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CONTENT

The Role of Scaffolding in L2 Learners' Dialogic Reflections

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ABSTRACT

This article examines (1) the role of scaffolding and (2) scaffolding patterns that emerged in L2 learners' dialogic reflections on their spoken performances. Dialogic reflection has recently become a vital concept in teacher development studies (Mann & Walsh, 2017), however, the role of dialogic reflection on learner empowerment has not been investigated. In this study, the term "dialogic reflection" is used to define 24 tertiary level L2 learners' reflections on their spoken performances after they conduct six different paired speaking tasks which last 17 hours in total. The present study observes these dialogic reflections of the students under the scope of Sociocultural Theory, which posits human mental functioning as a mediated process that occurred with the help of others (Ratner, 2002). The data is gathered from these reflection sessions, and it is analyzed through sociocultural discourse analysis (Mercer, 2004). Thanks to microanalysis of the data, the findings show that learners use scaffolding to be able to establish mutual understanding between each other (Musiol & Trognon, 1999) in terms of word search, grammatical correction and content development, and they used three different patters to reach their aim; asking for help, intentional intervention, and showing joint effort.

Keywords: scaffolding, sociocultural theory, dialogic reflection, oral performance, collaborative task.

İkinci Yabancı Dil Öğrencilerinin Sözlü Performanslarından Sonra Birlikte Yaptıkları Yansıma Konuşmalarında Birbirlerini Desteklemelerinin Rolü

Öz

Bu makale ikinci yabancı dil öğrencilerinin kendi konuşma performansları üzerine yaptıkları yansıtıcı diyaloglarda görülen birbirlerini desteklemenin rolünü ve birbirlerini desteklerken ortaya çıkan desenleri incelemektedir. Literatür incelendiğinde birlikte yapılan yansıtıcı konuşmanın daha çok öğretmen eğitiminde kullanıldığı gözlenmektedir (Mann & Walsh, 2017). Fakat bu çalışmamızda birlikte yansıma kelimesi ikinci dil öğrenen 24 öğrencinin 17 saatlik performansları üzerine yaptıkları konuşmalar olarak kullanılmıştır. Bu çalışma, öğrencilerin yansıtıcı konuşmalarını sosyokültürel teori bağlamında insanın zihinsel işleyişini başkalarının yardımıyla gerçekleşmesine olanak sağlamasını esas alarak incelemektedir. Veriler öğrencilerin yapmış olduğu yansıtıcı konuşma toplantılarından alınmış ve sosyokültürel söylem analizi yoluyla incelenmiştir (Mercer, 2004). Verilerin mikro analizi sayesinde, bulgular, birlikte yansıtma oturumlarında birbirlerini desteklemenin rolünü ve öğrencilerin birbirlerini desteklerken ne tür desenler ortaya çıktığını göstermektedir.

Anahtar kelimeler: yönlendirici destek, sosyokültürel teori, diyalojik yansıtma, sözlü performans, işbirlikçi görev.

1 | INTRODUCTION

 Throughout the late 20th century, language teaching witnessed changing winds and shifting sands times (Brown, 2007) which has led to an understanding of L2 learning as a dynamic, complex, non-linear, and socially situated process. With the advent of this new insight, engaging in meaningful conversations and negotiation of meaning in interaction has become a vital component of the language learning process (Long, 1991; Swain, 2006, 2007; Swain and Deters, 2007; Pica, 1984; Vygotsky, 1978).

Sociocultural theory (henceforth SCT) underpins this type of learning claiming the importance of the use of language that is regarded as a tool for understanding the processes of human mental development (Vygotsky, 1978). Moreover, SCT forms an intricately interwoven tapestry in learning as it includes some vital assets of learning such as mediation, scaffolding, interaction, and reflection, all of which are used to promote individual agency (Swain & Lapkin, 2001; Swain & Deters, 2007; Vygotsky, 1978).

Among those, there has been a long-standing interest in implementing collaboration in different parts of learning since it includes mediation and scaffolding (Donato & Mccormick, 1994; Karimi & Jalilvand, 2014; Swain, 2006). These studies underscore the importance of scaffolding between teacher-student or student-student in a teaching/learning setting. Under the scope of SCT, the researchers created some activities and tasks in which learners were supposed to do the task together with their peers by scaffolding each other. The aim of these activities or tasks is to create an environment which gives the learners opportunities to regulate themselves or their peers through conversation, which may result in internalization through which cognitive developments and improved version of previous saying can occur (Lantolf & Thorne, 2006; Lesser, 2004, Swain & Deters, 2007).

Acknowledging the importance of these studies, in this study, it is also aimed to explore the role of scaffolding between L2 learners, but its focus is not on the task, but it is about the reflections of the peers done after they conduct the task. Mann and Walsh (2013) proposed and used the term dialogic reflection for pre or in-service teacher trainings. However, in this study, the term was adopted and adapted for the L2 learners, and it was combined with SCT to see its role in these reflection sessions.

LITERATURE REVIEW

Dialogic reflection is an intra- or interpersonal reflection in which learning is mediated by using language (Mann & Walsh, 2017). Dialogic reflection has been widely used in understanding and improving teacher education. In dialogic reflection, to shed light on their teaching, teachers are required to reflect on their implementations and teaching practices by the help of language, which shapes their thoughts (Vygotsky, 1978). These dialogic reflections are teacher-led which means that teachers have an opportunity to reflect on their own practices themselves, or it could be done in a collaborative process, which leads them to talk to their partners/peers, to co-contract the meaning of what, why and how they have done. Dialogic reflection and language have a robust connection as the second one mediates any learning process. Moreover, Mann and Walsh (2017) proposed that deploying dialogic reflection among teachers is a necessity to promote deep understanding of their practice (Mann & Walsh, 2017). Thus, if the term dialogic reflection could be used to make meaning of practices and to result in significant improvement in learning, it could be used, in this study, to refer to the students' reflections which are done to make meaning of their own production. Based on this perspective, as it includes interaction, collaboration, mediation, scaffolding and language, sociocultural theory is a perfect fit to extend its aspects. Thus, it is of vital importance to define the related principles of SCT to understand the rationale behind dialogic reflection.

Mediation is one of the most crucial principles of SCT, which is directly about the relationship between human beings and their world around (Lantolf & Thorne, 2007). It is accepted as a process of everyone's development in which everything and everyone can be tools and artifacts such as language, logic, strategies, people, etc. They all improve individual's mental functioning and show a robust relationship between each individual and the society (Tomasello, 1999; Mitchell, Myles & Marsden, 2013). Simply put, mediation shows a set of preferences that people might use to do anything. A cliché example is given from the real world; people might use their hands to dig in the land, but they prefer using shovels, which mediates this process to help and support them (Thorne, 2003, 2009). According to SCT, there are some ways of mediation, one of which is regulation; object, other, and self-regulation (Lantolf & Poehner in VanPatten & Williams, 2015). It is observed that there is a transition from other to self-regulation which is the ultimate aim of mediation (Werstch, 1979). Under this paper's scope, other-

regulation attracts more attention as it is directly related to scaffolding. Other-regulation is giving assistance to someone who needs help to regulate their behavior or mental functioning and scaffolding is a metaphor used to refer to that support or assistance that a caregiver gives to a child (Wood & Bruner & Ross, 1976). Bruner (1978) explained five stages that could be applied while a caregiver scaffolds a child. It starts with simplifying a task for the child and goes on with helping the child to concentrate on a task, showing a model of how to do a task, expanding the scope of urgent situations and lastly assisting him or her to see progress. After observing caregiver and child situations, its implementation was extended to educational settings in which teacher-student or expert-novice interaction was given priority. Under this scope, Lidz (1991) agreed on the use of scaffolding principles with Bruner's (1978) stages. Based on these stages, Lidz (1991) proposed scaffolding mechanisms, which could be used to observe or evaluate any mediated situation; teacher to student or peer to peer.

L2 studies on scaffolding initially started to observe teacher-student interaction in which how mediation takes place or how teachers and students benefit from this mediational process were analyzed (Aljaafreh & Lantolf, 1994; van Lier, 1996). Then some researchers explored scaffolding between peers to analyze its effects and impacts on the learners (Donato, 1994; Guerrero & Villamil, 2000; Ohta, 1995). These studies indicated that learners benefit from mutual scaffolding in that they could support their peers while they are conducting a task, and they also could be more aware of their own progress in the language. The role of scaffolding between peers is also examined in this study. However, it differs from other studies in that the peers reflect on the task dialogically, so learners' aim is not completing a task, but reflecting on it to evaluate, to regulate and to improve themselves. Moreover, they use L1, which is accepted as a symbolic tool to regulate the mental functioning (Lantolf & Thorne, 2007) during their reflection sessions.

RESEARCH QUESTIONS

This study aims to explore (1) the role of scaffolding in L2 learners' dialogic reflections of their spoken performances and (2) the types of patterns students use while scaffolding. With this aim in mind, the following questions are addressed in the study.

1. What is the role of scaffolding in L2 learners' dialogic reflections of their spoken performances?

2. What patterns do the learners use while they are scaffolding their peers in dialogic reflection sessions?

2 | METHOD

PARTICIPANTS

24 participants took place in this study. The participants are preparatory class students at a foundation university in Turkey. The administration of the university selected the class randomly. The students are enrolled in various departments including engineering, business, management, etc. At the time when data collection started, the participants' language proficiency level was B1(according to CEFR). Data collection took 12 weeks in total. It should be noted that the participants had 25 hours of English classes per week during the data collection process.

INSTRUMENTS

The instruments used in this study include 6 different speaking tasks, which were conducted during English classes. The tasks were selected by the researchers prior to data collection. The tasks were selected based on three criteria: (1) providing a *meaningful* context for students to communicate in English, and (2) including situations that students are *familiar* with, and (3) being *interesting* for the students. The aim of the tasks is to make the learners understand the context, the purpose, the duration of the task as well as providing some key languages to them. After making the learners familiar with the theme, the task requirements are given to them by explaining each step.

Before implementing the tasks, the learners are asked to choose a partner for pair-work. Then, each pair is assigned with a task, which presents a meaningful situation and procedures about what to do and how to do. These pairs are given a few minutes for preparation. After the preparation, the pairs do the first task and record their conversation. As soon as they complete their task, they listen to the recording of their first task and reflect on their conversation dialogically. The dialogic reflection sessions are also audio-recorded. Moreover, these audio-

recordings of dialogic reflection sessions are orthographically transcribed and analysed to be able to answer the research questions.

DATA COLLECTION PROCEDURES

Data collection procedure started with the second term when the learners' readiness was enough to be able to be aware of their own performances and reflect on them. They were informed about the procedure of how they would do the task and how they could organize their reflection sessions. However, no tutorial about how to reflect was provided. Below is the table, which shows the tasks, reflection sessions and weeks.

Table 1. Data Collection Procedure

Weeks	Tasks	Duration	Reflection Sessions	Duration
Week 1	Informing about the procedure and getting permission for the study			
Week 2	Task 1	54 minutes	Dialogic reflection-1	98 minutes
Week 4	Task 2	62 minutes	Dialogic reflection-2	100 minutes
Week 6	Task 3	56 minutes	Dialogic reflection-3	110 minutes
Week 8	Task 4	70 minutes	Dialogic reflection-4	106 minutes
Week 10	Task 5	80 minutes	Dialogic reflection-5	103 minutes
Week 12	Task 6	75 minutes	Dialogic reflection-6	115 minutes

As it is shown in the Table 1, after receiving an approval from the learners and giving information about the process to the learners, the first task was distributed to the class in which they record their performance about it and then the learners use these recordings as stimulated recall to reflect on their performance with their peer dialogically. After receiving all the recordings of six different tasks, researchers transcribed them to analyse.

DATA ANALYSIS

The qualitative data was analysed by using MAXQDA, a software program in which the data could be stored and categorised. Moreover, as a methodology for the analysis, sociocultural discourse analysis (henceforth SCDA), proposed by Mercer (2004) was applied to analyze the use of language used during social thinking mode. SCDA, which is one of the microanalysis methods, is a perfect fit for the present study in that it is used both in analyzing the intellectual thinking between people, and it also puts emphasis on how the development occurs in social context and over time (Johnson & Mercer, 2019).

RESEARCH ETHICS

The ethical committee of the institution approved the study and then the researchers informed the participants about the study and the participants gave their consent via signing a consent form. Their names are kept anonymous.

3 | FINDINGS

In this current study, tertiary level L2 learners conduct 6 different speaking tasks and after operationalization of each, they use their recordings as stimulated recall which is a session in which learners are given their recordings to stimulate and recall their thoughts or performances (Gass & Mackey, 2000), and while listening to them, they reflect on their performances dialogically. The data was analysed through SCDA (Mercer, 2004) to figure out the role of scaffolding between peers and what patterns they use to support each other.

WHAT IS THE ROLE OF SCAFFOLDING IN DIALOGIC REFLECTIONS OF THE LEARNERS' SPOKEN PERFORMANCES?

This section presents an analysis of extracts to highlight the role of scaffolding in learners' dialogic reflections. There are 113 extracts, in which learners scaffold each other. All the extracts were analyzed to be able to answer the research question. However, in this part we will give three sample extracts, which can indicate the role of

scaffolding. Moreover, those extracts indicate that although the aim of scaffolding is similar in all extracts, the actions carried out through scaffolding vary. Extract 1 below indicates two learners, who have similar language proficiency levels, talking about the task and about how to improve it jointly.

Extract 1

1   A: Bak, bu advertisement önemli. Ne diyelim? Board mu?

                 Look,this advertisement is important. What can we say here? Board?

2   B: Board diyelim OK o. Table da diyebiliriz.

                 Say "board" it is OK. We can say "table" too.

3   A: Ne? Tabela mı?

                 What? Table?

4   B: Evet table. Bir dakika.

                 Yes table. Just a second.

5   A: *Signboard* (high intonation)

6   B: Başka yok mu ya anlamı?

                 Is there any other meaning of it?

7   A: Signboard iyi ya. (writing) imza tahtası gibi.

                 Signboard is OK. It is like signing board.

8   B: Aynen.

                 Agree.

In line 1, A initiates the conversation by stating the importance of one of the topics in their task, which is about "*advertisement*". Then, he requests help from his peer asking a word and offering one possible word as "*board*". In line 2, B accepts his suggestion initially, then and suggests an alternative word "*table*". In line 3, A requests a clarification of the word. In line 5, A offers a new word "signboard" with a high intonation. .This continues with B's question about whether there are any other meanings of the word. In line 7, A goes on with pivoting (Jefferson, 1984) to use that word by saying "*it is OK*" and adds further explanation of the word. The interaction ends with B's agreement. They have a problem to find a word, which fits in the task, and they could construct it together. It is not a bold claim to say that if there is a peer-to-peer support, it can be easier for them to regulate themselves and finalize what they need.

In addition to this, in this first extract, learners use scaffolding to establish mutual understanding between them. We use establishing mutual understanding in the meaning of "the result of a negotiation process aimed at bringing the interlocutors to a joint and precise representation of their intentions of meaning and the interpretations they make of these intentions" (Musiol & Trognon 1999: 223). While the learners help each other to find a word, they are asking questions or making suggestions, and their aim is to agree on something through negotiation of meaning.

Considering the first extract, it is noticed that the learners support each other to find a solution to the problem together. It can be thought as building a house together by putting a brick one by one. A starts the conversation by asking a word, and through lines 1 to 7, they look for an appropriate word, and finally it is A who found what he needed, and B agrees with A and they could establish mutual understanding.

Extract 2 below shows another example of scaffolding emerged during reflections. It is similar to the first one in that the students are trying to establish mutual understanding by figuring out how to say something in English. However, it differs in terms of the action they took while they are supporting each other. While in the first extract speaker 1 (S1) questions how to say a word by asking questions to speaker 2 (S2), in the second extract initiation starts with making suggestions to improve the grammatical structure of the task.

Extract 2

1	A:	We will give 3 lokma for 3 lokmas prize diyelim. 3 lokma, 2 lokma
		Lets say we will give 3 donut for 3 donuts. 3 donut, 2 donut's
2	A:	fiyatına 3 lokma.
		prize 3 donut.
3	B:	Aynen, bunu diyelim. Nasıl diyeceksin?
		Agree, lets say this. How will you say it?
4	A:	Ben derim.
		I can say.(stops for a few seconds)
5	B:	*We will give*
6	A:	*2 paid 3 take*. Yok tam Turkish oldu.
		No it is just Turkish.
7	B:	Two prize. pay ne demek? Ödemek.
		What does "pay" mean? Pay.
8	A:	*Öde*.
		Pay.
9	B:	2 paid 3 take
10	A:	Aaa! OK OK. Çok iyi.
		Ohh! OK OK. Very good.

Lines 1 and 2 start with an effort of A to revise and improve the task by adding new content to it. In line 3, B agrees with A to add the new content and questions how to phrase that sentence. In line 4, A asserts that he can say it but then pauses for a few seconds. Then in line 5, B attempts to formulate the sentence, but he does not finish it. In line 6, A offers a candidate translation for what they want to say, however, he argues that it sounds like a Turkish saying. In line 7, B attempts to formulate another candidate translation "*two prize*", but then he stops for checking the meaning of the verb "*pay*". In line 8, A confirms the meaning of the verb '*pay*'. In line 9, B formulates the sentence in English as "*2 paid 3 take*". In line 10, A displays his agreement with the suggested translation with an exclamation and an explicit statement saying that "*it is very good*".

Below is the third extract showing scaffolding between peers. It displays another way of reaching mutual understanding.

Extract 3

1	A:	Bak şey demedin bazıları uzaktan geliyor o yüzden
		Look, you didn't say some are coming from distant places,so say
2	A:	park sıkıntımız oluyor de.
		there is park problem.
3	B:	Hıhıh. Tamam. Bazısı uzaktan bazısı yakın mı?
		Hımm. OK. Some from distance some from nearby, right?
4	A:	Yaa işte uzaktan geliyor araba kullanmak zorunda.
		Huh, they are coming from distant places. They are to use cars.
5	A:	Have to kullanalım orada

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Use have to there.

6   B: Tamam.

OK.

In extract 3, A initiates the conversation in lines 1 and 2 by highlighting a missing point in their task and recommends that his pair should add this point about the parking problem as some people are coming from distant places. In line 3, B accepts this suggestion, and he tries to clarify the point by asking a question. Then, in lines 4, A clarifies his point by explaining that as "*they are coming from distant places. They are to use cars.*" In line 5, A switches his focus from the meaning to the form and states that they should use "*have to*" in this context. The extract ends with B who accepts his peer's suggestions.

In this extract, from the first line to the last, A is the one who scaffold his peer in terms of the content of the task. Thus, it is seen that their aim is to negotiate on the content of the task. Moreover, signs such as "*Hımm, OK*" in line 3 or "*OK*" in the last line shows that B could build mutual understanding with his peer.

To conclude this research question, it is seen that learners use scaffolding to establish mutual understanding about their task. However, the actions, they are taking while creating a common sense in-between themselves, are varying. While the first extract indicates the need for help in a word search, the second one shows the assistance in grammatical structures, and the third one necessitates scaffolding in content development. The common point in all of them is to reach negotiation. This negotiation process might facilitate learning potentials, which was defined by Hellermann and Pekarek Doehler (2010) as "learning potentials include grammatical structures, lexical items, as well as methods for turn construction, the sequential order of turns, and recipient design work" (p. 27). As dialogic reflections of learners include talking about the content of the task, grammatical issues, word choices, their opinions, etc., these might have an impact on their learning potential for the future tasks, which may end up with regulation and internalization.

WHAT PATTERNS DO THE LEARNERS USE WHILE THEY ARE SCAFFOLDING THEIR PEERS IN DIALOGIC REFLECTION SESSIONS?

Through the analysis of the first question, we explained the role of scaffolding emerged during dialogic reflections of the learners. After figuring out the role of scaffolding, our aim in the second question is to find out what kind of patterns the learners use to be able to scaffold each other.

The analysis of the data displays that while learners scaffold each other during reflections, they use some patterns to scaffold themselves or their peers. The table below shows the distribution of these patterns.

Table 2. Scaffolding Patterns

Scaffolding Patterns Emerged During Dialogic Reflections of L2 Learners	
Asking for help	41
Intentionality	37
Joint effort	35

The analysis of the data indicates that out of 113 extracts, the most common type of scaffolding emerges via one of the speakers' initiations of the interaction by asking for help. It is observed that in some of them, one of the learners directly asks for help (in 30 extracts) and in the rest of them (in 11 extracts), they show that they need approval to be able to be sure about something. Below are the sample extracts, which identifies the situation.

Extract 4

1	A:	Sport support, spor desteği nasıl diyebilirim orada?

How can I say sport support there?

2	B:	Provide facilities diyebilirsin sanki. Daha iyi olabilirdi.

You can say I think. It could be better.

3	A:	Support dedim ne demeliydim?

I said support. What should I say?

4	B:	Provide sport facility
5	A:	Hıh, tamam

Hıh, OK.

In line 1, A needs help because he has hesitations in word choice he used in the task, so he directly asks it to his partner. In line 2, B helps him by suggesting the collocation "provide facilities". After A asks the same question one more time in line 3, B provides a clear assistance by saying 'provide sport facility'. It is after this assistance that A says 'Hıh, OK', which displays that he accepts the suggestion, and they could reach an agreement.

One more example about requesting help from peer is given in the extract below. However, it differs from the previous one since the second speaker needs guidance in getting approval.

Extract 5

1	A:	can be recycling doğru bir cümle mi oluyor?

Is it a correct sentence?

2	B:	Ne demişsin?

What did you say?

3	A:	Our products can be recycling.
4	B:	Our products *can be recycled*.
5	A:	*Recycled*
6	B:	Aynen aynen

Yes yes

This extract again starts with requesting help from his peer. In line 1, A formulates a phrase, and he explicitly checks for confirmation by asking whether it is correct or not. Then, in line 2, B questions the whole sentence. In line 3, A produces the full sentence "*Our products can be recycling*". In line 4, A corrects B's sentence, as "*Our products can be recycled*". In line 5, A displays that he notices the correction and highlights the word "*recycled*" by repeating it. The conversation ends with B's turn which shows alignment with A's correction.

To conclude the first scaffolding pattern, we might suggest that learners are willing to request help or assistance from their peers in terms of language forms and structures in their reflections.

The most second common pattern taken from the analysis of the scaffolding extracts is intentionality. Intentionality is a term used to show the conscious attempt to influence one's actions. Lidz (1991) first used the term to indicate the mediational functioning between a caregiver and a child. Then it was used to show peer-to-peer intentional actions during conducting a task (Guerrero & Villamil, 2000). It may also be applied to peers' conscious actions, and in this study, it is adapted for the peers who intentionally intervene the conversation to assist their peers. Below is a sample extract in which one of the peers intentionally repeats his peer's sentence to show his/her mistake and correct him.

Extract 6

1   A: Başta dedin ki I have a one question dedin. I have a demelisin.

First you said   said. You should say

2   B: Aynen. A one, ikisi de bir demek doğru.

Agree. A and one, *both of them is one, right*.

In line 1, A repeats what his peer said prior to the extract. Then, he explicitly corrects the grammatical mistake made in B's sentence. In line 2, B first agrees with A and then displays his understanding by explaining the reason for the grammatical mistake. This extract gives us intentional action taken by A. He notices an incorrect usage of a grammatical form, and he offers a correction. Moreover, by agreeing with A, B is the one who accepts his mistake by saying "*Agree*", which shows that they could reach the same understanding about the topic, and he could internalize the usage by doing metatalk about it.

Below is another type of intentionality, which is about the content of the task. A would like his peer to make addition to the task.

Extract 7

1   A: Aaa şey desene ben bunları söylüyorum, sen de Lucifer British

Hım let's say the thing. I am saying these, you say Lucifer

2   A: konuşuyor de Tom var birde. (laughing)

speaks British, so does Tom.

3   B: Aynen. (laughing)

Agree.

In lines 1 and 2, A would like to scaffold his peer in terms of the content of the task, and he gives some examples related to the topic. In line 3, it is seen that they could establish mutual understanding as B agrees with A. In these kinds of samples, it is observed that although peers' language levels are assumed to be the same, one of the peers might be more eager to intervene the conversation to support their peer in terms of language use, content development, task improvement, etc. This enthusiasm ends with intentional support given to the peer.

Another frequent pattern of scaffolding is *joint effort,* which is peers' effort shown in the reflections to revise and improve it together or regulate their behaviours jointly. Below there is an extract in which co-construction of the task is demonstrated.

Extract 8

1   A: Bir dur. Burada konuya hemen girmişiz, üstünde konuşalım.

Just a sec. We just started the topic, let's talk about it.

2   B: Fikir ayrılığımız var diyelim.

We say we have a disagreement.

3   A: Olur. Birimizin ikna olması lazım bir de ikna etmeye çalışmak gerek

OK. One of us must be convinced, and we try to convince.

4   A: Sen gerçi biraz ikna oldun gibi.

You indeed seemed to be convinced.

5   B: Evet.

Yes.

6   A: Burada biraz daha konuşmamız lazım. Ne konuşabiliriz orada?

Here we have to speak more. What can we talk about?

7	B:	Diyelim ki İngilizce aksanını tercih ediyorum diyeyim for talk.

We can say that I prefer British accent for talk

8	B:	Konuşmak için American tercih ediyorum diyeyim

I say I prefer American accent to speak

9	A:	American unutma bak American. Oraya not al.

American, don't forget American. Note it down there.

10	B:	Tamam devam edelim.

OK, let's go on.

11	A:	Hayır dur. Burada konuşalım biraz. For example diye açıklayalım

No stop. Speak here more. We explain saying for example

12	B:	Ne olsun?

Like what?

13	A:	Australian, Turkish, British gibi say.

Count them like Australian, Turkish, British.

Line 1 starts with A who makes reflection about the beginning of the task, and he suggests talking more about the topic. In line 2, B puts forward to add something and line 3 goes on with A's acceptance of that issue. After throwbacks to the task in line 4 and 5, line 6 continues with A who would like to talk more. B in line 8 adds something for his part, and A tries to regulate him about that topic by saying "*American, don't forget American. Note it down there.*". A accepts it, and he wants to go on with listening to their task, but A stops him to add more things to the content. In line 12, B shows that he has no more idea by asking what else they can add to his peer, who suggests some more accents that could be mentioned in the task. The conversation continues a bit more, but a short part of it was cut to be commented here. This extract shows that learners can contribute to each other and co-assist each other to construct something together.

One more sample is given below to indicate peers' joint effort while they are scaffolding each other in terms of language use.

Extract 9

1	A:	Regularly come here
2	B:	Can come regularly
3	A:	According to this time table
4	B:	People will come regularly böyle diyelim.

We can say it like this

5	A:	Tamam. O da olur.

All right. That is OK too.

Extract 9 starts with A's effort to formulate a sentence. In line 2, B corrects A's first formulation as 'can come regularly'. In line 3, A utters the beginning of the sentence and B finishes the sentence by changing 'can' in B's suggestion to "will", and says, "let's put it like this?". In line 5, A displays his agreement. This extract is a clear evidence of displaying how peers co-construct meaning through scaffolding each other.

This data indicates that learners could support each other even if their levels are almost the same and through scaffolding, they establish mutual understanding. Moreover, there are patterns that are used by learners while

scaffolding. They might directly request help from their peers, one of them intentionally assists his/her peer, or they might co-construct the meaning or understanding together.

4 | DISCUSSION & CONCLUSION

The present study sets out to explore the role of scaffolding and to find out patterns of scaffolding emerged in L2 learners' dialogic reflections on six different speaking tasks. After examining 17 hours of data to detect the scaffolding sequences and categorizing them in MAXQDA, 113 extracts were identified and then analyzed through SCDA (Mercer, 2004). There are many studies, which illustrated that peer scaffolding plays a crucial role in co-constructing, revising, and improving a task (Carson & Nelson, 1994; Guerrero & Villamil, 1994, 2000; Nelson & Murphy, 1992a, Villamil & Guerrero, 1996), and this study is thought to contribute to the other studies in terms of using dialogic reflection with learners to make them get benefited from scaffolding to regulate their own learning.

The analysis of this current study shows that the role of scaffolding is to provide guidance to each other in terms of finding target vocabulary items (extract 1), correcting grammatical structures, and expanding the content of the task (extract 3). Moreover, the findings display that while the learners are using scaffolding in these roles, their aim is to build mutual understanding between themselves in reflection sessions. Previously Van de Pol, Volman, and Beishuizen (2010) suggested that learners could be active enough in teacher-student interaction to establish mutual understanding with their teacher. In addition to this study, we now could propose that learners scaffold their peers to make meaning of what they said and to build mutual understanding to be able to regulate themselves or their peers, which may end up with internalization.

We have also found out that there are some patterns in learners' interaction where they support each other. Parallel to the studies in which peer scaffolding is used to ask for clarification (Stanley, 1992), giving information (McGroarty & Zhu, 1997), using languaging (Guerrero & Villamil's, 1994; 2000; Villamil & De Guerrero, 1996), providing linguistic knowledge (Swain & Lapkin, 2001), this current study indicates three different patterns L2 learners use while reflecting on their task. The most frequent of them (36% of the data) is asking for help (shown in extract 4 and 5), which shows us that speaker 1 could request help or ask for something from speaker 2 who provides scaffolding. As SCT posits the need for learning something and regulating oneself start in a society first (Vygotsky, 1978). A learner who needs help is required to use a tool for this or to ask it to someone. It might be an object like internet, books, and dictionaries or to a person who was previously accepted to be a more knowledgeable other, an expert or teacher (Lantolf & Thorne, 2007). However, more recently, it has been seen that no power relationship is prerequisite to ask for help or support. The second common pattern is intentionality (shown in extracts 6 and 7), first used by Lidz (1991) to show conscious assistance given by a caregiver to a child. The data show that in 33% of the extracts, learners intentionally support their partners. They use intentionality with highlighting something they notice during their partners' talk (extract 6) or with showing willingness to regulate their partners' behavior (extract 7). This shows that learners are capable of constructing something together with their peer despite no prior knowledge about how to do so. Other-regulation is a sine-qua-non term of this pattern as some learners might show tendency to regulate their friends. Moreover, since a shift from other-regulation to self-regulation is a known fact (Lantolf & Thorne, 2007), this regulatory behavior can be seen as a step to self-regulation. Finally, yet importantly, L2 learners in our study use joint effort, which can be defined as co-construction of something, as a tool to scaffold each other. In the 31% of the extracts, peers are observed to construct their thoughts, performances, or task jointly (shown in extracts 8 and 9). This final pattern withdrawn from the data indicates us that learners can be engaged deeply in their performances to reflect on it and while reflecting it helps them support and regulate each other.

All in all, learners use scaffolding while they are reflecting on their performances within some patterns, all of which help them regulate their behaviors. These findings may give the teachers an opportunity to form pairs in their classes to give the learners a place to support each other and to establish an understanding with each other. Moreover, as there are more studies on peer scaffolding nowadays, there might be further studies in which the focus might be an integration of student and teacher scaffolding to analyze their impacts on learners.

STATEMENTS OF PUBLICATION ETHICS

This study is based on the first author's PhD thesis (in progress). Thus, ethical approval was taken for the thesis, and this article's data was used from the same study.

CONFLICT OF INTEREST

The author has no conflicts of interest.

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The Turkish Adaptation of the Teaching Style for Successful Intelligence Questionnaire (TSI-Q): Validity and Reliability Study

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ABSTRACT

The purpose of this research is to adapt the Teaching Style for Successful Intelligence Questionnaire (TSI-Q) to Turkish. The research was carried out on three separate groups consisting of 305 high school teachers. In the linguistic equivalence study, it was obtained that there were strong, positive and significant correlations between responses of the participants to the English and Turkish forms of the scale. The construct validity of the TSI-Q's Turkish form was tested by means of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). According to the results of EFA, a four-factor structure explaining 61% of the total variance was compatible with the original form of the scale. The fit indices reported in CFA were ratified in this four-factor structure. The emerging factors were named as memory, analytical thinking, reproductive thinking and practical thinking as in the original form of the scale. As for the reliability, Cronbach's Alpha internal consistency coefficient of the TSI-Q was calculated as .95. The item analysis result revealed that item total correlations were over the threshold value of .30. All these results suggest that the Turkish form of the TSI-Q provides valid and reliable measurements, and it can be used to measure teaching style based on the successful intelligence of teachers.

Keywords: reliability, teaching styles, scale adaptation, validity

Başarılı Zekaya Dayalı Öğretme Stili Ölçeğinin Türkçeye Uyarlanması: Geçerlik ve Güvenirlik Çalışması

ÖZ

Bu araştırmada Başarılı Zekaya Dayalı Öğretme Stili Ölçeği'nin (BZÖSÖ) Türkçeye uyarlanması amaçlanmaktadır. Araştırma ortaöğretim kademesinde görevli 305 öğretmenden oluşan üç çalışma grubu üzerinde yürütülmüştür. Dilsel eşdeğerlik çalışmasında katılımcıların BZÖSÖ'nün Türkçe ve İngilizce formuna verdikleri cevaplar arasında pozitif yönlü, güçlü ve anlamlı korelasyonlar tespit edilmiştir. BZÖSÖ'nün Türkçe formunun yapı geçerliği açımlayıcı faktör analizi (AFA) ve doğrulayıcı faktör analizi (DFA) uygulanarak test edilmiştir. AFA'da toplam varyansın %61'ini açıklayan ve ölçeğin orijinal formuyla paralellik gösteren dört faktörlü bir yapı elde edilmiştir. DFA'da rapor edilen uyum indeks bu yapıyı doğrulamıştır. Faktör analizi sonucunda ortaya çıkan boyutlar, ölçeğin orijinal formundaki gibi, hafıza, analitik düşünme, yaratıcı düşünme ve uygulamalı düşünme olarak adlandırılmıştır. Güvenirlik çalışması çerçevesinde, BZÖSÖ'nün geneli için hesaplanan Cronbach-alfa iç tutarlılık katsayısı .95 olarak saptanmıştır. Madde analizi sonuçları, madde korelasyonlarının BZÖSÖ'deki tüm maddeler için .30 eşik değerinin üzerinde olduğunu göstermiştir. Araştırmaya ilişkin bu sonuçlar, ölçeğin Türkçe formunun geçerli ve güvenilir ölçümler sağladığını ve öğretmenlerin başarılı zekaya dayalı öğretim stillerini ölçmek için kullanılabileceğini ortaya koymaktadır.

Anahtar Kelimeler: güvenirlik, öğretme stili, ölçek uyarlaması, öğretme stili, geçerlik.

1 | INTRODUCTION

Over the last two decades, the world has been witnessing quite swift and dramatic changes in several fields. Rapid digitalization, globalization and technological developments have been altering the definitions and the scopes of the terms in recent years. In this sense, the term, "education", has been evolving, and is no longer just a process based upon transferring and evaluating the knowledge. It requires determining targets, contents, and implementations, which address innovative, multi-disciplinary and complex skills, so that the students can challenge, keep up with the era, and lead the future. Apart from developing their cognitive skills via maths, science, and language courses; children and teenagers need to improve their several versatile, holistic skills- such as problem solving, critical thinking, communication, collaboration to achieve their full potential, and facilitate practices of these school courses (NRC, 2012). Several organizations, initiatives, such as, OECD (the Organization for Economic Co-operation and Development), and NRC, put forward the frameworks including the skills that are required for the century. These skills are called the 21st century skills and include developing "creativity", "critical thinking", "communication", and "collaboration" skills of the individuals. Although there are some discrepancies in the classification and evaluation of skills in terms of the goals of institutions, there are common points, skills and targets in the reports. For instance, the committee of Partnership for 21st Century Skills points out various sets of terms associated with the 21st century skills, and defines three extensive domains for competence; -cognitive, intrapersonal and interpersonal. While the cognitive domain includes reasoning and memory, the intrapersonal domain covers the capacity to manage one's behavior and emotions to achieve one's learning goals. Besides, the interpersonal domain makes up expressing views, and interpreting and reacting to actions and messages from others. These intertwined skills can allow individuals to obtain deeper learning, and transfer what was learned to solve new problems (NRC, 2012).

Furthermore, the OECD emphasizes that education should provide learners with agency and a sense of purpose, and the knowledge and skills they need to shape their own future and contribute to the lives of others (OECD, 2018). Therefore, the OECD launched the Future of Education and Skills 2030 Project in 2018. Education is of vital importance in developing knowledge, skills, and attitudes that prepare young people for unprecedented challenges of future, and help them become active, responsible and engaged citizens (OECD, 2015). In this sense, education systems should become responsive to changes and equip young people with new skills, which let them benefit from the emerging models of social developments and contribute to new economic forms, the main asset of which is generating and applying knowledge. Hence, novel approaches, innovative learning and teaching strategies should be developed and adopted during both the formal education period and lifelong learning processes.

Within this scope, the modern education system is supposed to arrange and update both teacher training programs and the curriculum in order to educate young people who can transfer their learning to their daily life, come up with new ideas and solutions to the problems through devising critical thinking abilities and regulate their learning. In Turkey, participating in international educational research, projects, and assessments, such as PISA, TIMMS, STEM+A, requires not only focusing on analytical skills but also developing productive, creative and practical skills of the students. In this regard, the teaching styles of teachers should guide and facilitate learning process. It is necessary that teachers encourage students to be aware of their strengths and weaknesses, and emerge their potential capacities (Sternberg, 1998). The individual, who is aware of his/her own traits, and takes responsibility for his/her own learning, is eager to construct meaningful knowledge and can be better motivated to become an active learner in learning environments, and assume responsibility for the learning process (Bulut, 2018).

Each student takes part in the learning environment with her/his unique potential. A learner's contribution to the learning process is vital and valuable in education as it is an interaction and communication process. Learners vary in terms of their socio-economic level, ethnicity, culture, language and learning style (Borich, 2014). In other words, their needs, personalities, interests, abilities, learning styles, and intelligences are the basic factors creating individual differences. Individual differences in learning performances are related to inborn traits, environments and learning capacities of individuals. Kuzgun and Deryakulu (2004) state that individual differences emerge with the interaction between inborn traits and the social environment of a person, and thus this interaction identifies the person's intelligence, and learning capacity. On the other hand, experimental research on learning and developing

memory clarifies that differences in performances of learners depend on the following four factors (Winert, Helmke & Schneider, 1989): (a) Memory capacity, which is one of the relatively stable individual traits in information processing system (e.g. short-term memory capacity; (b) Intellectual competences, which include general intellectual skills that play an important role in leading learning and memory tasks; (c) Domain-specific knowledge, which covers the quantity and quality of knowledge associated with the content of the information to be learned and recalled; (d) Learning and memory strategies, which are related to the strategies that facilitate and master acquisition, storage, and recalling information.

The concept of intelligence has been debated, and scholars have suggested various theories for ages. Discovering mysterious secrets of the brain, all domains of sciences started to define the term intelligence through multi-disciplinary works. Intelligence is usually defined as the individual's mental capacity. However, a number of scholars now agree that intelligence is a sophisticated concept that comprises a wide range of different competences, and thus is highly difficult to measure and define (Service, 2005). In the 19th century, scientists asserted that intelligence could be measured through standard intelligence tests, and started to design tests to measure traits indicative of intelligence. Along with the beginning of compulsory education in Europe, it was thought that there was a connection between children's school performances and their intelligence. Conventional views favored that intelligence could be measured through standardized IQ tests (Sternberg, 2005). The pioneers of standardized intelligence tests, Binet and Simon focused on the issues not explicitly taught in schools such as attention, memory-based skills, reasoning, analytical thinking, and developed "the Binet-Simon Intelligence Test". They put forward the concept of mental age, based on the average cognitive competencies of children at certain ages (Cianciolo and Sternberg, 2004). Spearman as the representative of psychometric approach to intelligence emphasized the singular nature of intelligence. He highlighted a general factor of intelligence, often referred to as the "g factor", which assumes that the individual has a unique, inborn, and stable capacity. According to Spearman, there is a single cognitive ability standing for an individual's intelligence and correlating with the performances of the individual in the other domains (Sternberg & Grigorenko, 2004; Sternberg, 2019).

The dominance of the psychometric approach over intelligence has declined dramatically since the beginning of the 1970s (Gardner, Csikszentmihalyi & Damon, 2001). Important movements have been witnessed in intelligence theories, research and measurements which point out multiple features of mental capacity predicting individuals' both academic success and life-long skills (Kaufman & Singer, 2004). Contemporary intelligence theories view traditional notion of intelligence as the competence of adaptation to the environment to be defective (Delgoshaei & Delavari, 2012). Intelligence, high level of thinking abilities, and meta-cognitive competences enable individuals to transfer, process and apply knowledge for problem solving efficiently (Dochy, Segers, & Bossche, 2003). Considering versatile dimensions and complex structure of intelligence, Gardner introduces multiple intelligence theory and eight different types of intelligence in 1980s. He has argued that conventional concepts and measurements of intelligence are based upon unitary notions in nature, and fail to reflect the structure of intelligence that is far more complex than standardized IQ tests. This sophisticated structure is pluralistic. Intelligence performances form and vary within socio-cultural context, and thus intelligence demands an interdisciplinary approach and sensitivity to culture (Gardner, 1993). This theory expands the domains of intelligence, promotes undiscovered potential, creativity, awareness, emotion, and tacit knowledge of the individuals (Chinowsky & Brown, 2004). Besides, the theory highlights the diversity of the learners in the learning styles, and thus enables teachers to recognize the concept of individualized and independent learning (Sternberg, 2002).

Supporting the multiple nature of intelligence, Sternberg puts forward "successful intelligence theory" which is defined as one's ability to adapt, shape and select her/his socio-cultural environment in order to attain lifelong success (Sternberg, 1999). Sternberg (2005) states that there is no precise definition of success that is confirmed by everyone. Since people have various ambitions in life, education cannot offer the formula of single targeted measures of success. Attaining success depends on empowering one's strengths and making up for one's weaknesses through creating the balance of analytical, creative, and practical abilities. Hence, the theory is referred to as "triarchic skills", depicting analytical, creative and practical aspects of intelligence. Throughout their life-long learning and experiences, people should think;

(a) creatively to come up with new and valuable ideas,

(b) analytically to assess whether their ideas and other ideas are valid and worthwhile,

(c) practically to apply their ideas and to persuade others. People also need

(d) wisdom to ensure that their talents can be devised to attain a common good that balances between their own interests and other people's interests over the long term (Sternberg, 2015).

As Sternberg (2002) points out, analytical thinking ability covers abstract subjects, and requires analyzing, judging, assessing, and critical thinking abilities. This kind of intelligence is particularly displayed in academic settings and represents "g" intelligence. The other type of intelligence, creative thinking ability contains a range of problems and requires coming up with new ideas, formulating strategies to deal with novelty. Practical thinking ability involves individuals' implementing practical solution to difficulties in daily life. Adaptation, shaping and selecting environments are the components of practical thinking, and the balance among these elements helps individuals attain success throughout their life (Sternberg, et al. 2005). Sternberg and Grigorenko (2000) summarize the elements of successful intelligence theory as follows;

1. There is no precise definition of success that is confirmed by everyone, since people have different life styles, expectations, goals or needs that move them away from single targeted measures of success.

2. Individuals should capitalize their strengths and compensate for their weaknesses to attain success. They should be aware of their capacity and skills.

3. Successfully intelligent people can achieve some balance of adapting, shaping and selecting their existing environments.

4. Successfully intelligent people find out a balance in their use of analytical, creative, and practical abilities. They generate ideas to make them work harmoniously (Sternberg and Grigorenko, 2000: 211-215)

The theory of successful intelligence asserts that some students can be more talented in displaying their knowledge when they face the problems within a practical context rather than analytical pattern. Practical ability involves transferring tacit knowledge to daily life. For instance, in the study carried out by Sternberg and his friends (2009), Brazilian children, who dropped out schools due to financial or other reasons, and worked as street vendors, were successful in making trade-related arithmetic operations, but they were unable to solve similar problems in abstract context. Similarly, in the research they carried out in rural Kenya, they found out that the children, who were good at preparing, and using herbal medicine to treat various type of infections, scored quite poorly on academic tests. The families of these children viewed that the children needed to learn this kind of practical skills to survive and attain success in life rather than academic knowledge or analytical skills (Sternberg & Grigorenko, 2002). Sternberg suggests that the same can be said for the children who want to follow careers in art, music, carpentry, and so forth. They need to enhance their practical skills to reach their goals in life rather than spending time developing their academic skills (Sternberg, 2006). In this regard, Sternberg and his colleagues developed "Sternberg Triarchic Abilities Test (STAT)", and tested validity of successful intelligence theory at schools and colleges. STAT is a test designed to measure analytical, practical, and creative thinking skills of individuals. Hence, students or teachers at schools or colleges formed the participants of Sternberg's research, and he proposed implications for learning styles of students, teaching and assessment method of teachers.

Modern societies require individuals with creative intelligence, who are capable of identifying right patterns, and have problem-solving and analytical thinking skills. Some education systems encourage students to think critically, and solve simulated practical problems to enable them to be more enthusiastic and active learners. Transferring knowledge from schools into real life makes people successful and provides opportunities to implement academic knowledge in society. Therefore, integrated patterns of analytical, critical and practical thinking training in the curriculum bring up educated people to address society's needs (Nyunt Saw & Han, 2021).

In recent years, education systems have been transformed from teacher-centered approach to student-centered approach. Thus, it becomes an obligation to design new curricula considering individual differences of both teachers and students. New curricula based on constructive approach have been designed in Turkey since 2005. Constructivism aims to educate individuals who are capable of expressing their thoughts, communicating, collaborating, taking responsibility, having versatile viewpoints and advanced problem-solving skills, and

generating knowledge via information-communication technologies (ME, 2017). These aims are associated with the elements of successful intelligence theory.

The individual differences and thinking styles of teachers, who play a vital role in implementing the curricula at schools, have a significant impact on learning and teaching process. It is essential that teachers keep up with the latest developments in their teaching domains, revise, update and design their teaching styles in accordance with the needs, and expectations of students. Teachers must be aware of their aptitude and proficiency level, and organize learning environment regarding the differences among students so that they can provide long lasting learning, facilitate acquisition of knowledge , and help students transfer information into real life practice (Bulut, 2014).

In accordance with the context relating to the theory of successful intelligence, it is aimed, in this research, to adapt "Teaching Style for Successful Intelligence Questionnaire (TSI-Q)"developed by Palos and Maricutoui (2013) into Turkish so that it can be used by the researchers in Turkey on Turkish speaking samplings. Adaptation process and the assessment of validity and reliability is conducted on the sample consisting of the teachers working at high school level. It is regarded that Turkish form of TSI-Q can contribute to the literature, and be beneficial measurement tool for the researchers studying assessment and determining teaching styles of teachers in terms of the theory of successful intelligence.

2 | METHOD

STUDY GROUP

In this study, online survey data from 305 teachers working at high schools in provincial centre of Diyarbakır were collected in the first semester of the 2020-2021 academic year. The scale was applied to three study groups. The first group consisted of 32 English language teachers who were applied both the original form of the scale and the translated version of the scale to carry out language equivalence analysis. The rest of the sample (n=273) was randomly divided into two groups as Sample 1 and Sample 2 for the analysis. Sample 1 (n= 136) were comprised of 59 (43.4%) female and 77 (56.6%) male teachers, the data obtained from Sample 1 was used to perform the exploratory confirmatory factor analysis (EFA). Sample 2 (n= 137) was made up of 58 (42.3%) female and 79 (57.7%) male teachers. The data obtained from Sample 2 (n=137) was used for confirmatory factor analysis (CFA). Data from both samples (n=273) were used for Cronbach Alpha reliability coefficient analysis.

The participants from six different teaching domains were included in the study group to gain maximum possible representation in EFA and CFA analyses. These domains were Turkish Language and Literature (n=49), Maths (n=37), Science (n=62), Social Sciences (n=52), Foreign Languages (n=50),and Arts (n=23).

MEASURING INSTRUMENT AND ADAPTATION PROCEDURE

The data of the original research was collected via "Teaching Style for Successful Intelligence Questionnaire (TSI-Q)" developed by Palos and Maricutoiu. The original scale was implemented on the sample that was comprised of 100 participants (70 females, 30 males), including teachers from high schools, and teaching staff from a university. The scale is a 6-point Likert Scale, from 1-*very strong disagreement* to 6- *very strong agreement*, and consists of 23 items and four sub-scales. These sub-scales are named as *reproductive thinking, analytical thinking, creative thinking*, and *practical thinking*, which are based on Sternberg's theory of successful intelligence. The scale does not have any item that has any negative items. There are 5 items for *reproductive thinking* (1-5-9-13-17), 5 items for *analytical thinking* (2-6-10-14-18), 7 items for *creative thinking* (3-7-11-15-19-21-23) and 6 items for *creative thinking* (4-8-12-16-20-22). The original form of the scale indicates common variance of approx. 36-40% (Palos & Maricutoiu, 2006).

In the beginning of adaptation process, the researchers contacted Associate Professor Dr. Ramona Palos via email and obtained permissions to use the original form of the scale for adaptation into Turkish. The most important phase of the scale adaptation studies is considered as the translation process (Hambleton & Bollwark, 1991). During the process of adaptation of a scale, four different designs can be used, which are called single basic translation, backward translation, single basic translation based on statistical analysis, and backward translation based on statistical analysis. The scale is translated from source language to target language by single translator

or preferably a group of translators within single basic translation design. Then, another group of translators assess the equivalence of the original version and the target version of the scale. Revisions can be made to the target version of the scale to make up for ambiguities identified by the translators. On the other hand; in backward design, a group of translators translates the scale from source language to the target language. A second group takes the translated scale, and translates it back to original language of the scale. Afterwards, the original version of the scale and target language version of the scale are compared, and judged whether two versions of the scale are equivalent, or not (Hambleton & Kanjee, 1993).

In this research, the scale was translated from source language to the target language through backward translation design. The original version of the scale was applied to participants in Romanian language, but Palos and Maricutoiu issued the English version of the scale. The researchers requested Romanian version from the developers of the scale. Later, they sent the scale to a translation bureau, and had certified translators translate it from Romanian to Turkish. Then, three experts in English language translated Turkish version of the scale into English. The English version of the scale in the article and the translated version of the scale were compared and revised by experts in English and Turkish languages. Afterwards, the researchers asked for second opinion from experts in educational sciences and another group of experts in Turkish and English languages to determine the best target language expressions that are equivalent and reflect the original version of the scale in Turkish. Even though the original version of the scale is 6-point Likert type, experts in Turkish language advised that 5-point Likert Type would be more appropriate to semantic structure of Turkish. Hence, the researchers preferred 5-point Likert Scale Type, from 1-*strongly disagree* to 5- *strongly agree*.

DATA COLLECTION

Initially, the translated version of the scale was tested to indicate whether it was equivalent of the original version of the scale. 32 English language teachers answered both the original form and the translated version of the scale. Simple correlation coefficient test was applied between two scales to indicate the equivalence level of the translated form of the scale.

For the adaptation of a scale, construct validity and reliability should be tested through exploratory factor analysis (EFA) or confirmatory factor analysis or both of them together (EFA and CFA) Karadeniz, Büyüköztürk, Akgün, Çakmak & Demirel, 2008; Gülbahar & Büyüköztürk, 2008; Kaya & Dağ, 2013). In this research, both EFA and CFA were conducted. While EFA is used to test the conformity of 4 factors of original version of the scale with a different culture, CFA measures the compliance of the adapted scale by comparing factors, and thus providing similarities and differences between the original and adapted versions of the scale (Tabachnick & Fidell, 2001).

Kaiser-Meyer-Olkin Test (KMO) and Bartlett's Test of Sphericity were carried out on data obtained from 273 teachers whether sample size was acceptable and appropriate for CFA and EFA. In the process of CFA, goodness-of-fit indices are taken into consideration to assess conformity level of the model (Şenel, Pekdağ & Sarıtaş, 2018). In CFA process of this research, goodness-of-fit indices - $\chi 2$/sd (Chi-Square/Degrees of Freedom), RMSEA (Root Mean Square Error of Approximation), NFI (Normed Fit Index), NNFI (Non-Normed Fit Index), CFI (Comparative Fit Index) and RMR (Root Mean Square Residual) were determined as criteria, and sufficiency levels of these goodness-of-fit-indices were tested for model-data fitness.

Internal consistency reliability analysis was performed for the reliability of the Turkish version of the scale. Cronbach's alpha coefficient was calculated to test internal consistency of the items and each subscale. The analyses were conducted through such computer softwares as SPSS.22 for KMO, Barlet's Tests, EFA and internal consistency test (Cronbach's alpha), and AMOS.24 for CFA. Though reliability test was performed on 273 participants of data set, the data set was randomly divided into two groups for EFA and CFA. Data set with 136 participants was used for EFA whereas CFA was conducted on the data set with 137 participants. Fabrigar, Wegener, MacCallum and Strahan (1999) postulate that calculating EFA and CFA on different data sets obtained from different samples is suitable choice for testing validity of a measurement tool.

RESEARCH ETHICS

After preparing the necessary documents concerning the research and ethics committee approval necessary documents, including the research process and publication process, the research measurement tools, research data and all processes were submitted to the Dicle University Research Ethical Committee. The ethics committee approval was received with the protocol number 32977, dated 16.03.2020. Research Ethics Permission was obtained from Provincial Directorate of National Education, dated 22.10.2020, numbered 30769799-44-E.15393017.

3 | FINDINGS

LINGUISTIC EQUIVALENCE

The original form and the translated version of the scale were applied to 32 participants to indicate an evidence of the linguistic equivalence between two forms, and linear correlation coefficients of two forms were calculated and compared. The correlation coefficients for each item are given in the Table 1:

Table 1. Correlation coefficients between original and Turkish forms of the TSI-Q

Number of Items	r	Number of Items	r	Number of Items	r	Number of Items	r
Item 1	.58	Item 7	.52	Item 13	.79	Item 19	.94
Item 2	.80	Item 8	.50	Item 14	.49	Item 20	.59
Item 3	.47	Item 9	.60	Item 15	.45	Item 21	.91
Item 4	.55	Item 10	.46	Item 16	.90	Item 22	.45
Item 5	.83	Item 11	.48	Item 17	.62	Item 23	.92
Item 6	.68	Item 12	.73	Item 18	.52		
Factor 1: .78		Factor 2: .87		Factor 3: .88		Factor 4: .93	
Total of the scale: .83							

In Table 1, correlation coefficients for each item of the original and translated versions of the scale were calculated between .45 and .94. The correlation value for the total of the scale was .83. Correlation coefficients for each sub-scale ranged from .78 to .93. The value of correlation coefficient is expected to be .70 and above, and the value .70 and above is defined as high level (Büyüköztürk, 2017). In this sense, both the total and sub-scales of the English and Turkish versions of the TSI-Q were covered within this high level value. It can be claimed that original and translated versions of the TSI-Q are equivalent.

EFA

Initially, KMO and Bartlett's Test of Sphericity were calculated to determine whether data set would be acceptable and appropriate for factor analysis. The results of these two tests were presented in Table 2:

Table 2. The Result of the KMO and Bartlett's Tests

Kaiser-Meyer-Olkin Sample Size Test		.957
Bartlett's Test of Sphericity	χ^2	4155.001
	sd	253
	p	.000

As seen in Table 2, Kaiser-MeyerOlkin (KMO) test was calculated as 0.957, which is considered to be a high value for factor analysis of this data set. Tavşancıl (2010) points out that a value of 0.90 or higher obtained from KMO test can be interpreted as a perfect value for sample size in order to perform factor analysis. Besides, findings

in Table 2 shows a normal distribution based on Bartlett's Test of Sphericity ($\chi2 = 4155.001$, $p < 0.01$), which also indicates that factor analysis can be carried out (Tabachnick & Fidell, 2001).

EFA is used to test the conformity of factor structure of the scale. The results of EFA test are given in Table 3 and Table 4:

Table 3. Initial Eigenvalues and Variances of the TSI-Q

Factors	Initial Eigenvalues	% of Variance	Cumulatives %
Reproductive Thinking	10.60	46.11	46.11
Analytical Thinking	1.40	6.11	52.23
Creative Thinking	1.20	5.24	57.47
Practical Thinking	1.006	4.11	61.59

As presented in Table 3, the results of EFA tests show that the data obtained from adapted scale is coherent to original form. Adapted scale includes 23 items and 4 factors, initial eigenvalues are above 1. The number of factors in the adapted scale is compatible to the original version of the scale. In other words, the results of EFA test supported the four-dimensional factor structure of the original scale It also explains 61% of cumulative variance. Büyüköztürk (2017) states that 30% of explained variance is sufficient for the scale with single factor, yet explained variance for the scale with multiple factors ought to be over 30%. Moreover, Yaşaroğlu (2007) claims that the explained variance exceeding 50 % of total variance is a significant criteria for factor analysis.

Table 4. Factor Loadings of the TSI-Q

Items	F1	F2	F3	F4	Items	F1	F2	F3	F4
1	.65				13	.44			
2		.35			14		.48		
3			.48		15			.70	
4				.46	16				.67
5	.74				17	.67			
6		.69			18		.34		
7			.43		19			.63	
8				.74	20				.87
9	.67				21			.46	
10		.63			22				.59
11			.47		23			.39	
12				.52					

In table 4, it can be observed that factor loads range from .35 to .87. As stated in references, factor loads should be at least .30 (Büyüköztürk, 2017; Can, 2017). In this sense, the items of the adapted scale covers required factor loads. It can be suggested that EFA result of the adapted version of the TSI-Q confirms the factor structure in the original form of TSI-Q, and proves conformity with Turkish culture in terms of internal and structural validity.

CFA

In order to determine that the original structure of TSI-Q is confirmed with the sample of Turkish participants, construct validity of the scale was examined using confirmatory factor analysis. Initially in confirmatory factor analysis, the model fit indicators were checked. The results for the indices emerged for TSI-Q with excellent and acceptable fitness values are shown in Table 5.

Table 5. CFA Fit Indices for TSI-Q*

Fit Indices	Excellent Fit Values	Acceptable Fit Values	Obtained Fit Values
$\chi2/df$	$0 \le \chi2/df \le 2$	$2 \le \chi2/df \le 3$	2.57
GFI	$.95 \le GFI \le 1.00$	$.90 \le GFI \le 95$	.924
AGFI	$.90 \le AGFI \le 1.00$	$.85 \le AGFI \le .90$	.858
CFI	$.95 \le CFI \le 1.00$	$.90 \le CFI \le .95$	.915
NFI	$.95 \le NFI \le 1.00$	$.90 \le NFI \le .95$	.908
RMSEA	$.00 \le RMSEA \le .05$	$.05 \le RMSEA \le .08$	.072
SRMR	$.00 \le SRMR \le .05$	$.05 \le SRMR \le .10$	.025

*Bentler ve Bonett, 1980; Schermelleh-Engel and Moosbrugger,2003; Marsh, Hau, Artelt, Baumert & Peschar, 2006

As shown in Table 5, it was found that the model for the adapted version of TSI-Q tested through CFA indicated an acceptable level of fit values; Chi Square / Freedom Degree (CMIN / DF) = 2.57, X^2 = 580.480, p<.000, RMSEA = .072, S-RMR = .025, GFI = .92, AGFI = .85, CFI = .91, NFI = .90).

Acceptable criteria for goodness values calculated by CFA are stated as follows: Norm^2/sd ratio which is defined as normed chi-square is between 2 and 3, which is accepted as an indicator of goodness of the tested model with original data. Furthermore, while GFI (Goodness of Fit Index) and AGFI (Adjusted Goodness of Fit Index) are supposed to be above 0.90, CFI (Comparative Fit Index) should be above 0.85. RMS (Root Mean Square) or standardized RMS and RMSEA (Root Mean Square Error of Approximation) values are expected to be less than 0.05. These values point out that original structure of the instrument is confirmed by the adapted scale, and valid for a different culture (Bentler & Bonett, 1980; Schermelleh-Engel & Moosbrugger, 2003; Marsh, Hau, Artelt, Baumert & Peschar, 2006). Factorial model and factor-item relationship values of the scale are given in Figure 1.
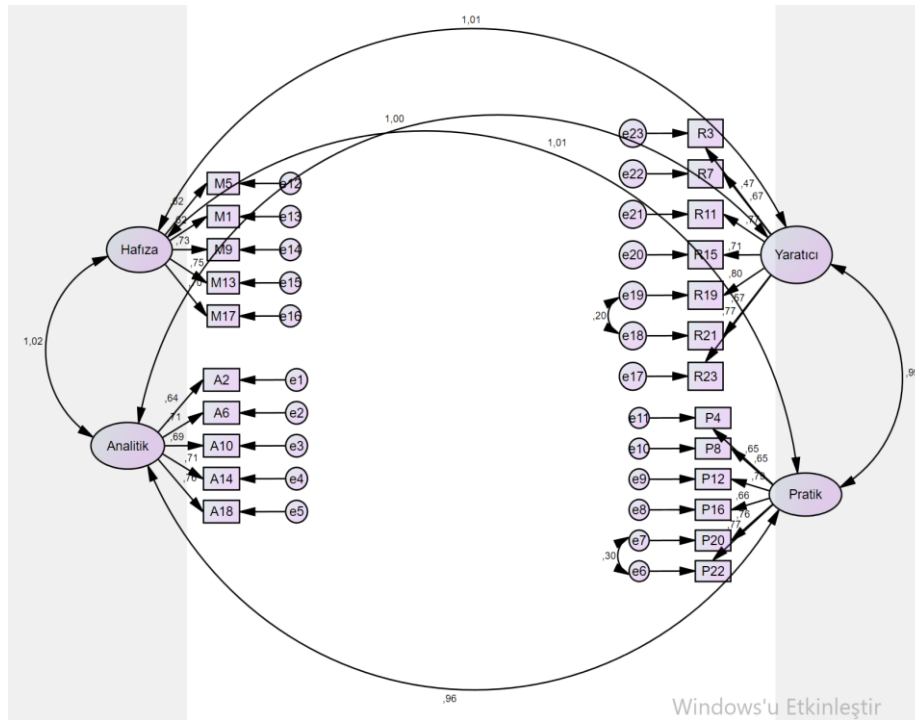
Figure 1. *Diagram of confirmatory factor analysis of the scale*

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In Figure 1, it is seen that the factor loads of the scale change between 0.30 to 1.02. Some standardized coefficient values were found above 1. However, there is a misunderstanding that coefficient values should be below 1. Jöreskog (1999) states that this misunderstanding results from multiple covariances between items and factors. The number of the items defining factors is inversely correlated with multiple covariance, and thus multiple covariance increases as the number of items declines (Deegan, 1978; Jöreskog, 1999). The reason why factor loadings concerning four-dimensional factor model is over 1 depends on this inverse correlation. As seen in the diagram, modification covariance was made between item 19 -21, and between item 20-22 to attain acceptable fitness value (Bentler & Bonett, 1980; Schermelleh-Engel & Moosbrugger, 2003; Marsh, Hau, Artelt, Baumert & Peschar, 2006). All these CFA fit indices and factor loads shown in diagram suggest that the Turkish version of TSI-Q is confirmed in the data set of this research, and valid to be used within the framework of its purpose in Turkey.

RELIABILITY

Reliability analysis of the TSI-Q is calculated by using Cronbach Alpha internal consistency coefficients. In a study of measuring reliability, Cronbach's Alpha internal consistency coefficients range from 0 to 1. As values get closer to 1.0, it means that the variables in the scale show greater reliability. Based on Cronbach's Alpha coefficient values (α), is interpreted as follows (Fraenkel & Wallen, 2009):

$0.00 \leq \alpha < 0.40$ indicates no reliability.

$0.40 \leq \alpha \leq 0.60$ represents poor reliability.

$0.60 \leq \alpha < 0.80$ shows high reliability.

$0.80 \leq \alpha < 1$ indicates excellent reliability.

The Cronbach's Alpha internal consistency coefficients are calculated for both the total and sub-scales of the TSI-Q. Reliability coefficients of TSI-Q are presented in Table 6.

Table 6. Reliability Coefficients of TSI-Q

Sub-scales	Item No	Cronbach's Alpha of Translated Form	Cronbach's Alpha of Original Form
Reproductive Thinking	1,5,9,13,17	.82	.86
Analytical Thinking	2,6,10,14,18	.83	.76
Creative Thinking	3,7,11,15,19,21,23	.86	.83
Practical Thinking	4,8,12,16,20,22	.87	.85
Total of the Scale	1 - 23	.95	.93

As shown in Table 6, Cronbach's alpha reliability is found as .95 for the total scale including 23 items. This value indicates that the adapted version of the TSI-Q has quite a high reliability and internal consistency. Besides, reliability coefficients of sub-scales of the TSI-Q range from .82 to .87. It can be said that the internal consistency of the scale is excellent, and so reliable measurements can be performed by means of this scale.

4 | DISCUSSION & CONCLUSION

In this research, validity and reliability study of the adapted version of TSI_Q (Palos and Maricutoui, 2013), which aims at determining self-perceptions of teachers on their teaching styles was carried out. The adapted scale was implemented on 305 teachers working at high schools. The results of KMO and Bartlett's Test of Sphericity showed that the data set obtained from the study group was appropriate for testing structural validity and reliability of the scale. EFA result of the adapted version of the TSI-Q confirmed the factor structure in the original form of TSI-Q, and proved conformity with Turkish culture in terms of internal and structural validity. The construct validity of the TSI-Q was analyzed through CFA, and a four- factor structure of the scale (Reproductive Thinking, Analytical Thinking, Creative Thinking, Practical Thinking) with 23 items was in conformity with acceptable

model fit indices in the adapted version of the scale. In other words, in the research four-factor structure of the original form was confirmed with the sample in Turkey. When Cronbach's Alpha internal consistency coefficients of the adapted scale were compared with those of the original version of the scale, it was discovered that Cronbach's Alpha inner consistency coefficients of the adapted scale were as high as those of the original form. All these findings point out that the adapted scale suggests similar results with the original form, and the model is found to be valid and reliable in Turkish sampling in case the measurement tool is used in line with its original objectives.

Reliability of the scale was calculated through the Cronbach's Alpha internal coefficients. The Cronbach's alpha internal consistency reliability coefficient for the whole TSI-Q scale was .95. Internal consistency reliability coefficients for subscales ranged between .82 and .87. Özdamar (1999) states that the scales with reliability coefficient .60 and more are regarded as reliable, and over .80 are accepted as highly reliable. In this sense, these results denote that reliability of the adapted scale is quite high for both its total and sub-scales.

Unlike conventional ones, modern education systems are supposed to address the challenges of the 21st century. Along with memory-based and analytical knowledge, teaching creative thinking abilities can help individuals generate new ideas, find out and solve problems in unusual ways (Hassan, Alghamdi & Al-Hattami, 2020). As Torrance (1965) states; unless we give up insisting on thinking statically we cannot keep up with the changes. Hence, teachers provide opportunities for their students to think flexibly, critically, and creatively (Kim, 2011).

Developing thinking skills intertwined with reproductive, analytical, creative and practical abilities not only brings out undiscovered potentials of the individuals, but also ensures to increase the quality of education (Sak & Maker, 2004). The education based on improving thinking skills both enables the individuals to find out their capacities, and contribute to shape their social and cultural environment (Sternberg & Grigorenko, 2000). In this sense, the individuals can learn deeper thinking skills, choose and transform required knowledge, and transfer it into their daily life. Teachers play a significant role in developing these skills and making them prevalent in education systems.

Teaching styles of teachers can vary in learning-teaching process due to the features of learning environment, individual differences, learning content, and so on. Sternberg (1997) claims that the ways of problem-solving, applying activities, making decisions are unique to each teacher, and teaching styles vary across teachers, age groups, and schools. In this regard; considering the variances teachers encounter in learning environment, teachers should adopt the most appropriate teaching style in order to contribute to students' success, make the content explicit and attain objectives of lessons. Several studies have been performed on determining correlation between teaching styles of teachers and academic achievement of students. These studies demonstrate that the coherence between learning styles of students and teaching styles of teachers contributes to increase the academic achievement of students, and enables students to discover their learning styles, and realize self-efficiencies, strengths and weaknesses during learning process (Kolb, 1984; Felder, 1988; Sternberg & Grigorenko, 2004; Bulut, 2018). In this context, measurement tools are needed for the research on determining self-perceptions of teachers relating to their teaching styles. In this research, the researchers carried out validity and reliability studies of the Turkish adaptation of TSI-Q, which aims to determine teachers' teaching styles based on successful intelligence theory.

The significant limitation of this research is to perform EFA, CFA and internal consistency coefficients on the data obtained from the same sampling. Further studies to be carried out on different sampling groups could reinforce validity and reliability of the scale.

The following research would be carried out via this adaptation version of TSI-Q:

- By means of this adapted scale, comprehensive research with several variables could be performed to identify teachers' teaching style based on successful intelligence.

- The adapted version of this scale could be used in different education levels and several different courses in order to contribute to evaluation of curriculum.

STATEMENTS OF PUBLICATION ETHICS

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully. Ethical approval (approval date: 16.03.2020, and number: 32977) was taken from Dicle University.

RESEARCHERS' CONTRIBUTION RATE

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

CONFLICT OF INTEREST

There is no conflict of interest to disclose.

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APPENDIX A.

BAŞARILI ZEKA ÖĞRETİM STİLİ ÖLÇEĞİ (BZÖSÖ)

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
1. Derslerimde öğrencilerimin hafızalarını geliştirebileceğim durumların üzerine odaklanırım.					
2. Öğretme sürecimde, öğrencilerimin kendilerine sunulan bilgiyi (bir şeyin neden öyle olduğunu) analiz edebilme kapasitelerine önem veririm.					
3. Derslerimde öğrenmeyi kolaylaştırmak için değişik oyunlar (rol yapma, şakalar vb.) kullanırım.					
4. Dersten sonra öğrencilerimi, sınıfta öğrendikleri teorik bilgileri pratikte uygulamaları konusunda teşvik ederim.					
5. Öğrencilerimin sınıfta özümsedikleri bilgiyi tekrarlayabilecekleri öğrenme ortamlarını tercih ederim.					
6. Öğrencilerimin öğrendikleri konu ile ilgili ortaya atılan bir problemi değerlendirebildikleri öğrenme ortamlarını tercih ederim.					
7. Öğretme etkinliklerimde öğrencilerimin bilgiyi yeniden yorumlamaları, yeni yöntemler keşfetmeleri konusunda teşvik ederim.					
8. Sınıfta öğrencilerimin uygulamalı etkinlikler (projeler, hareket planı, vb.) yapmalarına önem veririm.					
9. Öğretme stilim öğrencilerimi hafızalarını geliştirmeleri konusunda teşvik eder.					
10. Etkinlikleri uygulama sürecinde öğrencilerimin olgu ve kavramları açıklama kapasitelerine önem veririm.					
11. Sınıfiçi etkinliklerde öğrencilerimin problem çözmek için hayal gücünü kullanmasına (o durumları hayal etme, yeni fikirler üretme vb.) önem veririm.					

12. Öğretim stilimde öğrencilerimin sınıfta doğruluğu onaylanan plan ve stratejileri, uygulamaya koymaları konusunda teşvik ederim.					
13. Öğretme sürecimde öğrencilerimin daha kapsamlı, detaylı bilgileri özümseme kapasitelerine önem veririm.					
14. Öğrencilerin edindiği yeni bilgileri farklı kuram ve modeller ile değerlendirmelerini tercih ederim.					
15. Öğretme etkinliklerinde öğrencilerimin varsayımda bulunmaları ve varsayımlar üzerinden neler olabileceğini düşünmeleri konusunda teşvik ederim.					
16. Öğretme yöntemim öğrencilerimi, farklı problemler çözerken öğrenilmiş teorik bilgileri kullanma yönünde teşvik eder.					
17. Öğretme etkinliklerinde öğrenme sürecinde öğrencilerimin hafızalarını kullanmalarını kolaylaştırır ve takdir ederim.					
18. Öğretme sürecimde öğrencilerimin sistematik analiz, mantıksal düşünme kapasitesinin geliştirilmesine önem veririm.					
19. Öğretme etkinliklerimde, öğrencilerimi farklı durumlara uygulanabilen yeni çalışma ilke ve yöntemleri keşfetmeleri konusunda teşvik ederim.					
20. Öğretme stilimle öğrencilerimi, teoriden öğrendikleri bilgileri pratikte uygulamaları konusunda cesaretlendiririm.					
21. Öğretim etkinliğimde öğrencilerimi, başkalarından farklı bir şekilde çalışmaları ve düşünmelerini, hatta bazen de mantıksal olan bilgiye karşı çıkmaları konusunda teşvik ederim.					
22. Dersin sonunda öğrencilerimi öğrendikleri bilgiler için pratik uygulamalar bulma konusunda teşvik ederim.					
23. Öğretme sürecinde kullandığım yöntem öğrencilerimi yaratıcı düşünmeye teşvik eder.					

The Analysis of Middle School Science Course Contents of Out-of-School Learning Environment Guidebooks

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ABSTRACT

This study aimed to analyze and compare the science contents of "Out of School Learning Environments Guidebooks (OSLEGs)" developed by the Ministry of National Education (MoNE) in the 2018-2019 academic year. The research was carried out by the document analysis method, one of the qualitative designs. Science content in the OSLEGs, selected randomly from seven provinces (Trabzon, Bursa, Denizli, Osmaniye, Erzurum, Sivas ve Diyarbakır), were analyzed in terms of units/subjects, learning outcomes, and learning environments. The findings indicated that the most qualified guidebook regarding relations between unit/subject - learning outcome and learning outcome - learning environment is Denizli's OSLEG. In addition, it has been determined that the science contents in many OSLEGs do not contain sufficient relations of unit/subject, learning outcome, and learning environment. Based on the results, it is recommended that the OSLEGs be reorganized at all grades to address more unit/subjects and learning outcomes.

Keywords: Document analysis, Out-of-school learning environment guidebook, Science course.

Okul Dışı Öğrenme Ortamları Kılavuzlarının Ortaokul Fen Bilimleri Dersi İçeriklerinin Analizi

Öz

Bu araştırmada, 2018-2019 eğitim öğretim yılında Milli Eğitim Bakanlığı (MEB) tarafından geliştirilen okul dışı öğrenme ortamları kılavuzlarının fen bilimleri dersi içeriklerinin incelenmesi ve illere göre karşılaştırılması amaçlanmıştır. Araştırma nitel desenlerden doküman analizi yöntemi ile yürütülmüştür. Türkiye'nin yedi bölgesinden rastgele seçilen yedi ilde (Trabzon, Bursa, Denizli, Osmaniye, Erzurum, Sivas ve Diyarbakır) hazırlanmış olan "Okul Dışı Öğrenme Ortamları Kılavuzları"nın (ODÖOK) fen bilimleri dersi içeriği ünite/konu, kazanım ve mekân yönünden analiz edilmiştir. Elde edilen bulgular; ünite/konu ve kazanım ilişkisi ile kazanım ve mekân ilişkisi açısından en zengin kılavuzun Denizli iline ait olduğunu göstermektedir. Ayrıca, birçok kılavuzdaki fen bilimleri ders içeriklerinin yeterli düzeyde ünite/konu, kazanım ve mekân ilişkileri içermediği tespit edilmiştir. Ulaşılan sonuçlara dayalı olarak; kılavuzların, tüm sınıf düzeylerinde daha fazla sayıda konu ve kazanıma değinerek kurulan kazanım-mekân ilişkilerinin artırılması ile öğretmenlerimize daha fazla seçenek sunularak bu öğrenme ortamlarından öğretim sürecinde daha fazla yararlanması ve öğrencilerimizin fen dersine olan ilgilerinin ve akademik başarılarının ülke çapında arttırılmasına katkıda bulunacağı düşünülmektedir.

Anahtar kelimeler: Doküman analizi, Okul dışı öğrenme ortamı kılavuzu, Fen bilimleri dersi.

1 | INTRODUCTION

The change in student profiles (vis-à-vis learning styles, attention spans, etc.) resulting from the developments in the modern age requires adaptations in curricula, teaching methods, materials, and learning environments. The traditional approach to teaching, carried out only in classrooms, between four walls, and using only a blackboard, is now far from meeting the needs and expectations of students today. Focusing entirely on the time students spend in the school and classroom and preparing the instructional planning solely for the classroom environment results in neglect for other alternative spaces that can be used during instruction (Bransford, Brown, & Cocking, 2000). Out-of-school learning, which is one way of addressing this problem, is defined as the curriculum-based activities carried out outside the school to support formal education (Bozdoğan & Kavcı, 2016). While Öztürk (2009) defines *out-of-school learning* as learning processes that include educational activities in the nature and the living environment, Çiçek and Saraç (2017) define out-of-school learning environments as a less structured and more spontaneous educational environment than the classroom, which allows unexpected elements to emerge. Out-of-school learning environments may include "authentic" learning environments such as science centers, museums, public institutions, industrial organizations, nature camps, zoos, planetariums, or "virtual" learning environments such as web 2.0 tools, educational websites, and social media (Karademir, 2018). These environments offer students hands-on interaction opportunities with real objects or phenomena and allow them to learn by doing and experiencing (Bakioğlu & Karamustafaoğlu, 2020).

Studies have shown that students remember the information learned in out-of-school learning environments even after a long time, that is, learning retention is achieved in these environments (Anderson & Pisticelli, 2002; Bakioğlu & Karamustafaoğlu, 2020; Falk & Dierking, 1997; Sarıoğlan & Küçüközer, 2017; Türkmen, 2010). Conducting a study with 6th-grade students, Bozdoğan and Kavcı (2016) found that teaching activities outside the classroom significantly increased academic achievement in science courses. Furthermore, various studies conducted especially for the subject of science (Efe, 2019; Kaya, 2019; Kılıç, 2020; Metin, 2020) have concluded that out-of-school learning environments complement the textbook, students learn with fun, and environments such as science centers make a positive contribution to students' perceptions on the nature of science. The relevant literature on out-of-school learning environments includes studies conducted with students and pre-service/in-service science teachers. A study by Balkan Kıyıcı and Atabek Yiğit (2010) found that teacher candidates reported meaningful and permanent learning about wind power after their technical trip to a power plant as part of the "wind energy" subject in their "Energy and Environment" course. Mertoğlu (2019) also found that as a result of their out-of-school activities, teacher candidates achieved new and permanent learning in many subjects related to science, especially physics. Ocak and Korkmaz (2018) examined the opinions of science and pre-school teachers about out-of-school learning environments. The teachers in their study stated that out-of-school learning environments offer students the opportunity to learn by doing, concretize abstract information, and have positive contributions to their development. Similarly, in the study conducted by Batman (2020) in which physics teachers' views on out-of-school learning environments were examined, physics teachers reported that activities carried out in informal environments would positively affect students' attitudes and academic achievement and would be effective in facilitating and making learning permanent. According to Aslan and Demircioğlu (2019), chemistry teachers thought that out-of-school learning environments were suitable for chemistry teaching and stated that these environments helped students learn by doing, seeing the relationship of chemistry with daily life, and encouraging permanent learning. On the other hand, the related research literature shows that teachers find out-of-school learning environments effective in learning, but they do not prefer to conduct these activities for various reasons (Moseley, Reinke, & Bookout, 2002; Simmons, 1998; Tatar & Bağrıyanık, 2012). In this context, some studies (Bozdoğan, 2015; Güler, 2009; Thomas, 2010) emphasized that teachers do not have sufficient knowledge and experience about out-of-school learning environments. In addition, transportation difficulties, time constraints, crowded classrooms, difficult student control, and the presence of some official procedures make it difficult for teachers to prefer such activities (Dillon ve diğerleri, 2006; Erten & Taşçı, 2016; Karademir, 2013).

Considering the findings of the studies mentioned above, it is evident that besides the experiments and observations carried out in laboratories, activities performed in out-of-school learning environments are critical, especially in a course intertwined with daily life, such as science. Teachers' conducting science lessons in out-of-school learning environments increases student interest and success (Bozdoğan & Yalçın, 2006; Dori & Tall, 2000; Metin, 2020; Tatar & Bağrıyanık, 2012; Türkmen, 2018). In addition, it is known that teaching activities

implemented in out-of-school learning environments are known to be more effective in increasing student motivation towards science learning and developing their creativity compared to the applications carried out in the classroom environment (Bozdoğan & Yalçın, 2006; Kulalıgil, 2016; Metin, 2020). Rapp (2005) also states that as a result of associating the activities carried out in out-of-school learning environments with the acquisitions related to the subject, students achieve deep learning and socio-cognitive growth. However, the Science Curriculum approved in 2018 states that students should benefit from out-of-school learning environments, whose positive effects are summarized above (Ministry of National Education, 2018). For this context, "Out-of-School Learning Environments Guidebooks (OSLEGs)" were developed in 2019 by the Ministry of National Education (MoNE) for each province of Turkey, and their piloting was initiated. The guidebooks developed by the commissions formed by the Provincial Directorates of National Education aimed to associate subjects, learning outcomes, and learning environments to cover all levels from pre-school to high school. OSLEGs were created to associate out-of-school learning environments (OOSLEs) with primary and secondary education programs, allowing students to utilize better and understand these environments while also contributing to their learning by doing and experiencing the learning outcomes in the curriculum. A relationship should be established between the characteristics of the learning environments and the outcomes for the subjects that are more beneficial for students to be taught in an OOSLE than the classroom environment, and the number of outcomes should be included in a way that will offer teachers alternatives. In addition, characteristics like measurability and applicability should be considered when relating curriculum outcomes to OOSLEs in the OSLEGs (MoNE, 2019).

Considering that out-of-school activities require more labor and time than traditional teaching practices (Karademir, 2013), the OSLEGs should be designed to make teachers' work as easy as possible. Therefore, Batman (2020) recommends that curricula be arranged according to out-of-school learning environments, with curriculum-based activities planned before and after such learning. These activities should be made available for teachers' use. Despite the positive results, the related research literature has found that one of the reasons why teachers do not use out-of-school learning environments in teaching science is the difficulty of the planning involved (Carrier, Tugurian, & Thomson, 2013). However, the level of content in the developed OSLEGs (whether they are sufficient or not) and whether they are qualified to meet the needs of teachers, especially at the planning stage, is not yet known. Therefore, the current study aims to analyze the secondary school science course contents of OSLEGs by provinces and grades.

RESEARCH QUESTIONS

Answering the following research question was the aim of this study: "How do science course contents of OSLEGs differ by provinces in terms of unit/subject, learning outcome and learning environment?" As part of the main problem of the study, the answers to the following questions were sought:

1. How do the contents of OSLEGs for the 5th grade science course differ in terms of unit/subject, outcome and learning environment by province?

2. How do the contents of OSLEGs for the 6th grade science course differ in terms of unit/subject, outcome and learning environment by province?

3. How do the contents of OSLEGs for the 7th grade science course differ in terms of unit/subject, outcome and learning environment by province?

4. How do the contents of OSLEGs for the 8th grade science course differ in terms of unit/subject, outcome and learning environment by province?

This research is a study in which teachers and researchers can have an idea about the use of the content of the science course in the OSLEGs and the choice of different OOSLEs according to the subject or achievement. On the other hand, when the studies on OOSLEs are examined, it has been found that the results of the teaching activities carried out in the OOSLE(s) that are deemed appropriate within the scope of a determined unit or subject are examined from different perspectives. Based on these determinations, it is also important to determine the extent to which OOSLEs, which have been determined to have positive effects on the learning process, are included in the prepared OSLEGs, and especially in the studies conducted in the literature. In this context, with the results to be reached within the scope of the research; it is thought that the deficiencies in the OSLEGs can be determined before they are put into practice and suggestions can be made to quickly eliminate them. This is also

important in terms of supporting the data to be obtained during the implementation of the OSLEGs in the pilot schools.

2 | METHOD

The research part of the study was conducted by applying the document analysis method, which is one of the qualitative research methods. Document analysis can be defined as the systematic examination of printed or web-based documents and the information contained in these documents (Bowen, 2009). In other words, document analysis involves a close analysis of the written materials containing information or facts about the phenomenon to be investigated (Yıldırım & Şimşek, 2011).

RESEARCH SAMPLE

The OSLEGs, which can be accessed online until 1st September 2019 (deadline to post) of the middle school science course developed by the provincial education directorates in Turkey and also had science contents, were determined as the sample of the study and seven randomly chosen provinces (Trabzon, Bursa, Denizli, Osmaniye, Erzurum, Sivas and Diyarbakır) from each geographical region of Turkey were included in the analysis.

The OSLEGs were accessed from the websites of the provincial directorates of national education between May 1-30, 2020. The content of the science courses of these OSLEGs, which were developed in 2019, has remained unchanged. Therefore, the reviewed versions are still accessible on the websites of the relevant provincial directorates of national education (Appendix-1).

DATA COLLECTION AND ANALYSIS

The descriptive analysis technique was used in analyzing the data. This kind of analysis aims to present the findings to the reader in an organized and interpreted form. For this purpose, the data obtained are first described systematically. Then, these descriptions are explained, interpreted, cause-effect relationships are examined, and some results are reached (Yıldırım & Şimşek, 2011).

The middle school science course OSLEGs' contents of seven provinces included in the research sample and randomly selected from each region were subjected to descriptive analysis in terms of unit/subject, outcome, and learning environment. While the OSLEGs were analyzed descriptively, the number of outcomes included within the scope of units and subjects and the types of learning environments proposed in the context of these outcomes were determined. The learning outcomes are coded as 'O', and learning environments are coded as 'LE' on the tables. While presenting the findings related to the analysis of the outcomes, the outcomes in the OSLEGs are shown with 'x' and used together with the number of different outcomes mentioned (For example, 'x3' indicates three different outcomes for the subject). In addition, in the tables where the outcomes analysis is shown, the total number of the outcomes mentioned as related to the subject in the OSLEGs are also stated.

The learning environments in OSLEGs are grouped under 15 headings in Figure 1 by examining the learning environment classifications included in the guidebooks. In presenting the findings related to the analysis of the learning environments, the numbers for the classified groups were used (Figure 1).

Learning environments	1. Museums
	2. Science and Research Centers
	3. Art Centers
	4. Technoparks
	5. Historical and Cultural Places
	6. Libraries
	7. Natural Protected Area and Archaeological Sites
	8. Industrial Organizations
	9. Universities
	10. National, Thematic Parks and Gardens
	11. Various Institutions and Organizations (Governorship, Airport etc.)
	12. Healthcare Organizations
	13. HEPP and Power Plants
	14. Sports Areas
	15. Various Educational Organizations

Figure 1. *Categories of learning environments*

The OSLEGs were first analyzed by the researchers independently. Then, the accuracy of the classifications was confirmed by comparing the data obtained. Finally, the percentage of agreement between the researchers was calculated using Miles and Huberman (1994)'s intercoder reliability formula, and it was determined that the rate of agreement between the researchers was 0.96.

Grades were taken into consideration in displaying the data. It would be convenient to present the unit/subject, outcome, and learning environment information together for each grade to help readers understand and interpret the findings easily.

3 | FINDINGS

In this section, the findings obtained from the examination of middle school science course OSLEGs' contents categorized by unit/subject, outcome and learning environment relations are presented by grades. The findings showing the distribution of unit/subject, outcome, and recommended learning environment for the fifth-grade science course are summarized in Table 1.

Table 1. Units / Subjects, Outcome and Learning Environments Distribution for the Fifth-Grade Science Course in OSLEGs

Units / Subjects		Bursa O	Bursa LE	Denizli O	Denizli LE	Erzurum O	Erzurum LE	Osmaniye O	Osmaniye LE	Sivas O	Sivas LE	Diyarbakır O	Diyarbakır LE	Trabzon O	Trabzon LE	Number of provinces referring to the subject
1. Sun, Earth, and Moon	1. Structure and Properties of the Sun			x2	10			x	1, 10	x	3					3
	2. Structure and Properties of the Moon			x2	10					x2	3					2
	3. Movements and Phases of the Moon	x	2,	x2	10			x	1, 10							3
	4. Sun, Earth, and Moon			x	10			x	1, 10							2
2. World of Living	1. Getting to Know the Living Beings	x	1,9,10	x	7,9,10	x	9	x	1,7, 10	x	2,11	x	1, 10	x	1	7
3. Measurement of Force and Friction	1. Measurement of Force			-	-			x	2	x	2					2
	2. Frictional Force	x3	2	x3	9,15			x	2	x	2					4
4. Matter and Change	1. State Change of Matter			x	11											1
	2. Distinctive Properties of Matter			x	11											1
	3. Heat and Temperature			x	11			x	9					x	11	3
	4. Heat Affects Matters			x2	11			x2	9							2
5. Spread of Light/ Physical Events	1. Spread of Light			x	1,3,11											1
	2. Reflection of Light			x2	1,3,11			x	10							2
	3. Interaction of Light with Matter	x	1	x	1,3,11			x	10							3
	4. Umbra	x2	1, 2	x2	1,3,11			x	10							3
6. Human and Environment	1. Biodiversity	x2	1, 10	x2	7,8,9, 11	x	9	x2	1, 7	x2	10,11	x2	1, 9	x	10	7
	2. Human-Environment Relationship	x4	8	x4	7,8,9, 11	x	10	x2	10, 7					x2	9, 11	5

		LE	O	LE	O	LE	O	LE	O	LE	O	LE	O	LE	O	Total
	3. Catastrophic Natural Phenomena	x2	2, 11	x2	7,8,9, 11					x2	11			x	9, 10	4
7. Electrical Circuit Elements	1. Representation of Circuit Elements with Symbols and Circuit Diagrams	x	2	x2	15			x2	2					x	9	4
	2. Variables Affecting Bulb Brightness in a Simple Electrical Circuit			x	15			x	2							2
Number of outcomes referred to on the basis of provinces		17		33		3		19		10		3		7		61 / 92

*O: Number of outcomes referred to, LE: Recommended type of learning environment.

There are seven units in the curriculum for the fifth-grade science course and 20 subjects within these units. When the frequency of these subjects is examined on the basis of provinces, it can be seen that the subjects of "Getting to Know the Living Beings" in the "World of Living" unit and "Biodiversity" in the "Human and Environment" unit are also mentioned in the OSLEGs of the seven provinces examined in the study (Table 1). On the other hand, it found that the subjects of "State Change of Matter" and "Distinctive Properties of Matter" in the unit "Matter and Change," besides the "Spread of Light" in the unit "Spread of Light" are the least-frequent subjects, mentioned in the OSLEG of only one province. These issues are followed by the subject of "Human-Environment Relationship" in the "Humans and Environment" unit, which is mentioned in the OSLEGs of five provinces. As for the number of outcomes mentioned on the basis of provinces, 33 outcomes were listed under 19 subjects were found to have been mentioned in the Denizli province's OSLEG. On the other hand, the analysis showed that the OSLEG of Erzurum province mentions three outcomes within the scope of three subjects, and the Diyarbakır province's OSLEG outlines three outcomes under two subjects.

The recommended learning environments for seven units and 20 subjects in the fifth-grade science course curriculum are given in Table 1. When the proposed learning environments were examined in the context of the unit, the units that were offered the most suggestions with six different types of learning environment suggestions were found to be "World of Living" and "Humans and Environment." When the distribution of the unit/subject and learning environment suggestion in the OSLEGs was examined on the basis of provinces, the analysis showed that nine different types of learning environment suggestions were included in the OSLEG of Denizli province, and five different types of learning environment suggestions were included in the OSLEGs of Bursa and Osmaniye provinces. It was observed that there are two different learning environment suggestions in the OSLEG of Erzurum province.

The curriculum for the sixth-grade science course includes seven units and 20 subjects within these units (Table 2). When the frequency of the subjects by the seven provinces is examined, the subjects of "Circulation System" in the "Systems in Our Body" unit, "Fuels" in the "Matter and Heat" unit, and "Interaction of Sound with Matter" in the "Properties of Sound" unit were found to be included in the OSLEGs of five provinces. It was further determined that the least-often mentioned subject in the OSLEGs for the sixth-grade science course was the subject of "Density" in the "Matter and Heat" unit, as referred by only one province. It was determined that the subjects of "Regulation and Control Systems" in the "Systems in Our Body and Health" unit and "Conductive and Insulating Materials" in the "Transmission of Electricity" unit and the "Solar and Lunar Eclipses" in the unit titled "Solar System and Eclipses"; and the "Support and Movement System", "Digestive System", "Respiratory System" and "Excretion System" in the "Systems in Our Body" unit; and "Resultant Force" and "Movement with Constant Velocity" in the unit titled "Force and Motion"; along with the "Particulate Structure of Matter" in the "Matter and Heat" unit; as well as the "Speed of Sound" in the "Properties of Sound" unit were included in the OSLEGs of two provinces. Furthermore, 59 outcomes for 20 subjects were included in the curriculum of the Denizli province's OSLEG, while the OSLEG of Erzurum province only touched on three outcomes in two subjects.

The recommended learning environments for the seven units and 20 subjects in the sixth-grade science course curriculum are shown in Table 2. Examination of the proposed learning environments revealed that that the unit titled "Properties of Sound" is the unit that has the most diverse suggestions, with seven different learning environments. This unit is followed by the "Systems in Our Body" unit, with six different learning environment recommendations. When the distribution of the unit/subject and learning environment suggestions in the OSLEGs were examined on the basis of provinces, it was found that the Denizli province's OSLEG, with 10 different types of learning environment suggestions, and the Osmaniye province's OSLEG, with seven different suggestions, contained the highest number and variety of learning environment suggestions. On the other hand, only two different types of learning environments were suggested in the OSLEGs of Erzurum and Sivas provinces.

Table 2. Units / Subjects, Outcome and Learning Environments Distribution for the Sixth-Grade Science Course in OSLEGs

Units/Subjects	Provinces	Bursa O	Bursa LE	Denizli O	Denizli LE	Erzurum O	Erzurum LE	Osmaniye O	Osmaniye LE	Sivas O	Sivas LE	Diyarbakır O	Diyarbakır LE	Trabzon O	Trabzon LE	Number of provinces referring to the subject
1. Solar System and Eclipses	1. Solar System			x2	10			x2	1, 10	x2	2					3
	2. Solar and Lunar Eclipses			x3	10			x	1, 10							2
2. Systems in Our Body	1. Support and Movement System	x	1,2	x	15											2
	2. Digestive System	x	1	x3	9											2
	3. Circulation System	x	1	x5	12					x	2	x	11	x	11	5
	4. Respiratory System	x	1	x	9											2
	5. Excretion System	x	1	x	9											2
3. Force and Motion	1. Resultant Force			x3	7,14					x	2					2
	2. Movement with Constant Velocity			x2	9					x	2					2
4. Matter and Heat	1. Particulate Structure of Matter	x	2	x2	2											2
	2. Density			x4	9,11											1
	3. Matter and Heat			x4	15			x4	9					x	9	3
	4. Fuels	x3	1,2	x3	11	x	11	x	9					x2	9, 12	5
5. Properties of Sound	1. Spread of Sound	x	2	x	3,5,10, 11,15					x	2					3
	2. Hearing The Sound Differently in Different Environments	x	2	x2	3,5,10, 11,15					x	2	x	9			4
	3. Speed of Sound	x	2	x	3,5,10, 11,15											2
	4. Interaction of Sound with Matter			x5	3,5,10, 11,15	x2	3, 11	x3	3,5,7	x2	2,5	x	11			5

		Bursa O	Bursa LE	Denizli O	Denizli LE	Erzurum O	Erzurum LE	Osmaniye O	Osmaniye LE	Sivas O	Sivas LE	Diyarbakır O	Diyarbakır LE	Trabzon O	Trabzon LE	Number of provinces
6. Systems and Health in Our Body	1. Regulation and Control Systems			x5	9									x	12	2
	2. Sense Organs	x	1	x4	9,11			x2	2							3
	3. The Health of Systems	x	1,11	x2	11,12							x2	11,12	x2	12	4
7. Transmission of Electricity	1. Conductive and Insulating Materials			x2	15			x	9							2
	2. Electrical Resistance and Related Factors			x3	15			x	9	x	2			x	8	4
Number of outcomes referred to on the basis of provinces		14		59		3		15		10		5		8		62 / 104

*O: Number of outcomes referred to, LE: Recommended type of learning environment.

Table 3. Units / Subjects, Outcome and Learning Environments Distribution for the Seventh-Grade Science Course in OSLEGs

Units / Subjects		Bursa O	Bursa LE	Denizli O	Denizli LE	Erzurum O	Erzurum LE	Osmaniye O	Osmaniye LE	Sivas O	Sivas LE	Diyarbakır O	Diyarbakır LE	Trabzon O	Trabzon LE	Number of provinces referring to the subject
1. Solar System and Beyond	1. Space Researches			x6	10,15			x2	1, 10	x2	2			x	4, 9	4
	2. Beyond Solar System: Celestial Bodies			x4	10,15			x4	1, 10							2
2. Cell and Divisions	1. Cell			x3	2,9			x2	2	x2	2					3
	2. Mitosis			x2	2,9	x	9									2
	3. Meiosis			x3	2,9											1
3. Force and Energy	1. Force and Weight Relationship	x	2													1
	2. Force, Work and Energy Relationship	x2	2													1
	3. Energy Conversions	x2	2	x2	9,11			x3	9							3
4. Pure Substances and Mixtures	1. Particulate Structure of Matter			x4	9											1
	2. Pure Substances	x2	1, 2	x3	9									x	8	3

Category	Subtopic	LE	O	LE	O	LE	O	LE	O	LE	O	LE	O	LE	O	Total
	3. Mixtures	x2	2													1
	4. Separation of Mixtures															---
	5. Domestic Waste and Recycling	x3	1, 8	x5	8,11	x	8	x4	8	x3	8	x	8	x2	8, 9,	7
5. Interaction of Light with Matter	1. Absorption of Light	x2	1, 2	x2	13,15			x2	9			x	10	x	11	5
	2. Mirrors	x2	2							x2	2					2
	3. Refraction of Light and Lenses			x4	11,15	x	10			x	2			x	7, 10	4
6. Reproduction, Growth and Development in Living Beings	1. Reproduction, Growth and Development in Humans			x3	9											1
	2. Reproduction, Growth and Development in Plants and Animals	x	8	x4	7,10,11					x2	10,11	x	2, 9	x	9, 10	5
7. Electric Circuits	1. Connecting Types of Bulbs	x2	2	x6	11,15			x4	13, 9					x	8	4
Number of outcomes referred to on the basis of provinces		19		51		3		21		12		3		8		50 / 117

*O: Number of outcomes referred to, LE: Recommended type of learning environment.

The curriculum for the seventh-grade science course includes seven units and 19 subjects comprised of these units (Table 3). When the frequency of subjects by province was examined, it was found that the subject of "Domestic Waste and Recycling" in the unit labeled "Pure Substances and Mixtures" is mentioned in the guidebooks of all the provinces examined. Following this, the subjects of "Absorption of Light" in the unit titled "Interaction of Light with Matter" and "Reproduction, Growth, and Development in Plants and Animals" in the unit titled "Reproduction, Growth and Development in Living Beings" were mentioned in the OSLEGs of five provinces. On the other hand, no province mentioned the "Separation of Mixtures" in the unit titled "Pure Substances and Mixtures" in the OSLEGs. In addition, the "Meiosis" subject in the "Cell and Divisions" unit, the "Force and Weight Relationship" subject in the "Force and Energy" unit, the "Force, Work and Energy Relationship", "Particulate Structure of Matter", and "Mixtures" subjects in the "Pure Matter and Mixtures" unit, and the subject of "Reproduction, Growth and Development in Humans" in the unit titled "Reproduction, Growth and Development in Living Beings" were mentioned only by one province. Considering the number of outcomes mentioned on the basis of provinces, it was found that 51 outcomes outlined under 14 subjects within the seven units in the curriculum are included in the Denizli province's OSLEG. In contrast, Erzurum and Diyarbakır's OSLEGs have only three outcomes for three subjects.

The learning environments recommended for seven units and 19 subjects in the seventh-grade science course curriculum are shown in Table 3. When the recommended learning environments are examined, the study revealed that the unit titled "Interaction of Light with Matter" contained eight different types of learning environment suggestions, and that the units "Solar System and Beyond", "Reproduction, Growth and Development in Living Beings", and "Electric Circuits" included six different learning environment suggestions. When the distribution of the unit/subject and learning environment suggestions in the OSLEGs was examined on the basis of provinces, it was seen that the Denizli province's OSLEG ranked first with 8 different types of learning environment suggestions; the OSLEGs of Osmaniye and Trabzon followed Denizli with six different types of learning environment recommendations (Table 3).

The curriculum for the eighth-grade science course includes seven units and 22 subjects (Table 4). When the frequency of the subjects was examined by province, it was determined that the subject of "Electricity Conversion" of the unit titled "Electric Charges and Electric Energy" was mentioned in the OSLEGs of six provinces, and the "Simple Machines" subject of the "Simple Machines" unit and "Sustainable Development" subject of the "Energy Conversions and Environmental Science" unit were mentioned in the OSLEGs of five provinces. On the other hand, the subjects of the "Periodic System" and "Interaction of Matter with Heat" in the unit of "Matter and Industry" were mentioned in none of the OSLEGs. In addition, the analysis showed that the subjects of "Inheritance," "Mutation and Modification," and "DNA and Genetic Code" in the "DNA and Genetic Code" unit, along with the "Food Chain and Energy Flow" and "Energy Conversions" in the "Energy Conversions and Environmental Science" unit, and the "Electric-Charged Objects" in the unit of "Electric Charges and Electric Energy" were mentioned by only one province. When Table 4 is analyzed according to the number of outcomes mentioned on the basis of provinces, it is clear that 55 outcomes for 20 subjects are mentioned in the Denizli province's OSLEG, and four outcomes for four subjects are mentioned in the Diyarbakır province's OSLEG.

The learning environments suggested in OSLEGs for the seven units and 22 subject titles in the eighth-grade science course curriculum are presented in Table 4. When the learning environments suggested in the OSLEGs were examined by unit, it was determined that the units suggesting the highest number of learning environments was the "Simple Machines" with 10 different types of learning environment, followed by the "Electric Charges and Electric Energy" unit with eight different types of learning environment. When the distribution of the unit/subject and learning environment suggestions in the OSLEGs was examined on the basis of provinces, the Denizli's OSLEG with 10 different types of learning environment suggestions and Trabzon's OSLEG with eight different types of learning environment stood out with the most frequent suggestions.

Table 4. Units / Subjects, Outcome and Learning Environments Distribution for the Eighth-Grade Science Course in OSLEGs

Units/Subjects		Bursa O	Bursa LE	Denizli O	Denizli LE	Erzurum O	Erzurum LE	Osmaniye O	Osmaniye LE	Sivas O	Sivas LE	Diyarbakır O	Diyarbakır LE	Trabzon O	Trabzon LE	Number of provinces referring to the subject
1. Seasons and Climate	1. The Formation of the Seasons	x	2	x	11					x2	11					3
	2. Climate and Air Movements			x2	11	x	11							x	11	3
2. DNA and Genetic Code	1. DNA and Genetic Code			x3	2,7,9											1
	2. Inheritance			x3	2,7,9											1
	3. Mutation and Modification			x3	2,7,9											1
	4. Adaptation	x	1	x	2,7,9											2
	5. Biotechnology	x	11	x3	2,7,9	x	9									3
3. Pressure	1. Pressure			x3	7,11	x	9	x3	9					x	5	4
4. Matter and Industry	1. Periodic System															---
	2. Physical and Chemical Changes	x	2	x	2,7,8,9,11	x	9									3
	3. Chemical Reactions	x	2	x	2,7,8,9,11											2
	4. Acids and Bases			x7	2,7,8,9,11									x	9	2
	5. Interaction of Matter with Heat															---
	6. Chemical Industry in Turkey			x2	9	x	8					x	8	x2	9	4
5. Simple Machines	1. Simple Machines	x	2	x2	1,8,10,15			x2	9			x	1	x	3,7,10,14	5
6. Energy Conversions and	1. Food Chain and Energy Flow			x	2,7,11											1
	2. Energy Conversions			x3	2,7,11											1

Unit	Subject	Bursa LE	Bursa O	Denizli LE	Denizli O	Erzurum LE	Erzurum O	Osmaniye LE	Osmaniye O	Sivas LE	Sivas O	Diyarbakır LE	Diyarbakır O	Trabzon LE	Trabzon O	Total O
Environmental Science	3. Matter Cycles and Environmental Problems			x3	2,7,11									x	9	2
	4. Sustainable Development			x5	8	x2	8	x2	8	x	8	x	8			5
7. Electric Charges and Electric Energy	1. Electric Charges and Electrification			x3	5,9,11,15			x	2							2
	2. Electric-Charged Objects			x2	5,9,11,15											1
	3. Electricity Conversion	x2	1	x6	10,11,13,15	x	13	x2	13	x	2	x	13			6
Number of outcomes referred to on the basis of provinces		8		55		6		9		6		4		8		52 / 98

*O: Number of outcomes referred to, LE: Recommended type of learning environment.

Table 5. Distribution of the Number of Subjects and Outcomes mentioned in Different Grades for the Science Course in OSLEGs by Provinces

Units	Bursa Number of Subjects	Bursa Number of Outcomes	Denizli Number of Subjects	Denizli Number of Outcomes	Erzurum Number of Subjects	Erzurum Number of Outcomes	Osmaniye Number of Subjects	Osmaniye Number of Outcomes	Sivas Number of Subjects	Sivas Number of Outcomes	Diyarbakır Number of Subjects	Diyarbakır Number of Outcomes	Trabzon Number of Subjects	Trabzon Number of Outcomes
5.1. Sun, Earth, and Moon	1	1	4	7			3	3	2	3				
5.2. World of Living	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5.3. Measurement of Force and Friction	1	3	1	3			2	2	2	2				
5.4. Matter and Change			4	5			2	3					1	1
5.5. Spread of Light	2	3	4	6			3	3						
5.6. Human and Environment	3	8	3	8	2	2	2	4	2	4	1	2	3	4
5.7. Electrical Circuit Elements	1	1	2	3			2	3					1	1
6.1. Solar System and Eclipses			2	5			2	3	1	2				
6.2. Systems in Our Body	5	5	5	11					1	1	1	1	1	1
6.3. Force and Motion			2	5					2	2				
6.4. Matter and Heat	2	4	4	13	1	1	2	5					2	3
6.5. Properties of Sound	3	3	4	9	1	2	1	3	3	4	2	2		

6.6. Systems in Our Body and Health	2	2	3	11			1	2			1	2	2	3
6.7. Transmission of Electricity			2	5			2	2	1	1			1	1
7.1. Solar System and Beyond			2	10			2	6	1	2			1	1
7.2. Cell and Divisions			3	8	1	1	1	2	1	2				
7.3. Force and Energy	3	5	1	2			1	3						
7.4. Pure Substances and Mixtures	3	7	3	12	1	1	1	4	1	3	1	1	2	3
7.5. Interaction of Light with Matter	2	4	2	6	1	1	1	2	2	3	1	1	2	2
7.6. Reproduction, Growth and Development in Living Beings	1	1	2	7					1	2	1	1	1	1
7.7. Electric Circuits	1	2	1	6			1	4					1	1
8.1. Seasons and Climate	1	1	2	3	1	1			1	2			1	1
8.2. DNA and Genetic Code	2	2	5	13	1	1								
8.3. Pressure			1	3	1	1	1	3					1	1
8.4. Matter and Industry	2	2	4	11	2	2					1	1	2	3
8.5. Simple Machines	1	1	1	2			1	2			1	1	1	1
8.6. Energy Conversions and Environmental Science			4	12			1	2	1	2	1	1	2	2
8.7. Electric Charges and Electric Energy	1	2	3	11	1	1	1	2	2	2	1	1		

The number of subjects and outcomes mentioned for the units in all grades within the science course were determined on the basis of provinces and presented in Table 5. Denizli is the city that touches on the highest number of subjects and outcomes, followed by Osmaniye, Bursa, and Trabzon, respectively. However, Erzurum and Diyarbakır include the least number of subjects and outcomes related to the science course. As for the fifth-grade science course content, it can be seen that the OSLEGs with the highest number of subjects and outcomes belong to Denizli and Osmaniye provinces, while the least number of subjects and outcomes are mentioned in the OSLEGs of the provinces of Erzurum and Diyarbakır. The current study showed that for the content of the sixth-grade science course, the most subjects and outcomes were mentioned in the OSLEG of Denizli province, and the least number of subjects and outcomes were mentioned in the OSLEG of Erzurum province. Concerning the seventh-grade science course content, it was found that the OSLEG that mentioned the highest number of subjects and outcomes belonged to Denizli province and the OSLEGs mentioned the least number of subjects and outcomes belonged to Erzurum and Diyarbakır provinces. Regarding the content of the eighth-grade science course, the highest number of subjects and outcomes are mentioned in the Denizli province's OSLEG and the least in the Sivas province's OSLEG (Table 5). Table 6 shows the distribution of the learning environments recommended in the OSLEGs for the subjects and outcomes included in the science course curriculum by grade and province.

Examining Table 6, showing the distribution of learning environment recommendations for the science course by grade and province, it is clear that the highest number of learning environment suggestions are made in the OSLEGs content of Denizli, Bursa, and Osmaniye for the fifth-grade science course; Denizli and Osmaniye for the content of the sixth-grade science course; Denizli, Trabzon, and Osmaniye for the content of the seventh-grade science course; and Denizli and Trabzon for the content of the eighth-grade science course.

When the same data are examined in terms of learning environment diversity, it is observed that museums, science and research centers, industrial organizations, national, thematic parks and gardens, universities, and various institutions and organizations are frequently recommended. Museums, universities, and national, thematic parks and gardens were mainly recommended as the learning environments to visit in the content of the fifth-grade science course. The most frequently recommended learning environments for the sixth-grade science course were science and research centers, universities, and various institutions and organizations. For the seventh-grade science course, the most recommended science and research centers, industry organizations, universities, and national, thematic parks and gardens content. In the content of the eighth-grade science course, industrial organizations, universities, various institutions and organizations, and HEPPs and power plants emerged as the most highlighted.

Table 6. Distribution of the Learning Environments Recommended in Different Grades for the Science Course in OSLEGs by Provinces

Learning Environments	5th Grade							6th Grade							7th Grade							8th Grade						
	Bursa	Denizli	Erzurum	Osmaniye	Sivas	Diyarbakır	Trabzon	Bursa	Denizli	Erzurum	Osmaniye	Sivas	Diyarbakır	Trabzon	Bursa	Denizli	Erzurum	Osmaniye	Sivas	Diyarbakır	Trabzon	Bursa	Denizli	Erzurum	Osmaniye	Sivas	Diyarbakır	Trabzon
1. Museums	4	4		5		2	1	8			2			3				2				2	1				1	
2. Science and Research Centers	5			4	3			6	1		1	8			8	3		1	4	1		4	11			2		
3. Art Centers		4			2				4	1	1																	1
4. Technoparks																				1								
5. Historical and Cultural Places									4		1	1											2					1
6. Libraries																												
7. Natural Protected Area and Archaeological Sites		4		3					1		1					1					1		12					1
8. Industrial Organizations	1	3												1	2	1	1	1	1	1	3		5	1	1	1	2	1
9. Universities	1	5	2	2		1	3	7			4		1	2	7	1		3		1	3		11	3	2			3
10. National, Thematic Parks and Gardens	2	5	1	8	1	1	2	6			2					3	1	2	1	1	2		2					1
11. Various Institutions and Organizations	1	11			3		2	1	8	2			3	1	5				1		1	1	12	1	1			1
12. Healthcare Organizations									2				1	3														
13. HEPPs and Power Plants																1		1					1	1	1		1	
14. Sports Areas									1																			1
15. Various Educational Organizations		3							8							5							4					

4 | DISCUSSION & CONCLUSION

The purpose of this study was to analyze the middle school science course content in OSLEGs of randomly selected seven provinces from each geographic region of Turkey by comparatively analyzing unit/subject, outcome, and learning environment variables. In this section, the findings regarding the research problems are interpreted in light of the related literature, and the results are presented.

When the contents of the science course in OSLEGs were examined holistically depending on the frequency of subject mentions in provinces (for instance, "number of provinces referring to the subject" in Table 1-4), it was observed that biology in the fifth grade, biology, chemistry, and physics in the sixth grade, chemistry in the seventh grade, and physics in the eighth grade were highlighted. When analyzed on the basis of grades, it was found striking that although physics-based subjects (10 subjects) were higher in number in the fifth grade, biology-based subjects (4 subjects) were given a higher coverage in the OSLEGs. However, in the sixth grade, while physics subjects were found to be predominant (10 subjects), it was observed that a chemistry-based unit containing four subjects had the same weight as physics units in the OSLEGs. Similarly, in the seventh grade, physics-based subjects (9 subjects) were more frequent than biology and chemistry (5 subjects). Considering all these findings, the study presented that the frequency of mentioning physics and biology-based subjects lagged behind the frequency of addressing chemistry-based subjects. However, Mertoğlu (2019) found that teacher candidates prefer the subjects and outcomes related to physics and biology from among the units in the science curriculum while practicing extracurricular activities. Köseoğlu and Türkmen (2020) claimed that science teachers mostly use out-of-school learning environments on biology-based subjects. Still, they want to use these environments for all subjects included in the curriculum. Considering these results, it can be suggested that the contents of the OSLEGs should be developed to support the studies of teachers and teacher candidates in this scope, especially in terms of the diversity of outcome-learning environment relations in the context of physics and biology-based subjects. If teachers are presented with as many outcomes and learning environment suggestions as possible in terms of applying out-of-school learning activities with the OSLEGs, the process of preparing out-of-school learning activities can be facilitated, and teachers' interest and motivation to carry out these activities can be increased.

The current study showed that all provinces established an outcome-learning environment relationship for the "World of Living and Human and Environment" units in the fifth-grade science course in their OSLEGs (Table 1). For these units, the analysis revealed that learning environments in the categories of museums, science and research centers, natural sites and archaeological sites, universities, national, thematic parks and gardens, and various institutions and organizations were generally preferred. Kaya (2019) also found that after the field trip carried out within the scope of the "World of Living" unit, students see the zoos included in the thematic park classification as an educational environment, that they learn while having fun in zoos, and that they think that subjects for science lesson can be learned outside the classroom environment. In the study conducted by Özata Yücel and Kanyılmaz (2018), teachers stated that they found the units of "Living and Life and Phenomenon" suitable for the students to acquire life skills that are not specified as separate outcomes in the science curriculum and are implicitly given in other outcomes. They explained that the reason for this is that the subjects included in these units are more intertwined with life, arouse curiosity in students, and are suitable for learning by living. In this context, it can be said that an environment where students can learn life skills with fun can be provided in all provinces by conducting fifth-grade science lessons in the learning environments recommended in the OSLEGs. Ural Keleş (2018) also obtained findings that support this result in his study, and based on these findings, he concluded that the science and engineering activities included in the curriculum would make a significant contribution to the students' learning by experiencing. Still, it is important to provide the necessary environments for these contributions to be made.

When the contents of the sixth-grade science course in Table 2 and the relation between the subject/outcome and the learning environment were examined, the subjects of "Support and Movement System, Digestive System", "Respiratory System", and "Excretory System" were mentioned only in the OSLEGs of two provinces (Bursa and Denizli). However, it is very thought-provoking that in the OSLEGs of Erzurum and Osmaniye provinces, no outcome and learning environment relation was made on any subject within the scope of this unit. Focusing on student views regarding the use of OOSLEs, Bakioğlu and Karamustafaoğlu (2020) found that these environments had a positive effect on students' learning due to the attractiveness of the materials used during the teaching process of the Human Body subject, and they determined that they help students attain knowledge and skills. Similarly,

Yavuz Topaloğlu (2016) concluded that after the activity carried out in a dialysis center to teach the unit of "Systems in Our Body", students improved their conceptual understanding of organ donation, which is one of the socio-scientific topics. Despite such positive findings, it is pretty surprising that a unit based on biology, which every person should learn very well to acquire basic knowledge of life, is given very little attention in the OSLEGs. This is because the basic life knowledge taught concretely in the preschool period is actually based on abstract and complex structures (Bilaloğlu, 2005; Gümüş, Demir, Koçak, Kaya, & Kırıcı, 2008). For this reason, it is vital to learning environment biology-based topics in the middle school OSLEGs in more detail to both put information based on individual health issues on a more solid basis in the minds of students at the secondary school level and to prevent them from having problems with prior knowledge during high school. However, the unit of "Force and Motion" in the sixth-grade science course was only mentioned in the OSLEGs of two cities (Denizli and Sivas) (Table 2). In addition, it can be said that there is not a lot of diversity when the units in Table 2, in which the relationship of the outcome-learning environment is frequently established, were examined. However, Bozdoğan and Kavcı (2016) revealed that paying due attention to out-of-school activities in science courses with out-of-school lesson plans developed as part of the "Force and Motion" unit improves students' academic success. Therefore, a higher number of out-of-school activities should be included in the teaching process to increase students' academic success and spread and develop the learning culture outside of school.

It was also found that an outcome-learning environment relationship is frequently established for the subject of "Domestic Wastes and Recycling," which is included in the chemistry-based "Pure Substances and Mixtures" unit in the content of the seventh-grade science course in the OSLEGs (Table 3). It was found that Recycling Facilities, which generally fall into the industrial organization category, are preferred as a learning environment. Katırcıoğlu (2019) studied the effect out-of-school learning activities (trips to a solid waste sorting facility, liquid waste oil storage unit and electronic waste collection-storage area) carried out as part of the subject of "Domestic Waste and Recycling" on the level of student awareness and perception of nature and revealed that out of school learning environments have a supportive effect on classroom learning. Furthermore, the activities carried out in the recycling facilities can be expected to have a positive effect on the development of students' environmental awareness. In his study, Aydın (2019) concluded that, following the workshop activities held in the Izmit Seka Paper Museum, which was visited as an out-of-school learning environment, the experimental group students' attitudes towards the environment became more positive than the other students.

When the content of the eighth-grade science course was examined province by province, it was obvious that the outcome-learning environment relationship is mainly established for the unit of "Electric Charges and Electric Energy" (Table 4). In the OSLEGs, HEPPs and power plants are generally suggested as the locations for the outcomes in this unit. A study conducted by Bozdoğan and Yalçın (2006) on the subject of energy determined that the equipment found in an Energy Park and the activities carried out here significantly affect the interest and academic outcome of secondary school students in science. In addition, based on their study conducted in a wind power plant, Balkan Kıyıcı and Atabek Yiğit (2010) concluded that the opportunities to obtain first-hand information, to make observations, and to support permanent and meaningful learning, and enabling social interactions with entertainment are the salient characteristics of the teaching activities organized in OOSLEs. Thus, if subject-related activities are carried out in the recommended learning environments, they can be expected to contribute to increasing student interest and success in science lessons. In addition, by associating simple machines that make our daily life easier with OOSLEs (for example, a seesaw in a playground), the working mechanisms of such machines can be taught in an easy and fun way. Another striking finding is that Erzurum and Sivas's OSLEGs do not refer to the "Simple Machines" unit. However, access to OOSLEs such as playgrounds is relatively easy in these cities (Table 4). When these findings are considered, it can be concluded that units such as "Seasons and Climate" and "Simple Machines" that can be easily associated with daily life are not adequately addressed in the OSLEGs. This conclusion can be interpreted as either indicating that the teachers in the commission are not aware of the OOSLEs around or do not know how to use such environments around them as an OOSLE.

When the findings (Table 6) were examined, the analysis revealed that museums, science centers, industrial organizations, universities, parks and gardens, and various other institutions and organizations were frequently recommended in the OSLEGs in terms of OOSLEs. It can be said that these environments are often recommended because of their high number and easy accessibility, as well as their positive effects on the academic achievement of students. Öz (2015) determined that the courses taught using science center activities developed according to the research-based learning approach were more effective in increasing students' academic success compared to the courses taught using the current curriculum. Further, Efe (2019) found that science centers cause a positive

change in student perceptions of the nature of science, and students defined science centers as very interesting, fun and useful. Cebeci (2019) also reported that science teachers thought that museums should be expanded with their rational function more emphasized, and museum environments should be developed to create interactive learning environments. On the other hand, it was found that the art center, technopark, historical and cultural sites, natural sites and archaeological sites, health institutions, HEPP and power plants, sports fields and various educational institutions are, used in the OSLEGs to a lesser degree. However, studies have shown that taking secondary school students to such learning environments as part of science courses provides benefits in many ways. For example, Yavuz Topaloğlu and Balkan Kıyıcı (2017) found that activities carried out in out-of-school learning environments enable students to learn new, unknown and different aspects of HEPPs, which is one of the socio-scientific issues. However, it was further determined that while thematic parks and gardens such as botanical parks were included as site suggestions in the OSLEGs, the planetariums, which are also classified under National, Thematic Parks and Gardens, were not. However, in the studies of Sontay, Tutar and Karamustafaoğlu (2016), Yılmaz (2018), and Başakçı (2018), it was stated that planetarium trips are effective in making the information more permanent and increasing student awareness of the professions related to space. Furthermore, these studies emphasized that such out-of-school learning environments should be included in the teaching process, as it is effective and fun to use in science teaching. The results obtained in similar studies support the conclusion that more diverse OOSLEs need to be included in the OSLEGs. When the findings in Table 6 are examined in terms of the recommended learning environments, libraries turn out to be not included as a learning environment to visit. As stated in the studies of Balcı, Uyar, and Büyükikiz (2012) and Sevmez (2009), students generally prefer to use the internet for research and especially the low rate of using publ, especially be the reason public use addition, the reason for this result can be attributed to the nature of the course, as is not very compatible with the library environment. It has been determined that in the subjects in which an outcome-learning environment relationship is established, a relationship is established between each outcome and a single learning environment (science center, museum, etc.), and an alternative learning environment cannot be presented. This situation may create the perception in teachers that if this learning environment cannot be visited, other environments cannot be evaluated. On the other hand, it is quite remarkable that the OSLEGs do not include school gardens. However, it is not necessary to choose a place physically outside out-of-school when it comes to out-of-school learning. If school gardens are designed for this purpose, it is thought that they can be both easily accessible and useful places for out-of-school learning. Similarly, school gardens are environments that encourage students to develop positive psycho-physical characteristics and acquire new knowledge in a healthy environment (Geušić, 2020). Many studies examining the effects of the school garden on the educational process show that the use of school gardens in the learning process provides many benefits to students, one of which is experiential learning (Başar, 2020; Papadopoulou, Kazana & Armakolas, 2020). School gardens, especially designed under a certain theme, enable to be intertwined with nature, to learn by doing and by living, and thus increase students' interest in science lessons (Riggs, 2020). Gülen and Bozdoğan (2021), in their study in which determined the use of school gardens by science teachers in their lessons, emphasized that almost half of the teachers use the school garden in their lessons, while the majority of the teachers, who use the school garden, use it at irregular intervals and to teach the lesson. In addition, when the middle school classroom levels were examined in terms of learning areas, it was determined that the teachers mostly used the school gardens in the "Physical Events" learning area.

When Table 5 and Table 6 were examined together, it can be concluded that while the OSLEG of Denizli province stands out in terms of both the mentioned unit/subject and the number of outcomes and the variety of learning environment suggestions, Erzurum, Diyarbakır and Sivas provinces' OSLEGs were found to be quite weak in these aspects. This may be due to the fact that the commissions that prepared the OSLEGs, which were relatively weak in terms of the variables examined, did not have enough knowledge, experience, and equipment regarding the theme of "OOSLEs". Considering the findings indicating that teachers do not have sufficient knowledge and experience about out-of-school learning environments (Bozdoğan, 2015; Güler, 2009; Thomas, 2010), the teachers in OSLEG preparation commissions may be suggested to request support from experienced academic staff about OOSLEs, with an eye towards improving the OSLEGs. MoNE (2019) suggested that in the well-designed OSLEGs a relationship should be established between the characteristics of the learning environments and the outcomes for the subjects that are thought to be more beneficial for students to be taught in an out-of-school learning environment than the classroom environment. The number of outcomes should be included in a way that will offer teachers alternatives.

Considering the findings obtained in the current study, it may be suggested that the OSLEGs be developed at all grades by strengthening the outcome-learning environment connections and thus, offering an adequate number of applicable options to teachers in the provinces they work. In this way, out-of-school learning activities can be used more extensively in the teaching process and can contribute to raising student interest and achievement in science. Since it is important to establish interdisciplinary relations in out-of-school learning activities (Bunting, 2006), information on interdisciplinary relations is added to OSLEGs (for example, supporting an outcome in a science course or a chosen out-of-school learning environment with other disciplines such as mathematics, geography, and visual arts) so that an effective learning activity in terms of time, integrity, and efficiency can be prepared.

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While preparing this article, the authors certify that research and publication ethics were followed, as well as copyright restrictions for the intellectual and artistic works used. Since this study was carried out with the method of document analysis, no ethics committee approval was required.

RESEARCHERS' CONTRIBUTION RATE

Three authors contributed equally to the article writing. All authors read and approved the final version manuscript.

CONFLICT OF INTEREST

The authors of this article declare that there is no personal conflict of interest within the scope of the study.

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Appendix-1. The links of the OSLEGs.

Bursa:

https://bursa.meb.gov.tr/Dosyalar/Okul%20D%C4%B1%C5%9F%C4%B1%20%C3%96%C4%9Frenme%20Ortamlar%C4%B1%20-%20ORTAOKUL.pdf

Denizli:

https://denizli.meb.gov.tr/meb_iys_dosyalar/2019_09/09133738_OKULUM_DENIZLI_ORTAOKUL_KITAP_.pdf

Diyarbakır: https://diyarbakir.meb.gov.tr/okulum_diyarbakir/ortaokul/ortaokul.pdf

Erzurum: https://erzurum.meb.gov.tr/meb_iys_dosyalar/2019_09/05153158_temelegitim.pdf

Osmaniye:

https://osmaniye.meb.gov.tr/dosya/okulumosmaniye/3_OkulumOsmaniye_Ortaokul_DersDisiOgrenmeOrtamlari.pdf

Sivas: https://sivas.meb.gov.tr/meb_iys_dosyalar/2019_09/09164515_03_ortaokul.pdf

Trabzon: https://trabzon.meb.gov.tr/meb_iys_dosyalar/2019_10/18152108_ortaokul.pdf

Exploring Pre-service Teachers' Perception Regarding Factors in Technology Integration with Q Methodology

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ABSTRACT

The aim of this study is to understand the perspectives of pre-service teachers on the factors affecting technology integration with the Q methodology. Forty-one pre-service teachers studying at the faculty of education of a state university participated in the research. Twelve statements reflecting the factors of technology integration were selected. In determining the Q statements, attention was paid to include elements at four levels in the integration process: teacher, institutional and system, teacher design thinking and student. The data were analyzed with the PQMethod 2.35 program. Principal component analysis was used in the factor analysis, and after the rotation process, a three-factor solution was reached: (a) individual-oriented perspective, (b) individual and school-oriented perspective, (c) planning, individual, school and system-oriented perspective. Among these identified perspectives, it was seen that there was a consensus on supporting teachers' professional development, access to technology, positive attitudes of students, and guidebooks supporting technology integration. However, it was seen that there were different areas in the opinions of the pre-service teachers in the three factors determined. It has been observed that pre-service teachers in the individual-oriented perspective prioritize teachers' value beliefs about the role of technology in education. It has been concluded that the pre-service teachers in the individual and school-oriented perspective attach more importance to the technological and pedagogical competencies of the teachers. It has been seen that the planning of the lesson plans for the integration of technology is a priority factor for the pre-service teachers with a planning, individual, institution and system-oriented perspective. Recommendations for teacher educators are presented for each identified perspective.

Keywords: Technology integration, pre-service teachers, Q methodology

Öğretmen Adaylarının Teknoloji Entegrasyonundaki Faktörlere İlişkin Algılarının Q Metodolojisi ile İncelenmesi

ÖZ

Bu çalışmanın amacı, öğretmen adaylarının Q metodolojisi ile teknoloji entegrasyonunu etkileyen faktörler ile ilgili perspektiflerinin anlaşılmasıdır. Araştırmaya bir devlet üniversitesinin eğitim fakültesinde öğrenim gören, 41 öğretmen adayı katılmıştır. Teknolojisi entegrasyonunu faktörleri yansıtan 12 ifade seçilmiştir. Q ifadelerinin belirlenmesinde, entegrasyon sürecinde öğretmen, kurumsal ve sistem, öğretmen tasarım düşüncesi ve öğrenci olmak üzere dört düzeyde ögelerin yer almasına dikkat edilmiştir. Veriler PQMethod 2.35 programı ile analiz edilmiştir. Faktör analizinde temel bileşenler analizi kullanılmış, döndürme işleminden sonra ve üç faktörlü çözüme ulaşılmıştır: (a) birey odaklı perspektif, (b) birey ve okul odaklı perspektif, (c) planlama, birey, okul ve sistem odaklı perspektif. Belirlenen bu perspektifler arasında öğretmenlerin mesleki gelişimlerinin desteklenmesi, teknoloji erişimi, öğrencilerin olumlu tutumları ve kılavuz kitapların teknoloji entegrasyonunu desteklemesi konusunda görüş birliği olduğu görülmüştür. Bununla birlikte, belirlenen üç faktördeki öğretmen adaylarının görüşlerinde farklılaşan alanlar olduğu görülmüştür. Birey odaklı perspektifteki öğretmen adaylarının öğretmenlerin teknolojinin eğitimdeki rolüne ilişkin değer inançlarına öncelik verdiği görülmüştür. Birey ve okul odaklı perspektifteki öğretmen adaylarının, öğretmenlerin teknolojik ve pedagojik yeterliklerine daha fazla önem verdikleri sonucuna ulaşılmıştır. Planlanma, birey, kurum ve sistem odaklı perspektifteki öğretmen adayları için öğretmenlerin teknoloji entegrasyonuna yönelik dersi planlamaları daha öncelikli bir etmen olduğu görülmüştür. Tanımlanan her bir perspektif için öğretmen eğitimcileri için öneriler sunulmuştur.

Anahtar kelimeler: Teknoloji entegrasyonu, öğretmen adayları, Q metodolojisi

1 | INTRODUCTION

Technology integration is one of the most streamlined areas of research, reflecting the incredible speed of evolution of computer-based tools and applications (Bernard et al., 2018). Meta-analysis studies reveal the effect of using educational technologies in learning and teaching processes on learning performance (Chauhan, 2017; Cheung & Slavin, 2012; Higgins et al., 2019; Hillmayr et al., 2020). However, technology integration is a concept beyond the use of technology in learning and teaching processes. Belland (2009), defines technology integration, "as the sustainable and persistent change in the social system of K-12 schools caused by the adoption of technology to help students construct knowledge" (p. 354). In other words, technology integration is a sustainable change process beyond the use of educational technology in a short-term intervention. Therefore, many interrelated factors play a role in ensuring technology integration (Uslu & Usluel, 2019). Hew and Brush (2007) distinguished these factors into six groups: (a) resources (technology, access to available technology, time, and technical support), (b) knowledge and skills, (c) institutional, (d) attitudes and beliefs, (e) assessment, (f) subject culture. Based on the studies in the literature, Göktaş et al. (2009) listed the obstacles in the integration process as in-service training, software and hardware access, basic and integration knowledge and skills, time, managerial support and teaching programs. These factors are discussed as first-level (incremental, institutional) and second-level (fundamental, personal) barriers in Ertmer's (1999) highly cited study.

First-level factors include barriers outside the teacher such as equipment, time, training, and support. Access and technical support have been examined in many studies as an important determinant in the integration process (Pareja Roblin et al., 2018; Seifu, 2020). Even with adequate access to technology, effective professional development is seen as a major barrier to increasing the level of technology integration in classrooms (Harrell & Bynum, 2018). One of the external obstacles is the incompatibility between technology and the current curriculum and course hours (Gülbahar & Güven, 2008). In addition, administrative support at school level affects integration as first-level factors (Uslu & Usluel, 2019). Access to technology infrastructure, supportive school policies, and knowledge of how to integrate equipment effectively with course content are important prerequisites for sustainable practice (Pareja Roblin et al., 2018). School resources and environment have a strong influence on the practice of beginning teachers (Ottenbreit-Leftwich et al.,2018).

Initiatives to achieve integration primarily focus on increasing school access to technology. However, a three-year longitudinal study shows that access to technology increases, but teacher beliefs decline over time (Francom, 2020). In this context, second-level (personal) barriers become important. Second-level barriers are related to teachers' beliefs about learning and teaching, and their knowledge and skills (Ertmer, 1999; Hew & Brush, 2007). Teacher beliefs are defined as the most important obstacle for meaningful technology integration (Ertmer, 2005). The indirect and direct effects of technology value beliefs (Farjon et al.,2019; Uslu & Usluel, 2019) and pedagogical beliefs (Taimalu & Luik, 2019) on integration have been revealed in many studies. Also, one of the key factors at the teacher level is their core technological and integration-related competencies. Basic technology knowledge directly and indirectly affects technology integration (Ifinedo et al., 2020). In addition, teachers' technological, pedagogical and content knowledge and their intersection, TPACK knowledge, are one of the important determinants on integration (Habibi et al.,2020).

Tsai and Chai (2012) defined teachers' design thinking as a third-level barrier in addition to first- and second-order factors. Design thinking is the dynamic knowledge and practice created by teachers in the use of ICT in educational settings (Tsai & Chai, 2012). To broaden teachers' design thinking, it is important for teachers to prepare lesson plans that aim to integrate ICT into learning and teaching processes on the basis of effective pedagogical frameworks. Teachers' design thinking helps overcome perceptions of secondary barriers and can alleviate resource-based challenges (Makki et al.,2018).

The role of students' experiences, skills and motivations in the integration process should not be overlooked. Students' previous positive digital experiences significantly affect their perceived digital competence and attitudes towards digital technologies (Kim et al., 2018). Teachers make decisions about using technology in the classroom by considering how to effectively meet immediate teaching needs, beliefs about learning, and other contextual factors (Kopcha et al., 2020). In summary, the integration process includes the relations of many factors with each other.

Many studies have been conducted on the barriers perceived by teachers in the process of technology integration. Mercader and Gairin (2020) revealed that university teachers prioritized barriers such as lack of

education, lack of knowledge about digital technology teaching approaches, lack of planning, excessive workload, lack of time, generation gap, technophobia, lack of evaluation and incentives. In a study conducted with teachers in Indonesia, it was found that the lack of knowledge and experience in ICT education, in addition to the limited time and tools combined with poor Internet connection, are important barriers (Muslem et al., 2018). In a study conducted with physical education teachers, it was found that the loss of time spent on physical activity, lack of resources, investment in time and education, inappropriate use, lack of knowledge and technical problems are the most important barriers (Villalba et al., 2017). Kilinc et al. (2018) found that middle school social sciences teachers mostly stated that external factors such as limited technological opportunities, problems in Internet access, and methodical and technical support are barriers. As a result, in the literature, although more emphasis is placed on external factors, it is seen that there is a diversity regarding the barriers perceived by teachers, and the findings vary according to factors such as the level of the school and the subject area. On the other hand, the findings obtained by quantitative methods reflect the general tendencies of the study group. As a complement to objectivity, it is crucial to examine subjectivity in order to gather reliable evidence (Lundberg et al.,2020). Effective technology applications take place where complex factors converge (Heath, 2017). Considering that the factors in the integration process affect each other, it should be taken into account that there are various perspectives in prioritizing the perception of obstacles in the process. For educators who think that external barriers are more important, integration can be seen as a process that can be achieved with encouragement and support. On the other hand, a teacher who cares about teacher-level factors may find it difficult to develop solutions on how to overcome external obstacles, no matter how willing. Therefore, it is important to understand the perspectives of teachers and prospective teachers regarding the integration process. Understanding teachers' views on supporting and hindering factors in the integration process can also serve as a springboard for what steps to take in planning their future professional development. As a matter of fact, the factors that pre-service teachers prioritize can guide their future professional development trajectories. In this context, teacher educators' understanding of pre-service teachers' perspectives on barriers in the integration process can help them teach more effective courses that can support pre-service teachers from different perspectives.

In this study, it is aimed to understand the perspectives of pre-service teachers about the factors they perceive regarding the integration process through the Q methodology. Q methodology is seen as a window of obtaining information about subjective responses or reactions to problems encountered in educational research (Montgomery, 2010). With this method, it will be tried to take a step to understand the perspectives of teacher candidates on which factors affecting technology integration are more important and valuable, and to examine the areas where their views intersect and diverge.

2 | METHOD

Q METHODOLOGY

Q methodology is a systematic research method used to examine people's perspective or subjectivity (Maeder & Larwin, 2021). The purpose of a Q methodology study is to identify and categorize a specific group of participants' perspectives, personal structures, and values on a subjective topic, issue, or problem (Walker et al., 2018). This method allows understanding the convergence or divergence of participant perspectives, including which aspects of the domain are of value and importance for individuals in the field (Rodl et al.,2020). In this study, it is aimed to understand the viewpoints of prospective teachers about the factors affecting technology integration. The steps suggested by Rieber (2020) were followed in conducting the Q study (Figure 1).

In the first stage, the intention of the research and the suitability of the q methodology were evaluated. In this context, the study focuses on understanding pre-service teachers' views on technology integration. The individual's perceptions of the factors affecting integration have characteristics that bring about subjective opinions that can vary from person to person.
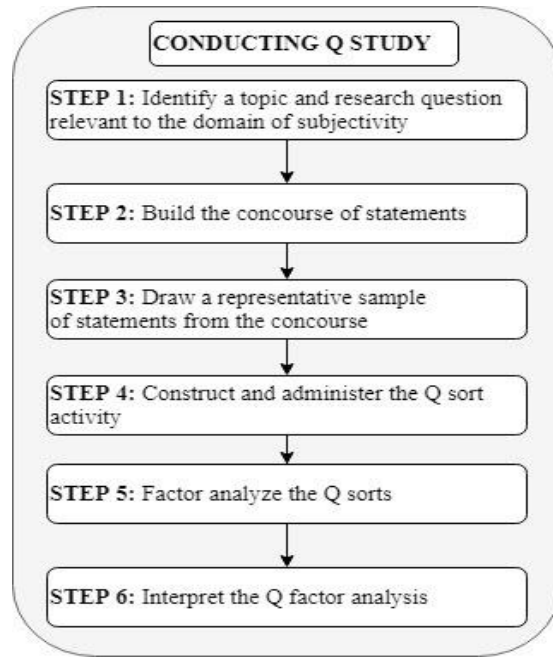
Figure 1. *A Step-by-step Approach to Conducting a Q Study (Rieber, 2020).*

Before performing the Q activity, the pre-service teachers participated in the discussion sessions in order to gain an understanding of the factors affecting the integration process in the instructional technologies course. In the second stage, the expressions in the Q sorts were selected. For this, studies on the factors affecting the integration process in the literature were used. In this context, the study by Kaya and Usluel (2011) in which the articles on technology integration using structural equation modelling or regression analysis were analysed by content analysis was used. In addition, the items in the measurement tool developed by Uslu (2013) to examine teachers' perceptions of barriers in the process of technology integration were used. In the third stage, expressions were chosen to reflect their perspectives on the factors affecting the integration process. In determining the Q sorts, attention was paid to include expressions at four levels: teacher, institutional and system, teacher design thinking and student in the integration process. The selected 12 statements are given in Table 1.

Table 1. Q Statements

Classification	Statements
School and system level factors (First -order)	1. The school has a budget to ensure technology integration
	2. Education policies at the country level encourage technology integration
	3. Lack of computers, projectors, smart boards and internet in classrooms
	4. Inadequate professional development programs given to teachers on technology integration
	5. Not including activities related to the use of technology in the lessons in the guidebooks given to the teachers.
	6. School administration's support of teacher's efforts towards technology integration
Teacher level factors (Second-order)	7. The teacher has positive attitudes and beliefs about the use of technology in teaching.
	8. The teacher has sufficient technological and pedagogical knowledge to integrate technology
	9. The teacher has student-centered pedagogical beliefs and approaches.
Third-order factors	10. Teacher's lesson planning for technology integration
Student-level factors	11. Students have sufficient digital skills
	12. Students have negative opinions about the use of technology in the lesson

In the fourth step, the Q sort activity was applied to the teacher candidates in an electronic environment with a document prepared in MS word. The document consists of three parts: Q sorts, grid and an open-ended question in which pre-service teachers can write their reasons for the order they have made. Before the application, pre-service teachers were explained about how to do the Q sort activity. The grid used for the sorting process is presented in Figure 2.

It has a rather negative impact on technology integration.				It has a rather positive impact on technology integration.
-2	-1	0	1	2
1 statement				1 statement
	3 statement		3 statement	
		4 statement		

Figure 2. *Q Sorting Grid*

In the fifth step, the correlations of the participants' Q sorts are calculated and factor analysis of these correlations is made on a per-person basis (Rieber, 2020). In the sixth step, the resulting clusters are interpreted and defined.

DATA COLLECTION AND ANALYSIS

Forty-one pre-service teachers studying at the faculty of education of a state university participated in the research. The participants are 2nd and 3rd year students taking the instructional technologies course. Twenty-three of the pre-service teachers were female and eighteen were male. Participants are studying in the department of science education, guidance and psychological counseling studies, social science education. After the necessary explanations about the Q Sorting grid were given to the teacher candidates. The application was made in a period of 20-30 minutes. Afterwards, pre-service teachers answered an open-ended question about how and for what reasons they do Q sorting.

In this study, q sorts were analyzed with the free software PQMethod (Schmolck, 2014). Q factor analysis creates factors by grouping highly correlated Q types together (Sung & Akhtar, 2017). In data analysis in the Q methodology, individuals are treated as a variable and factor analysis is performed to produce statistically significant groupings that suggest similar perspectives on the study topic (Walker et al.,2018). The purpose of factor analysis in the Q methodology is to reduce the number of different perspectives from the total number of participants to fewer related or like-minded groups (Rieber, 2020). Principal component analysis was used in the factor analysis, and a three-factor solution was obtained after the rotation process.

3 | FINDINGS

FACTOR ANALYSIS

As a result of the Q factor analysis, three clusters emerged reflecting the views of pre-service teachers on the factors affecting technology integration. The factor distributions as a result of principal component analysis and rotation are presented in Table 2.

Table 2. Participant Factor Loadings

Participant	Factor A (N=21)	Factor B (N=7)	Factor C (N=7)	Participant	Factor A (N=21)	Factor B (N=7)	Factor C (N=7)
Student 1	**0.7559X**	0.4463	0.3860	Student 22	**0.7152X**	0.3568	0.0856
Student 2	0.4574	0.2314	**0.8022X**	Student 23	**0.5715X**	0.5072	0.4006
Student 3	0.4356	**0.6734X**	0.5116	Student 24	**0.6767X**	0.4979	0.2926
Student 4	**0.7595X**	0.1287	0.4533	Student 25	**0.7328X**	0.4354	0.3864
Student 5	0.5303	0.1423	0.5580	Student 26	0.4958	0.5624	0.4920
Student 6	0.2211	**0.8021X**	0.4069	Student 27	**0.7317X**	0.1581	0.1278
Student 7	**0.8496X**	0.4196	0.2586	Student 28	0.2503	0.3197	**0.8471X**
Student 8	**0.8496X**	0.4196	0.2586	Student 29	0.2503	0.3197	**0.8471X**
Student 9	**0.6674X**	0.5890	0.2827	Student 30	0.4505	**0.7454X**	0.3882
Student 10	0.4191	**0.7292X**	0.1647	Student 31	**0.6986X**	0.4003	0.5074
Student 11	**0.7582X**	-0.1435	0.5069	Student 32	**0.8120X**	0.3730	0.3921
Student 12	0.4857	0.4866	0.4929	Student 33	0.0787	0.1975	**0.6910X**
Student 13	0.6166	0.5755	0.3216	Student 34	**0.7956X**	0.2921	0.4763
Student 14	**0.7053X**	0.4329	0.4246	Student 35	0.3399	**0.7213X**	0.0934
Student 15	**0.7871X**	0.4784	0.1723	Student 36	0.4530	0.0544	**0.7890X**
Student 16	0.4761	0.5282	0.5886	Student 37	**0.6288X**	0.3189	0.3828
Student 17	0.3997	0.4636	0.6083	Student 38	0.2893	0.3684	**0.6405X**
Student 18	0.1928	0.5462	**0.7250X**	Student 39	**0.7956X**	0.2921	0.4763
Student 19	0.5196	0.5827	0.4929	Student 40	**0.7139X**	0.1592	0.5036
Student 20	**0.6986X**	0.4003	0.5074	Student 41	**0.6252X**	0.4228	0.4184
Student 21	0.1487	**0.6386X**	0.5554				

According to Table 2, 21 of the pre-service teachers participating in the research took place in the Factor A, seven in the Factor B, and seven in the Factor C. Six pre-service teachers were not significantly included in the three factors.

FACTOR A: INDIVIDUAL ORIENTED PERSPECTIVE

The opinions of the pre-service teachers classified in Factor A regarding the statements they accepted and did not accept are given in Table 3. According to Table 3, it is seen that the pre-service teachers in this factor attach more importance to the factors at the individual level. According to the pre-service teachers classified in Factor A, the most important condition that positively affects technology integration is that the teacher has positive value beliefs about the use of technology in education. In addition, they think that teachers have sufficient technological and pedagogical knowledge to integrate technology, have student-centered pedagogical beliefs, and students have digital skills are other factors that positively affect technology integration.

According to the pre-service teachers included in this factor, the most important condition that negatively affects technology integration is the lack of access to technology in the classrooms. In addition, they think that factors such as the limited professional development opportunities given to teachers, the teacher's guidebooks do

not include technology use, and students have negative opinions about technology use in the lesson, affect technology integration negatively. They have neutral views on education policies, budget, school support and teacher's lesson planning. The opinions of the pre-service teachers in this factor regarding the reasons for the Q ranking they made are as follows:

"*First of all, I think that the most important person in the factors affecting technology integration is the teacher. In fact, it is much more important than the country's education policy and support from the school. Because there are neither country ministers nor school administrators in front of the students in the classroom. There is only the teacher and his ideas about technology and education. Therefore, in my opinion, the inadequacy of technology integration education in teacher training is the biggest problem.*" (Student 21).

Table 3. Most Agreed and Most Disagreed Statements of Pre-Service Teachers in Factor A

Statement	Z score	Grid position
7. The teacher has positive attitudes and beliefs about the use of technology in teaching.	1.925	+2
8. The teacher has sufficient technological and pedagogical knowledge to integrate technology	0.948	+1
9. The teacher has student-centered pedagogical beliefs and approaches.	0.641	+1
11. Students have sufficient digital skills	0.399	+1
2. Education policies at the country level encourage technology integration	0.374	0
10. Teacher's lesson planning for technology integration	0.250	0
1. The school has a budget to ensure technology integration	0.141	0
6. School administration's support of teacher's efforts towards technology integration	0.113	0
4. Inadequate professional development programs given to teachers on technology integration	-0.920	-1
5. Not including activities related to the use of technology in the lessons in the guidebooks given to the teachers.	-0.985	-1
12. Students have negative opinions about the use of technology in the lesson	-0.988	-1
3. Lack of computers, projectors, smart boards and internet in classrooms	-1.673	-2

"*I placed the teacher's belief in technology as the most positive effect, because in my opinion, everything happens or doesn't happen at will. If the teacher really wants to use technology actively, he does not need the support of the administration or the country. He can also benefit from technology with his own efforts. The biggest obstacle to teachers on this path is students. If the students are not in favor of technology, no matter how hard the teacher tries, he cannot make the student like technology. The first thing to do is to soften the student's thoughts towards technology. I don't think the teacher needs any support. That's why I put the state and administration's technology support to neutral effect.*" (Student 11).

"*For me, the most important factor in technology integration is the teacher's belief that technology is necessary. Because if the teacher considers the use of technology as unimportant, an efficient technology cannot be used in that lesson. If the teacher is willing, he or she will somehow make up for the lack of knowledge, even if his knowledge is insufficient. Since technology is a constantly changing field, information becomes insignificant over time if there is no desire to be renewed, and if there is a desire, it is renewed gradually over time. If students or teachers do not have a negative opinion about the use of technology, these technologies will certainly be used efficiently.*" (Student 15).

FACTOR B: INDIVIDUAL AND SCHOOL ORIENTED PERSPECTIVE

The opinions of the pre-service teachers classified in Factor B regarding the statements they accepted and did not accept are given in Table 4.

Table 4. Most Agreed and Most Disagreed Statements of Pre-Service Teachers in Factor B

Statement	Z score	Grid position
8. The teacher has sufficient technological and pedagogical knowledge to integrate technology	1.717	+2
6. School administration's support of teacher's efforts towards technology integration	0.978	+1
1. The school has a budget to ensure technology integration	0.830	+1
7. The teacher has positive attitudes and beliefs about the use of technology in teaching.	0.640	+1
9. The teacher has student-centered pedagogical beliefs and approaches.	0.588	0
2. Education policies at the country level encourage technology integration	0.064	0
11. Students have sufficient digital skills	0.000	0
10. Teacher's lesson planning for technology integration	-0.161	0
5. Not including activities related to the use of technology in the lessons in the guidebooks given to the teachers.	-0.836	-1
3. Lack of computers, projectors, smart boards and internet in classrooms	-1.129	-1
12. Students have negative opinions about the use of technology in the lesson	-1.232	-1
4. Inadequate professional development programs given to teachers on technology integration	-1.459	-2

According to Table 4, it is seen that the pre-service teachers in this factor have opinions about the necessity of school support and budget, as well as the teachers' competencies and positive beliefs about the use of technology. In addition, according to pre-service teachers, the most important condition that positively affects technology integration is that the teacher has sufficient technological and pedagogical knowledge to integrate technology. At the same time, they think that elements such as training for teachers, teacher guidebooks, technology opportunities in classrooms, and students' negative opinions about technology use in the lesson affect technology integration negatively. According to the pre-service teachers included in this factor, the most important condition that negatively affects technology integration is the lack of support for teachers' professional development. Teachers have neutral views on student-centered pedagogical beliefs, country-level education policies, students' digital skills, and teacher's lesson planning for technology integration. The opinions of the pre-service teachers in this factor regarding the reasons for the Q ranking they made are as follows:

"I think the most important factor is that the teacher has sufficient technological and pedagogical knowledge and can reflect this to the lesson. The fact that students have this knowledge and participate in the course together affects the course positively. Inadequate technological and pedagogical knowledge of the teacher and the inability to receive support in this regard also prevent the delivery of modern education and training. One of the important obstacles is that the school does not have enough technology. Because not having it at the point where technology will be most beneficial will cause many benefits to be avoided. For this reason, the school should have the support and the budget to allocate it." (Student 10).

"In my opinion, the situation that most positively affects technology integration is that teachers have sufficient pedagogical and technological knowledge in this field. Because the teacher is the person who will guide the students and encourage them to use technology in the lesson. If the teacher has sufficient knowledge, he can transfer this knowledge to his students. When I think in this direction, the situation that most negatively affects technology integration is the inadequacy of in-service training given to teachers. Since the teacher is the person who plays the most active role in the lesson and plans the lesson, it is necessary to provide the teachers with sufficient equipment for technology integration. The more quality education is given to the teacher on this subject, the more conscious the use of technology in the lessons will be. Therefore, it is very important to provide professional development opportunities." (Student 21).

FACTOR C: PLANNING, INDIVIDUAL, SCHOOL AND SYSTEM ORIENTED PERSPECTIVE

The opinions of the pre-service teachers classified in Factor B regarding the statements they accepted and did not accept are given in Table 5.

Table 5. Most Agreed and Most Disagreed Statements of Pre-Service Teachers in Factor C

Statement	Z score	Grid position
10. Teacher's lesson planning for technology integration	1.374	+2
8. The teacher has sufficient technological and pedagogical knowledge to integrate technology	1.073	+1
2. Education policies at the country level encourage technology integration	1.024	+1
1. The school has a budget to ensure technology integration	0.984	+1
7. The teacher has positive attitudes and beliefs about the use of technology in teaching.	0.299	0
9. The teacher has student-centered pedagogical beliefs and approaches.	0.000	0
11. Students have sufficient digital skills	-0.016	0
6. School administration's support of teacher's efforts towards technology integration	-0.128	0
12. Students have negative opinions about the use of technology in the lesson	-0.854	-1
4. Inadequate professional development programs given to teachers on technology integration	-0.984	-1
5. Not including activities related to the use of technology in the lessons in the guidebooks given to the teachers.	-1.000	-1
3. Lack of computers, projectors, smart boards and internet in classrooms	-1.772	-2

According to the pre-service teachers in Factor C, the most important condition that positively affects technology integration is that the teacher plans the lesson for technology integration. According to the pre-service teachers included in this factor, teachers' having technology and pedagogical competencies, country-level education policies and school support positively affect technology integration. Technology access and opportunities in the classrooms are the most important conditions that negatively affect technology integration. In addition, students' negative opinions about the use of technology in the lesson, insufficient professional development opportunities, and the absence of technology use in teacher's guidebooks affect integration negatively. Pre-service teachers in Factor C have neutral opinions about teachers' positive value beliefs regarding the use of technology in education, student-centered pedagogical beliefs, students' digital skills, and administrative support. The opinions of the pre-service teachers in this factor regarding the reasons for the Q ranking they made are as follows:

"In order not to experience any difficulties during the semester, the teacher should prepare the plan accordingly and be equipped with sufficient equipment. The fact that the teacher is knowledgeable about technology will also give confidence to the student. I think that the student's aptitude for technology is not important. Likewise, I added it to the neutral effect section, as I do not think that the teacher's student-centered beliefs and approaches have neither a positive nor a negative effect on technology integration." (Student 28).

"In schools, the teacher determines how the lesson will be taught, the lesson plan and the technology to be used. If he wants to teach a technology-based course in the lesson, he makes the plan accordingly, so that new technologies are taught to the students and the student develops himself by using technology. Of course, I made my assessment by taking into account the importance given to technological integration by the country and the school and their valuable assistance. I think it is important for the country-level policies and the school to have the necessary budget. If it is supported at the country level, studies on these are included in schools and events are also held. In addition, a better education is achieved when the teachers have sufficient technological and pedagogical knowledge and the students have digital competence. Actually, of course, this ranking has a positive or negative effect, but I think that beliefs and approaches are a bit more in the background compared to others. The lack of computers, projectors, smart boards and the internet in the classrooms with the most negative impact, if there is no technology in the classroom, activities cannot be done for this and students cannot have technology-related competences." (Student 38).

CONSENSUS IN STATEMENTS

It was seen that teacher candidates had similar views in five of the twelve statements. Statements with consensus are given in Table 6.

Table 6. Consensus Statements

	Factor A	Factor B	Factor C
11. Students have sufficient digital skills	+1	0	0
3. Lack of computers, projectors, smart boards and internet in classrooms	-2	-1	-2
4. Inadequate professional development programs given to teachers on technology integration	-1	-2	-1
5. Not including activities related to the use of technology in the lessons in the guidebooks given to the teachers.	-1	-1	-1
12. Students have negative opinions about the use of technology in the lesson	-1	-1	-1

The participants think that the use of technology in the guidebooks given to the teachers and the negative opinions of the students about the use of technology in the lesson have a negative effect on the integration. In addition, teachers have similar views on the limitations of professional development opportunities for technology integration (-1, -2, -1) and the lack of access to technology in classrooms (-2, -1, -2). It is seen that there is a consensus regarding the sufficient digital skills of the students (+1, 0, 0).

DIVERGENCE IN STATEMENTS

Differential expressions for all three perspectives are given in Table 7. When Table 7 is examined, it is seen that there are different perspectives regarding the statements about the teacher.

Table 7. Distinguishing Statements

	Factor A	Factor B	Factor C
7. The teacher has positive attitudes and beliefs about the use of technology in teaching.	+2**	+1	0
8. The teacher has sufficient technological and pedagogical knowledge to integrate technology	+1	+2*	+1
10. Teacher's lesson planning for technology integration	0	0	+2**
9. The teacher has student-centered pedagogical beliefs and approaches.	+1*	0	0
1. The school has a budget to ensure technology integration	0**	+1	+1
6. School administration's support of teacher's efforts towards technology integration	0	+1**	0
2. Education policies at the country level encourage technology integration	0	0	+1**

* $p<.05$; ** $p< .01$

It is seen that the pre-service teachers in Factor A score +2 for the expression that the teacher has positive attitudes and beliefs about the use of technology in education. While Factor B considers this statement to be important, participants in Factor C have neutral opinions. While it is the most important expression for Factor B that teachers have technological and pedagogical competencies to be able to use technology; Factor A and Factor C scored this statement +1. Teachers' lesson planning for technology integration is the most important supporting condition for pre-service teachers in Factor C. On the other hand, participants in Factor A and Factor B have neutral opinions on this issue. While teachers' having student-centered pedagogical beliefs is a neutral condition for Factor B and Factor C, it is one of the conditions that positively affect integration according to pre-service teachers in Factor A.

While Factor A had a neutral opinion in the statement that the school has a budget to provide technology integration, those in Factor B and Factor C scored +1. Although the school administration's support of the teacher's efforts towards technology integration is in a neutral position for Factor A and Factor C, teacher candidates in Factor B rated as +1. While pre-service teachers in Factor C rated country-level policies for technology integration as +1; It was seen that those in Factor A and B had a neutral opinion on this issue.

4 | DISCUSSION

This study focused on understanding pre-service teachers' perspectives on the factors affecting technology integration. As a result of the Q factor analysis, three clusters related to technology integration emerged. Pre-service teachers in Factor A think that teachers' technology-related value beliefs, pedagogical beliefs, competencies and student skills are factors that positively affect technology integration. While the pre-service teachers in this factor accept that the lack of access to technological tools in the classrooms is an important obstacle; they are of the opinion that teachers' having positive value beliefs is an important condition for overcoming obstacles in the integration process. Teachers' value beliefs are an important factor in overcoming first-level barriers (Ertmer et al., 2012). Also, teachers' value beliefs moderate their perceptions of school support (Vongkulluksn et al., 2018). According to the pre-service teachers in this factor, if the teacher believes that technology is necessary in educational processes, he can take the necessary steps to have the necessary pedagogical and digital skills. In the literature, it has been found that value beliefs, pedagogical beliefs and competencies are related (Cheng et al., 2021). Technology value beliefs affect perceived knowledge of technology integration (Taimalu & Luik, 2019) and TPACK (Cheng & Xie, 2018). Therefore, there are findings in the literature that beliefs are the precursors of skills. It has been observed that the teachers included in Factor A regarding the statements that negatively affect the integration process think that the absence of technology use in the guidebooks

and the inadequacy of professional development activities for integration are important obstacles. However, teachers have neutral views on preparing lesson plans for technology integration. On the other hand, the use of ICT before the lesson is an important precursor to the use of ICT in the classroom (Uslu & Usluel, 2019). Even if teachers have positive value beliefs about technology and have the necessary pedagogical and digital competencies, their failure to make a pre-lesson planning can hinder the process.

According to the pre-service teachers in Factor B, the most important factor supporting technology integration is the teacher's pedagogical and technological competencies. Technological and pedagogical competencies of teachers are one of the important determinants in the integration process. While technological competences affect pedagogical competences, pedagogical competences also affect the use of technology in the classroom (Suárez-Rodríguez et al.,2018). Unlike Factor A, pre-service teachers in this cluster also care about school support and budget, among the factors that positively affect technology integration. In the literature, it has been found that administrative support has indirect and direct effects on teachers' competencies (Baharuldin et al., 2019). Similarly, according to the pre-service teachers in factor B, the most important obstacle is that teachers are not supported with professional development opportunities in technology integration. Therefore, according to pre-service teachers in Factor B, teachers' having the necessary competencies and not providing professional development opportunities to achieve this affects the integration process.

According to the pre-service teachers included in Factor C, the most positive factor affecting the integration process is the teachers' planning of the lesson in a way that will ensure integration before the lesson. There are many studies in the literature that focus on teacher and pre-service teachers' course design to ensure integration (Koh et al., 2017; Murthy et al.,2015; Rienties et al.,2013; Uslu & Usluel, 2016). In addition to lesson planning, pre-service teachers in this factor think that teachers' technological and pedagogical competencies, country-level policies and school budget are the conditions that support integration. Therefore, it can be said that teacher candidates in this factor attach importance to factors at planning, teacher, school and country level in the integration process. On the other hand, it was seen that the pre-service teachers in this cluster had neutral views about teachers' value beliefs and pedagogical beliefs. Their answers to open-ended questions about their reasons for the Q sorting process also support this situation. The pre-service teachers in this factor gave more importance to planning than beliefs and attitudes. It can be interpreted that they handle the process through more measurable and visible indicators. On the other hand, according to Vongkulluksn et al. (2018), value beliefs also mediated and moderated the relationship between how teachers' perceived support for first-order barriers affected both the quantity and quality of technology integration.

It is seen that there is a consensus among Factors A, B and C on the importance of including the use of technology in the guidebooks and supporting the professional development of teachers. In this context, it can be said that they have similar views on the factors that hinder technology. It has been determined that there is a consensus on the need for students to have digital skills and to have important opinions about their use in lessons and the necessity of technology infrastructure in the classrooms. However, it has been seen that there are different perspectives on the factors that have a neutral effect of factors A, B and C. While pre-service teachers in Factor A think that school support, school budget and education policies at the country level have a neutral effect; Factor B thinks that school administration, and Factor C thinks that education policies at the country level have a positive effect. It has been concluded that there are differentiating perspectives on the conditions that positively affect the integration. It was found that those in Factor A prioritized technology value beliefs, those in Factor B prioritized competencies, and those in Factor C prioritized lesson planning. Therefore, the reasons why teachers have different perceptions between the conditions that support technology integration emerges as an area that needs to be examined in the future.

IMPLICATIONS

In this study, it was seen that pre-service teachers had different perspectives on the factors affecting technology integration. Teacher educators need to be aware of the different perspectives of pre-service teachers, be open to their diversity in their views, and raise awareness about the factors affecting integration. The integration process is a complex process involving many interrelated factors. Therefore, it seems more likely that pre-service teachers plan their professional development on the conditions that they care more about. However, teacher educators have important duties to increase and strengthen the awareness of prospective teachers by considering all the elements

in the process. The majority of pre-service teachers who participated in the study saw technology access in classrooms as a major barrier. There was also variation in the prioritization of factors at the teacher level. It was seen that the pre-service teachers who prioritized the factors at the individual level gave more importance to the beliefs of the teachers. Therefore, it would be beneficial to increase the awareness of teacher candidates with this perspective on barriers at school, system and student level. For this, these pre-service teachers can be provided to work on case studies that will make them think about how to overcome obstacles at school level. Considering that integration is a long-term sustainable change process, they should be helped to gain insight into how they can overcome external obstacles in the process. It was observed that pre-service teachers in Factor B prioritized conditions at school and teacher level, but had neutral views on policies at the country level. Sessions on technology integration policies of different countries can be organized in order to raise awareness of pre-service teachers in this group about the reflection of system-level policies on the integration process. In addition, it was observed that the pre-service teachers who had an individual-level (Factor A) and an individual and system-oriented perspective (Factor B) had neutral views about the teacher's lesson planning. It is necessary for pre-service teachers to gain awareness about the importance of planning and preparation phase in the integration of technology into the learning and teaching process. Teacher candidates in Factor C, on the other hand, had neutral views on the role of teachers' technology value beliefs and pedagogical beliefs. Considering that teacher beliefs are resistant to change and affect classroom practices, it is recommended that these pre-service teachers be aware of their existing beliefs and participate in learning activities about how they affect the practice process.

LIMITATIONS AND RECOMMENDATIONS

In this study, it has been tried to understand the viewpoints of the pre-service teachers regarding the preventive and supportive conditions regarding the technology integration process. The findings of the study are limited to the pre-service teachers participating in the research. The pre-service teachers who participated in the study attended a course in which they made theoretical knowledge and applications about the integration process. Therefore, a study that will take place with the participation of teacher candidates studying in different faculties can reach more diverse perspectives. Also, future research could focus on understanding the perspectives of in-service teachers and examine the comparison of these perspectives with pre-service teachers. In addition, future research may focus on understanding perspectives on how factors at the teacher, school-system, and student level in the integration process affect each other.

5 | CONCLUSION

Technology integration is one of the ultimate goals of many education systems. Although it is accepted in the studies that the teachers do not include the desired level of ICT in their lessons and that they mostly hang out on external conditions, it can be considered promising that the teacher candidates who participated in this study mostly emphasized the skills, belief and lesson planning processes at the teacher level. Therefore, this situation can be considered as a step for pre-service teachers to have proactive approaches in the process of integrating technology in future teacher practices. Although different factors related to the factors in the integration process have been prioritized, teacher education has an important place in shaping the intentions of pre-service teachers to integrate technology in their future classroom practices. Therefore, it is important to consider different perspectives for future teachers to gain awareness of the obstacles they will face, understand their own strengths and weaknesses, and increase their readiness for technology integration as they become teachers.

RESEARCH ETHICS

Participants were informed about the data collection and analysis process before participating in this study. In addition, they signed the consent forms indicating that they agreed to participate in the study. The collected data and the information of the participants are kept confidential. Ethical approval certificate were given from Manisa Celal Bayar University Social and Human Sciences Ethics. Ethics committee document number is E--050.01.04-202065.

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Influence of Planning Time and Task Type on Lexis in L2 Oral Performance

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ABSTRACT

   Building up a stock of vocabulary with operational sufficiency is a formidable task for L2 learners. An adequate portion of their vocabulary needs to be readily accessible and retrievable for productive use in real communication. This study investigated the possible effects of the availability of planning time and task type on L2 learners' lexical production in oral performance. It employed a 2x2 experimental design, where there were two independent variables (planning time and task type), each with two levels (no planning and with planning; descriptive and narrative). Participants were 102 (51 females and 51 males) intermediate level Preparatory School university students at an English-medium university in Turkey. The 51 dyads performed oral descriptive and narrative tasks under no planning and with planning conditions. The oral production of the participants were analyzed using two major measures: lexical complexity, and lexical accuracy. Lexical complexity was measured by word length in syllables and by lexical richness/variation with sub-measures of type-token ratio, lexical word range, grammatical word range, lexical-to-grammatical ratio and lexical density. Lexical accuracy was measured by the number of error-free clauses. The results revealed that lexical use is predominantly determined by task type rather than planning time. Narrative tasks elicited more complex and richer vocabulary than descriptive tasks. Availability of planning time appeared to positively influence the accuracy of lexis used, but at the cost of lower degree of richness/variation. The results also indicated that a focus on lexis could be induced through task design, which fosters various aspects of L2 lexical use.

   Keywords: Lexical accuracy, lexical complexity, lexical richness/variation, planning time, task type

İkinci Dil Sözlü Performansta Planlama Zamanı ve Görev Türünün Sözcük Kullanımına Etkisi

ÖZ

   İşlevsel yeterliliğe sahip bir sözvarlığı oluşturmak ikinci dil öğrenenler için zorlu bir görevdir. Özellikle, gerçek iletişimde üretken kullanım için sözvarlığının yeterli bir bölümünün kolayca erişilebilir ve geri çağrılabilir olması gerekmektedir. Bu çalışma, planlama zamanının varlığı ve görev türünün ikinci dil öğrenenlerin sözlü performansta sözcüksel üretimi üzerindeki olası etkilerini araştırmıştır. Her biri iki seviyeli (planlamasız ve planlamalı; betimsel ve öyküleyici) iki bağımsız değişkenin (planlama zamanı ve görev türü) olduğu 2x2'lik bir deneysel tasarım kullanılmıştır. Katılımcılar, eğitim dili İngilizce olan Türkiye'deki bir üniversitenin Hazırlık Okulu'nda öğrenim gören orta düzey dil yeterliğine sahip 102 (51 kadın ve 51 erkek) öğrenciden oluşmuştur. Ellibir (51) çift planlamasız ve planlamalı koşullarıyla sözlü betimsel ve öyküleyici görevleri gerçekleştirmiştir. Katılımcıların sözlü üretimleri iki ana ölçü kullanılarak çözümlenmiştir: sözcüksel karmaşıklık ve sözcüksel doğruluk. Sözcüksel karmaşıklık sözcüklerin içerdiği hece sayısı ve sözcüksel zenginlik/değişkenlik ölçütleri kullanılarak ölçülmüştür. Sözcüksel zenginlik/değişkenlik, alt-ölçütleri olan tür-belirteç oranı, içeriksel sözcük aralığı, dilbilgisel sözcük aralığı, içeriksel sözcük-dilbilgisel sözcük oranı ve sözcük yoğunluğu ile ölçülürken, sözcüksel doğruluk hatasız tümcelerin sayısıyla ölçülmüştür. Sonuçlar, sözcüksel kullanımın planlama zamanından ziyade ağırlıklı olarak görev türü tarafından belirlendiğini ortaya koymuştur. Öyküleme gerektiren görevler betimleme gerektiren görevlerden daha karmaşık ve daha zengin sözcük kullanımına yol açmıştır. Planlama zamanının varlığı kullanılan sözcüklerin doğruluğunu olumlu yönde etkilediği görülmüştür ancak bu daha düşük derecede sözcüksel zenginlik ve çeşitlilik pahasına gerçekleşmiştir. Sonuçlar ayrıca ikinci dil sözcük kullanımının çeşitli yönlerini besleyen görev tasarımı yoluyla sözvarlığına odaklanmanın sağlanabileceğini göstermiştir.

   Anahtar kelimeler: Görev türü, planlama zamanı, sözcüksel doğruluk, sözcüksel karmaşıklık, sözcüksel zenginlik/değişkenlik

1 | INTRODUCTION

Lexis and grammar are usually two challenging areas for L2 learners. Competence in both is needed for effective communication. Beginners, though, may depend more on simple and frequent vocabulary than grammar. For example, the utterance 'I book' produced by someone pointing at the bookshelf filled with books may help to achieve some degree of communication but it could still be interpreted in many different ways including: 'I want a book', 'I want that book', 'I've read that book', 'I know that book', 'I want to borrow that book', 'I want to see/look at that book', and so on. As a response to the question 'Which book?', the language user may not be able to elude 'specificity', which can be achieved through grammar, and feel the need to say something like 'the one with the red cover in the left corner'. In communication, lexis and grammar are complementary to each other.

In spoken discourse, the degree of reliance on lexis or grammar is relative to different factors such as the L2 learner's language competence and contextual clues or shared knowledge. Tourists not speaking the language they are visiting usually take dictionaries or phrase books with them. They demonstrate 'over-reliance' on lexis. Their language may be referred to as 'survival language'. On other occasions, what regulates reliance on lexis or grammar is the extent of shared knowledge. As Widdowson (1990) illustrates, when a surgeon utters the word 'scalpel!' on the operating theatre, s/he will be given the right tool without having to produce a grammatically well-formed request like 'Can I have a scalpel please?' because of the shared contextual knowledge. In this respect, lexis and grammar can be placed on a continuum regulated by context. Along this continuum, roughly between lexis and grammar, 'lexico-grammatical units' (Widdowson, 1990) exist. They have also been labelled as 'lexicalised sentence stems' (Pawley & Syder, 1983) and 'lexical phrases' (Nattinger & DeCarrico, 1992). Research has shown that the use of lexical phrases improves the L2 learner's fluency (Derwing, 2017; Foster, 2020; Hobbs, 2005; Wood, 2001) and achieving communicative goals by means of such phrases results in self-confidence. Therefore, a good stock of vocabulary, whether it be single words, phrases or lexical phrases, has the potential to aid communication in the target language.

A major question then is how L2 learners can improve their vocabulary. Before tackling this question, it is useful to distinguish between receptive and productive vocabulary. These two types of vocabulary are interrelated with receptive (i.e., listening and reading) and productive skills (i.e., speaking and writing), respectively (Nation, 2001). "Receptive vocabulary use involves perceiving the form of a word while listening or reading and retrieving its meaning" whereas "productive vocabulary use involves wanting to express a meaning through speaking or writing and retrieving and producing the appropriate spoken or written form (Nation, 2001, pp. 24-25). Others have used a similar distinction – active/passive vocabulary (Meara, 1990; Corson, 1995). However, Meara (1990) sees the active-passive distinction in terms of different types of word association whereas Corson (1995) views it from the perspective of use. Though such a distinction has been problematized in the related literature (e.g. Melka Teichroew, 1982; Meara, 1997), it has informed particularly the development of vocabulary tests such as *Vocabulary Levels Test* (Schmitt et al. 2001; Webb, Sasao & Ballance, 2017) and *Yes/No Test* used for placement purposes (Meara & Miralpeix, 2017), and *word frequency* to objectively measure lexical sophistication in oral or written output (Crossley, Salsbury, McNamara & Jarvis, 2011; Laufer & Nation, 1995; Read, 2000). Schmitt (2010) argues that "[t]his dichotomy has great ecological validity, as virtually every language teacher will have experience of learners understanding lexical items when listening or reading, but not being able to produce those items in their speech or writing (p. 80)." This assertion also implies that productive use of vocabulary is more challenging for learners.

Interestingly, Webb (2009) found that productive learning facilitates both receptive and productive knowledge of vocabulary. Based on the findings of his study, he suggests that productive learning of vocabulary might be a more effective method. More recently, Uchihara & Clenton (2020) investigated the relationship between vocabulary size and second language speaking ability. They discovered that possessing a large vocabulary does not automatically lend itself to sophisticated lexical production in speech. As "… productive vocabulary use is moderated by the individual" (Uchihara & Clenton, 2020, p. 543), failure to produce lexically rich texts may not always be due to lack of vocabulary knowledge but rather to factors like lack of motivation and willingness to respond (Nation & Webb, 2011) and avoidance strategies (Skehan, 2009b). In the present study, considering the intricate nature of productive lexical use, it is hypothesized that engaging in actual language use in oral communication can help L2 learners develop their productive use of lexis. This is the kind of engagement with

meaningful language use channeled into lexical performance that forms the motivation for the study. The major research gap that the current study attempted to address is the absence of the lexical dimension of task performance. Skehan (2009a) reports that "[a] major area of omission concerns the lexical aspects of task performance" and that studies published in the past two decades have predominantly used "a restricted set of performance measures", namely, complexity, accuracy and fluency (CAF) (p. 107). Despite limited attempts such as the use of *lexical range* (Ortega, 1999), *type-token ratio* (Robinson, 2001), "in the main the lexical area has not been well served" (Skehan, 2009a, p. 107). Considering studies that involved the manipulation of task features (i.e., planning time and/or task type) in the last ten years or so, one can justifiably claim that Skehan's (2009a) assertion still holds as lexical measures employed are in scarcity alongside CAF (not necessarily all three aspects together) and mostly concerned with written (e.g., lexical complexity in EFL students' argumentative writing (Ong & Zhang, 2010); L2 writing lexical complexity (Johnson, Mercado & Acevedo, 2012; lexical complexity in collaborative L2 writing (Kang & Lee, 2019); lexical complexity in L2 writing as influenced by strategic planning and task structure (Tabari, 2020); lexical variety in L2 descriptive writing (Tabari, 2016)) rather than oral task performance (e.g., lexical diversity in native speakers' task performance (Foster & Tavakoli, 2009); lexical diversity as a sub-dimension of linguistic complexity in communicative adequacy (Revesz, Ekiert & Torgersen, 2016). Comparative studies concerned with both written and oral performances that use lexical measures are even rarer (e.g., Yu, 2009). In a more recent study Bui (2019) states that while the use of performance measures such as fluency, accuracy and complexity "is becoming a standard practice, lexical complexity as a distinctive area has received less attention in the task-based language teaching (TBLT) literature" (p. 1). In Bui's (2019) study, considered, in this respect, one of the recent exceptions involving several aspects of lexical use, lexical complexity is operationalized in three dimensions: lexical diversity, lexical density and lexical sophistication. Clearly, to date lexical measures have been overlooked in the relevant literature despite Skehan's (2009b) call for such action: "[It is] vital to incorporate some measure of lexis into task performance" (p. 512). Therefore, the present study aimed to deploy a variety of lexical measures to portray a fuller picture of lexical production in L2 oral performance.

THEORETICAL BACKGROUND

Two major theoretical perspectives have been advanced to explain second language acquisition (SLA), namely linguistic and cognitive approaches. Linguistic theorists claim that there is a language-specific module in the mind which manifests language acquisition. Linguistic theorists, also referred to as Universal Grammar (UG) theorists, have dwelled on linguistic competence, that is, the linguistic system underlying L2 grammars and their constructions. On the other hand, cognitive theorists do not view language as separate from other aspects of cognition. The mind is capable of processing all kinds of information, including linguistic information. They have been more concerned with knowledge (i.e., competence) and actual use (i.e., performance). The theoretical framework of the current study lies with the *Information Processing* view (Kahneman, 1973), which stems from the cognitive approach. According to this theory, human learning is not dependent on simply responding to stimuli but processing the input. In this view, language learning is seen as a complex cognitive skill. While the linguistic theorists referred to the mind using metaphors such as 'language-specific module' or 'language acquisition device' (LAD), cognitivists adopted the 'limited-capacity processor' metaphor. By analogy to computers, the mind works like a processor with limited capacity. As applied to L2 learning, L2 learners have limited attentional resources (Schmidt, 1995). In other words, there is a limit to what they can attend to at a given time. The two extensions of this theoretical position are the *Limited Attentional Capacity Model* (Skehan, 1998) and the *Cognition Hypothesis* (Robinson, 2001, 2003). The Limited Attentional Capacity Model proposes that the three dimensions of output quality – complexity, accuracy, fluency (CAF) – are in competition for attention and that there are trade-off effects, that is, learners achieve an increase in one or more at the cost of a decrease in another. While Skehan (1998) predicts reduced CAF as a result of increased task complexity, Robinson (2001, 2003, 2005) predicts enhanced complexity and accuracy, but reduced fluency. Although the two cognitive positions make similar predictions, they offer different theoretical explanations (for a more detailed comparative review, see Ong & Zhang, 2010). Subscribing to the Limited Attentional Capacity Model (Skehan, 1998), in order to increase the so-called 'limited attentional capacity', the L2 learner needs to free up some attentional resources. In doing so, it is hypothesized that practice, in the sense of actual language use, plays an important role. Practice can lead to L2 acquisition through *automaticity* and *restructuring* of the cognitive processes built in communicative tasks (e.g., DeKeyser, 2001; McLaughlin, 1990; for an extensive overview on the concepts, see Segalowitz, 2003). As more language

becomes automatic, the processor can attend to other new items in the input. Once noticed and taken in (Schmidt, 1990, 1992, 1995), the new items are likely to cause some degree of restructuring in the L2 learner's interlanguage. Once the restructuring is confirmed and reconfirmed through language use on many encounters it leads to further automaticity. The presence or absence of opportunities to use the language may account for some variability in learner language.

It follows then that automaticity is the ultimate goal in L2 learning and teaching. L2 learners are expected to reach a proficiency level where they can use language rather effortlessly, not having to pay attention to everything they want to say in a particular context. The process view of lexis, which the current study adopts, involves contextual manifestations of lexis to pave the way to automaticity. In this view, cognitive processes such as noticing, intake, restructuring and automaticity are to be fostered. Ultimately, the learning of lexis would take place through using lexis in discourse wherein those cognitive processes operate. To put it in perspective, the present study investigates the effects of pre-task planning and task type on lexical use in spoken discourse from an information processing viewpoint.

The regulation of the construct 'planning' has been the focus of a number of studies. One of the earliest studies compared *planned discourse* to *unplanned discourse* (Ochs, 1979). Various forms of planning have been investigated so far: micro-planning versus macro-planning (co-planning) (Crookes, 1989); *on-line planning* (Yuan & Ellis, 2003); and *pre-planning* or *pre-task planning* (Crookes, 1989; Ellis, 1987; Foster & Skehan, 1996, 1999; Wigglesworth, 1997; Mehnert, 1998; Ortega, 1999). Pre-task planning operationalized in these studies refers specifically to 'strategic planning' where the learner is given time to plan the content and language to use prior to the actual task performance (Ellis, 2005). As far as the length of pre-task planning is concerned, most studies allowed 10 minutes prior to the task (e.g., Crookes, 1989; Foster & Skehan, 1996, 1999; Ortega, 1999). However, different lengths of pre-task planning time (i.e., 1 minute, 5 minutes, 10 minutes) were also investigated (Mehnert, 1998). The general findings regarding planning time have revealed gains in complexity and fluency, but mixed results for accuracy.

The regulation of 'task type', on the other hand, has appeared fruitful in terms of language production. Many different task types have been examined: concrete/immediate tasks versus abstract/remote tasks (Foster & Skehan, 1996; Skehan & Foster, 1997); convergent versus divergent tasks (Duff, 1986; Pica et al. 1993); story-retelling (Ortega, 1999). The general findings with respect to task type show that concrete tasks (as opposed to abstract tasks) tend to reduce the information processing load, therefore they result in increased accuracy and fluency; however, the evidence for fluency is mixed. Divergent tasks (as opposed to convergent tasks) lead to more complex language output. Story-retelling induces increased fluency and linguistic complexity.

Thanks to their potential benefits in L2 acquisition, pre-task planning time and task type are viable constructs whereby spoken output of L2 learners can be wielded. Specifically, the current study looked into how the regulation of pre-task planning time and task type could generate manifestations of lexical use in oral performance. Such an investigation could be considered an attempt to depict one 'neglected' aspect of oral task performance – lexical use – through a number of lexical measures. The main research question that the study aimed to address was: Can a focus on lexis be induced through the regulation of task features – pre-task planning and task type? It was hypothesized that pre-task planning and task type would lead to more complex and more accurate lexical use in oral production. Lexical complexity was measured by syllabic range (i.e. monosyllabic word range, disyllabic word range, polysyllabic word range) and lexical variation/richness (i.e., type-token ratio, lexical word range, grammatical word range, lexical-to-grammatical ratio, lexical density); and lexical accuracy was measured by the number of clauses with lexical errors. The specific hypotheses are as follows:

Hypothesis 1: Monosyllabic word range will be wider in planned than unplanned conditions, as well as in narratives than descriptives.

Hypothesis 2: Disyllabic word range will be wider in planned than unplanned conditions, as well as in narratives than descriptives.

Hypothesis 3: Polysyllabic word range will be wider in planned than unplanned conditions, as well as in narratives than descriptives.

Hypothesis 4: Type-token ratio will be greater in planned than unplanned conditions, as well as in narratives than descriptives.

Hypothesis 5: Lexical word range will be wider in planned and unplanned conditions, as well as in narratives than descriptives.

Hypothesis 6: Grammatical word range will be wider in planned than unplanned conditions, as well as in descriptives than narratives.

Hypothesis 7: Lexical to grammatical ratio will be higher in planned than unplanned conditions, as well as in narratives than descriptives.

Hypothesis 8: Lexical density will be higher in planned than unplanned conditions, as well as in narratives than descriptives.

Hypothesis 9: Lexical accuracy (measured by a lower percentage of error-free clauses) will be greater in planned than unplanned conditions, as well as in narratives than descriptives.

The hypotheses are concerned with mainly two aspects of lexical use: *lexical complexity* (syllabic range: Hypotheses 1-3) and (lexical richness/variation: Hypotheses 4-8), and *lexical accuracy* (Hypothesis 9).

2 | METHOD

RESEARCH DESIGN AND DATA COLLECTION

The study employed an experimental design. There were two independent variables: pre-task planning time and task type. Pre-task planning time was operationalized in two conditions, i.e., no planning (no planning time provided prior to the task) and with planning (10 minutes planning time provided prior to the task). Task type was operationalized in two: descriptive and narrative. The descriptive task, based on the description and sorting out of a series of pictures, can be described as dialogic whereas the narrative task, based on telling a story from a set of sequenced pictures, can be described as monologic. Both task types consisted of two parallel tasks (i.e. two parallel descriptive tasks and two parallel narrative tasks) which had been piloted tested prior to the experiment. On the descriptive task, the pair of participants is supposed to interact with each other while describing pictures, and therefore produce a dialogue. The participants need to put the pictures in the right order by asking and answering questions, agreeing or disagreeing, doing confirmation checks, and so on. On the narrative task, though there is a pair (i.e., the speaker and the listener) only the speaker is supposed to tell the story. It is, therefore, a non-interactive monologue. The presence of a listener is to authenticate the task.

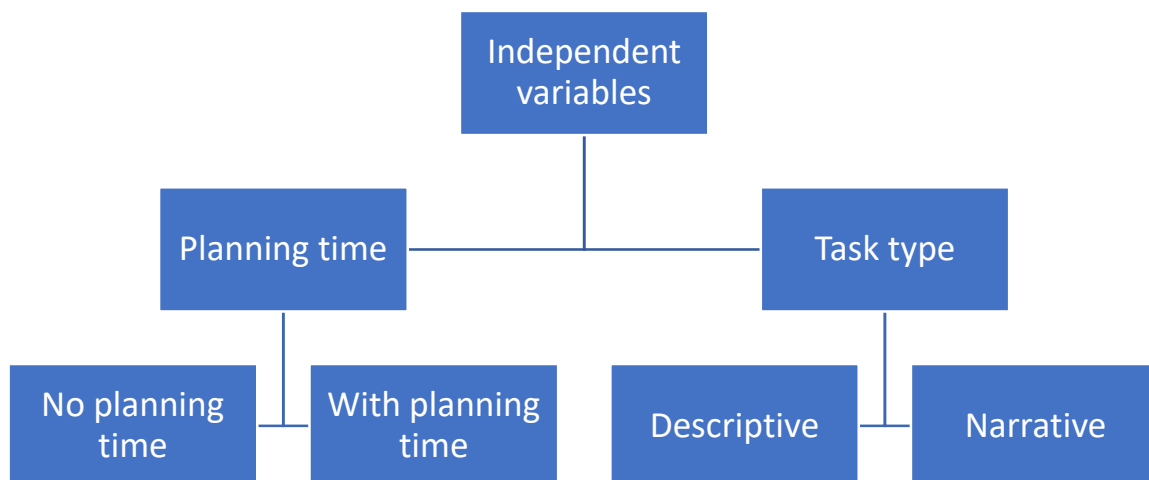The research design is illustrated in Figure 1 below:

Figure 1. *Independent variables in the research design*

The 2-by-2 (2x2) experiment contained four experimental groups: -Descriptive, +Descriptive, -Narrative and +Narrative. Minus (-) represents no planning time while plus (+) represents with planning time conditions. Table 1 below outlines the experimental groups in the study:

Table 1. Experimental Groups: Planning by Task Type

	Descriptive	Narrative	Total
-Planning time	24 dyads	27 dyads	51 dyads
+Planning time	27 dyads	24 dyads	51 dyads
Total	51 dyads	51 dyads	

In -Descriptive and +Descriptive conditions, 24 and 27 dyads participated, respectively. In -Narrative and +Narrative conditions, 27 and 24 dyads took part, respectively. A total of 51 dyads participated in each of the planning time conditions (i.e., no planning and with planning).

PARTICIPANTS

The participants were a total of 102 intermediate level university students studying at the Preparatory School of a well-established English-medium university in Turkey. In terms of gender, there were equal numbers of males (N=51) and females (N=51). The average age was 18.

LEXICAL MEASURES AND RELIABILITY OF CODING

Two major lexical measures were used in the study: *lexical complexity* and *lexical accuracy*. In a review article, Suzuki (2017) reviews 40 studies on pre-task planning and reports that less than half of those studies used a lexical complexity measure and that it was generally operationalized as "the variety of word types available in the spoken production" (p. 21). Similarly, Ellis (2009) states as a result of his literature review that "[l]exical complexity was measured by means of type-token ratio and the number of different word types" (p. 495). In the current study, lexical complexity involved a variety of sub-measures, namely, type-token ratio, lexical word range, grammatical word range, lexical-to-grammatical ratio, and lexical density. Over one third of the data were coded by the researcher and a native-speaker instructor of English, who had been trained for that purpose. Reliability scores of codings are reported below as applicable.

Syllabic range, a new measure operationalized in this research study, was defined as the range of syllables in the participants' oral output. To date, no research concerned with 'pre-task planning' has used such a measure of lexical complexity. It was hypothesized that syllabic range was associated with phonological complexity. That is, the greater number of syllables a word has, the more phonologically complex it is. Words composed of multiple syllables (and indeed in English "… a vast majority of words are multi-syllabic" (Hamada, 2017, p. 1101)) were reasoned to be phonologically more complex in terms of processing. Studies in word-formation have drawn a parallel between the number of affixes in a word and its complexity (Marslen-Wilson et al., 1994). For instance, *un+able* and *un+ambigu+ous+ness* are complex words, the latter being more complex but less frequent while the former being less complex but more frequent (Nation, 2001, pp. 320-321). The examples refer to morphological complexity; however, the focus of the study is on phonological complexity, thus syllables, rather than morphemes, were counted. Phonological complexity is associated with word length, but not necessarily with the number of morphemes. Levelt, Roelofs & Meyer (1999) proposed that spoken word production is a complex and extremely fast process which entails processing at multiple levels: "After a first stage of *conceptual preparation*, word generation proceeds through *lexical selection*, *morphological and phonological encoding*, *phonetic encoding*, and *articulation* itself [my emphasis]" (p. 1). In this theory, after transition from conceptual/syntactic domain to phonological/articulatory domain, phonological encoding draws on syllabification (i.e., from phonological word to phonological syllables) which then leads to phonetic encoding that involves the activation of phonetic syllable scores in the syllabary by phonological syllables (Levelt et al. 1999). While some studies found that word length was not a significant variable in vocabulary learning (e.g., Rodgers, 1969), others argued otherwise (e.g., Phillips, 1981; Stock, 1976). Though linking word length to word difficulty may be problematic (Laufer, 1997), Coles (1982) found that word length had a strong influence on the success of non-native speakers of English in

recognizing written forms of English. Singleton (1999, p. 141) suggests two methodological problems that account for the diverse evidence of word length: "(1) word length can be variously calculated – in phonemes, graphemes, syllables or morphemes – and (2) it is difficult to disentangle length from other variables – notably morphological complexity." He further argues, in conformity to Levelt et al.'s (1999) speech model, that word-formation rules operate in correlation with phonological rules (Singleton, 2000). More recent work appears to be in favour of word-length measured in number of syllables. It has shown that "… the number of syllables positively correlated with word recognition time, suggesting that more syllables take longer to recognize" (Yap & Baloto, 2009; Perry et al., 2010 cited in Hamada, 2017). More specifically, regarding phonological processing Goldrick (2014) found that the syllabic dimension of phonological structure, along with the segmental and metrical dimensions, "are independently represented and retrieved" (p. 228). Consequently, it can be claimed that theory of speech production and relevant research evidence amply justify the use of syllabic range as an indicator of lexical complexity in oral performance.

All words were decomposed into their component syllables. A coder (a non-native instructor of English) was trained to divide the words into syllables. On the same one third of the data coded by the coder and the researcher, the intercoder reliability was 98%. The high level of reliability was due to using the same reference – Cambridge International Dictionary of English (1995) to look up most of the words for their component syllables, except perhaps those one-syllable words such as 'but', 'and', 'she'. The words were filed into three folders: monosyllabic (words composed of one syllable), disyllabic (words composed of two syllables) and polysyllabic (words composed of three or more syllables) words.

Type-token ratio, as a measure of lexical range, was calculated by dividing the number of different words (i.e., types) by the total number of words (i.e., tokens), following Ortega (1999), Ure (1971), and others.

Lexical word range was calculated applying the formula of types of lexical words (i.e., content words) divided by the total number of lexical words.

Grammatical word range was calculated by dividing the types of grammatical words (i.e. grammar words) by the total number of grammatical words.

Lexical-to-grammatical ratio was calculated by dividing the number of lexical words by the number of grammatical words. All closed-class functional words such as prepositions, conjunctions, articles, demonstratives, numerals, and the negation particle ('no') were counted as grammatical, and content words, i.e., all nouns, verbs, adjectives, and adverbs, as lexical (L. Ortega, personal communication, July 7, 1997). Those words not fitting either of these categories were grouped under the category of 'Other', and were excluded from the counts.

Lexical density was defined as the percentage of content words in the oral performance and calculated by dividing the number lexical words by the number of tokens and multiplying the result by one hundred.

Lexical accuracy was measured by the percentage of lexical choice errors and calculated following the formula of the number of lexical choice errors multiplied by one hundred and divided by the total number of clauses. Lexical choice errors were defined as "errors in lexical choice affecting words, phrases, or collocations" (Mehnert, 1998, p. 91). Repeated lexical choice errors were counted only once. Intercoder reliability for lexical choice errors was established at 95%.

DATA ANALYSIS

The lexical measures referred to in the hypotheses can be categorized as follows:

Table 2. Lexical Measures

Lexical complexity		Lexical accuracy
Syllabic word range	Lexical richness/variation	Number of clauses
Monosyllabic word range	Type-token ratio	with lexical errors
Disyllabic word range	Lexical word range	
Polysyllabic word range	Grammatical word range	
	Lexical-to-grammatical ratio	
	Lexical density	

As shown in Table 2 above, there were two major lexical measures – lexical complexity and lexical accuracy. Lexical complexity was operationalized in two sub-measures: syllabic word range and lexical richness/variation. Each category involved various aspects of lexical use. A multiple-measure approach employed in the study aimed to investigate the effects of plannedness and task type on lexical use in L2 oral performance.

The recorded speech was first transcribed and then coded for the measures used. Later the data were quantified using a specially designed computer program which was implemented in C++ using Microsoft Visual Studio 6.0. The computer program basically computed the occurrence of certain aspects of language use previously coded (e.g., grammar word vs. lexical/content words) and subjected the total counts to a set of formulas embedded in the program. This procedure was repeated for both planning conditions and task types. For instance, 'lexical density' is the ratio of lexical items to the total number of words in a text. To calculate lexical density lexical words need to be identified and counted. Similar word counts and calculations were performed on all the measures presented in Table 2 above. The resulting numerical data were then analyzed using the *Statistical Package for the Social Sciences (SPSS)* software to see whether the hypotheses were confirmed. For this purpose, two-way ANOVA was performed for each dependent variable with factors (i.e., pre-task planning time and task type) to determine the possible effect of planning, task type as well as the interaction effect.

RESEARCH ETHICS

The participants volunteered to take part in the study and their written informed consent was obtained prior to the implementation. The dialogues and monologues produced under the designated conditions during the experiment were recorded with the permission of the participants. Confidentiality and anonymity were ensured while collecting, storing, analyzing, and reporting the data.

3 | FINDINGS

In this section, the statistical results of the study for each measure are presented in reference to the related hypothesis/hypotheses. The hypotheses are grouped together as applicable under the relevant measures for coherence.

LEXICAL COMPLEXITY: SYLLABIC RANGE

Lexical complexity was measured in monosyllabic, disyllabic and polysyllabic word ranges. The three related hypotheses were collapsed into one as follows:

Hypothesis 1-3: Monosyllabic, disyllabic and polysyllabic word ranges will be wider in planned than unplanned conditions, as well as in narratives than descriptives.

Tables 3-5 present the results on the effects of planning and task type on lexical complexity in syllable ranges:

Table 3. Monosyllabic Word Range

	Descriptive			Narrative			Total		
	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N
-Planning	.345	.078	24	.465	.074	27	.408	.096	51
+Planning	.338	.102	27	.439	.070	24	.386	.101	51
Total	.342	.091	51	.453	.077	51	.398	.099	102

(Planning F = 1.01, p = .317; Task type F = 45.38, p = .000; Interaction F = .362, p = .549)

Table 4. Disyllabic Word Range

	Descriptive			Narrative			Total		
	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N
-Planning	.485	.125	24	.800	.091	27	.652	.191	51
+Planning	.443	.125	27	.762	.097	24	.593	.196	51
Total	.463	.125	51	.782	.095	51	.623	.195	102

(Planning F = 3.36, p = .070; Task type F = 209.17, p = .000; Interaction F = .010, p = .922)

Table 5. Polysyllabic Word Range

	Descriptive			Narrative			Total		
	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N
-Planning	.699	.255	24	.849	.171	27	.778	.225	51
+Planning	.659	.302	27	.745	.154	24	.700	.246	51
Total	.678	.279	51	.800	.170	51	.739	.238	102

(Planning F = 2.49, p = .118; Task type F = 6.68, p = .011; Interaction F = .501, p = .481)

Concerning the effect of planning, there were no statistically significant differences among syllabic ranges as computed for planned and unplanned conditions, monosyllabic word range (p=.317), disyllabic word range (p=.070), and polysyllabic word range (p=.118), respectively. Interestingly though, there were gains in no planning condition rather than planning condition. With respect to task type, there were statistically significant differences for all syllabic ranges – monosyllabic word range (p=.000), disyllabic word range (p=.000), and polysyllabic word range (p=.011), respectively. Therefore, each of Hypotheses 1-3 was partly confirmed.

LEXICAL COMPLEXITY: LEXICAL VARIATION/RICHNESS

Lexical richness was measured by the following sub-measures: type-token ratio, lexical word range, grammatical word range, lexical-to-grammatical ratio, lexical density. The two-way ANOVA results pertaining to each sub-measure are presented in Tables 6-10 below:

Table 6. Type-token Ratio

	Descriptive			Narrative			Total		
	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N
-Planning	.325	.071	24	.470	.064	27	.402	.099	51
+Planning	.339	.097	27	.456	.071	24	.394	.103	51
Total	.333	.085	51	.463	.067	51	.398	.101	102

(Planning F = .000, p = .989; Task type F = 72.78, p = .000; Interaction F = .822, p = .367)

Table 7. Lexical Word Range

	Descriptive			Narrative			Total		
	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N
-Planning	.467	.098	24	.685	.060	27	.582	.136	51
+Planning	.447	.113	27	.678	.075	24	.556	.151	51
Total	.456	.106	51	.682	.067	51	.569	.143	102

(Planning F = .593, p = .443; Task type F = 161.39, p = .000; Interaction F = .123, p = .727)

Table 8. Grammatical Word Range

	Descriptive			Narrative			Total		
	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N
-Planning	.284	.087	24	.359	.099	27	.324	.100	51
+Planning	.305	.098	27	.326	.074	24	.315	.087	51
Total	.295	.092	51	.344	.089	51	.320	.093	102

(Planning F = .112, p = .739; Task type F = 7.18, p = .009; Interaction F = 2.22, p = .139)

Table 9. Lexical-to-Grammatical Word Ratio

	Descriptive			Narrative			Total		
	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N
-Planning	.658	.113	24	.751	.083	27	.707	.108	51
+Planning	.699	.136	27	.824	.101	24	.758	.135	51
Total	.680	.126	51	.785	.098	51	.731	.124	102

(Planning F = 6.82, p = .010; Task type F = 24.71, p = .000; Interaction F = .540, p = .464)

Table 10. Lexical Density (%)

	Descriptive			Narrative			Total		
	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N
-Planning	37.56	5.40	24	41.65	2.82	27	39.73	4.67	51
+Planning	39.60	4.77	27	43.78	3.04	24	41.57	4.53	51
Total	38.64	5.13	51	42.65	3.09	51	40.65	4.67	102

(Planning F = 6.44, p = .013; Task type F = 25.30, p = .000; Interaction F = .003, p = .954)

The resulting planning effect yielded statistically significant results concerning lexical-to-grammatical ratio and lexical density – p=.010 (F=6.82) and p=.013 (F=6.44), respectively. However, no statistically significant results were found as measured in type-token ratio (F= .000, p=.989), lexical word range (F=.593, p=.443) and grammatical word range (F=.112, p=.739), respectively. In regard to the task type effect, statistically significant results were obtained on all the sub-measures of lexical richness – type-token ratio (F=72.78, p= .000), lexical word range (F=161.39, p= .000), grammatical word range (F=7.18, p= .009), lexical-to-grammatical ratio (F=24.71, p= .000), and lexical density (F=25.30, p= .000), respectively. There are no interaction effects in any of the measures reported above (p > .05). Therefore, hypotheses 7 and 8 received strong confirmation while hypotheses 4-6 were partly confirmed (i.e., only the task type effect appeared statistically significant).

LEXICAL ACCURACY

Lexical accuracy was measured by the total number of clauses with lexical errors. Table 11 below displays the results by planning condition and task type:

Table 11. Lexical Accuracy

	Descriptive			Narrative			Total		
	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N
-Planning	25.13	9.61	24	25.56	12.93	27	25.36	11.38	51
+Planning	12.94	10.81	27	19.88	8.80	24	16.21	10.42	51
Total	18.68	11.87	51	22.89	11.43	51	20.78	11.79	102

(Planning F = 17.60, p = .000; Task type F = 2.99, p = .087; Interaction F = 2.34, p = .129)

The results indicate that planning time results in a lower percentage of lexical choice errors, achieving a level of significance in which p = .01 (F = 17.60). The mean scores for planned tasks (regardless of type) are significantly lower than those for unplanned tasks (12.94 compared to 25.13 on descriptives, and 19.88 compared to 25.56, respectively). The total mean scores for no planning and with planning conditions are 25.36 and 16.21, respectively. There is, however, no significant effect for task type (F = 2.99, p = .05). There are no interaction effects (F = 2.34, p > .05). Thus, for the lexical accuracy measure, these results provide strong confirmation for one component of Hypothesis 9 concerned with planning, but no confirmation for the other, which is concerned with task type.

4 | DISCUSSION & CONCLUSION

The overall results indicated that planning time and task type are manipulable features of oral task performance. Through the regulation of these two constructs, a focus on lexical use may be induced, leading to oral production of varying lexical quality – lexical complexity (operationalized in syllabic range and lexical richness/variation), and lexical accuracy. More specifically, the results showed that the availability of planning time does not lead to greater lexical complexity in terms of syllabic range; however, it significantly increases lexical variation/richness in terms of lexical-to-grammatical ratio and lexical density (i.e., increased use of content/schematic vocabulary), and lexical accuracy as measured by lower number of clauses including lexical errors. As most previous related research used 'general' performance measures (Skehan, 2009b) rather than independent lexical measures, it is difficult to make fully accurate comparisons. For instance, the use of the general measure of accuracy includes lexical accuracy. Another source of difficulty is that lexical measures employed are in scarcity. In addition, Ellis (2009) expressed his concern by pointing out that "operational definitions have varied considerably" and that "[t]hese differences in the operational definitions are problematic as they make comparisons across studies difficult in some instances" (p. 475). Nevertheless, reference to previous research will be made where applicable to at least indicate the tendencies in which lexical use occurs. More direct comparisons will, however, be attempted regarding the previous few studies that employed similar types of lexical measures.

The overall results of previous research for complexity are mixed; however, there is a great amount of evidence that strategic planning results in more complex language (Ellis, 2009). Consistent with such evidence, which used

the three general measures of language production (i.e. complexity (i.e., grammatical complexity), accuracy and fluency), pre-task planning time leads to significant gains in terms of a certain set of lexical complexity measures, namely the two lexical variation/richness measures (i.e., lexical-to-grammatical ratio and lexical density), but not in terms of type-token ratio, which is a common measure of lexical complexity (Ellis, 2009), suggesting that planning time leads to a significantly higher level of content vocabulary use. It can be inferred that learners tend to use planning time to draw on more content words rather than grammar words as a result of schemata activation. This finding is in accord with the results of Bui (2019) and Gilabert (2007), which are among a limited number of planning studies that employed the lexical complexity measure. Bui (2019) reports that "pre-task planning raises lexical density" (p. 21). Similarly, the results of Gilabert's (2007) study indicated that planning led to significantly greater lexical richness, in contrast with earlier studies that found no effect for planning (e.g. Ortega, 1999; Yuan & Ellis, 2003). On the other hand, the availability of time to plan before task performance contributed positively to the degree of correctness of lexical use. From the perspective of the Trade-off Hypothesis (see Skehan, 2009b), an unprecedented trade-off was found within lexis. That is, in terms of lexical use, planning time leads to increased accuracy but lower complexity on several lexical measures, except for lexical variation and density measures. It should be noted here that lower lexical complexity is partially associated with planning time. It appears that greater lexical accuracy occurs at the cost of less varied lexical use as evident in the non-significant results in measures such as type-token ratio, lexical word range and grammatical word range. Interestingly, this trade-off within lexis seems to be in reverse direction to that discovered by Foster & Skehan (1996) and Skehan & Foster (1997) for the general measures of complexity (i.e., grammatical/syntactic complexity) and accuracy (i.e., grammatical/syntactic and lexical). They found that complexity and accuracy are in competition and that complexity is prioritized over accuracy when learners are afforded time to plan. The results can also be interpreted from the perspective of Cognitive Hypothesis (Robinson, 2001, 2003, 2005) to suggest that when L2 learners are given the chance to plan, they tend to focus on accurate as well as complex use of lexis, at least in terms of more varied and denser output. Clearly, more research is needed to verify first whether lexical complexity and accuracy can be mapped on to the general measures of complexity and accuracy, and next whether different sub-measures of lexical complexity and accuracy are equally sensitive and reliable in measuring lexical use, and lastly whether certain aspects of lexical use are more responsive to planning. As urged by previous literature, lexis needs to be a component of measures (Ellis, 2009; Skehan, 2009a, 2009b). Indeed, more studies that employ a variety of lexical measures (including particularly syllabic range used in this study) are needed before any independent component of lexis is comfortably incorporated into the existing repertoire of measures in task-based performance.

Task type, on the other hand, appeared to be more influential on the production of lexis. A similar crucial role of task type in L2 speaking has recently been suggested by Qui & Cheng (2021). However, the possible functions of task types have not been fully investigated (Qui, 2020). The two tasks (descriptives and narratives) were designed to elicit two distinct types of discourse – dialogic and monologic, respectively. Each type of discourse is characterized by a specific type of vocabulary put into use. The data showed that monologic discourse was associated with schematic vocabulary while dialogic discourse was connected to procedural vocabulary. Considering the measures in the present study, task type or discourse type led to significantly greater lexical complexity in terms of syllabic word range at all three levels (i.e., monosyllabic, disyllabic, polysyllabic), and significantly greater lexical variation/richness on all sub-measures (i.e., type-token ratio, lexical word range, grammatical word range, lexical-to-grammatical ratio, lexical density). For lexical accuracy, however, the effect of task type or discourse type did not reach a level of significance. The results are consistent with previous research which demonstrated a link between narrative tasks and higher complexity but lower accuracy and fluency (Skehan, 2009b). However, descriptive tasks, which can be seen as interactive tasks, did not advantage both accuracy and complexity (Skehan, 2009b), but only complexity.

A set of conclusions can be drawn based on the data. One major conclusion is that lexis is influenced more by task type than planning time. Particularly, discourse type as a consequence of task type has a strong effect on the type of vocabulary used. To illustrate, monologic discourse (triggered by narratives) leads to predominantly schematic vocabulary while dialogic discourse (triggered by descriptives) leads to predominantly procedural vocabulary. Schematic vocabulary is concerned with content words whereas procedural vocabulary involves grammar words. The implication here is that different types of vocabulary may be manipulated through the regulation of task type. In this way, a targeted aspect of vocabulary could be elicited, and therefore developed in

learners via task type regulation. This particular finding has great instrumental value for syllabus design as well as coursebook design where a set of tasks are mapped on to a specific type of vocabulary.

Another main conclusion is that lexical complexity, as measured in phonological complexity (word length in syllables), and lexical richness are largely determined by discourse type (stemming from task type) while lexical accuracy is determined to a great extent by planning. It is clear that the type of discourse L2 users engage in on a given task influences the complexity of lexis they put into use. Monologic narratives seem to generate more complex words in terms of number of syllables than the dialogic descriptives. Put another way, narrative tasks lead to lexically more complex (syllabic range) language than descriptive tasks. Likewise, the analysis of the data indicated that lexical richness was heavily influenced by discourse/task type. That is, narrative monologic discourse seems to lead to richer and more varied vocabulary use than the dialogic descriptives. Taking into account the results of lexical-to-grammatical ratio and lexical density, it can be concluded that lexical heaviness increases as a result of monologic discourse as well as planning. As for lexical accuracy, it is improved significantly more by planning than task type. In other words, L2 users tend to produce lexis with greater accuracy when they are afforded time for pre-planning. They would make better choices of words and use vocabulary more appropriately in the given context. This suggests that a focus on lexical complexity and lexical accuracy may be induced by manipulating discourse type and pre-task planning, respectively, and therefore that individual lexical measures may be selectively improved through task design. Obviously, this finding has crucial implications for Task-based Language Teaching (TBLT). In the light of such evidence, informed decisions can be made in selecting task features and conditions in designing TBLT syllabi in line with learning outcomes.

Overall, the general research question as to whether a focus on form can be induced through the regulation of task features (i.e., task type and planning time) was addressed adequately, revealing significant evidence of the relationship of task design and lexical use. The results demonstrated that learners' focus can be directed towards various types and aspects of vocabulary through systematic task design. Not only did the evidence confirmed the rightful call for lexis to be a component of general measures, but also supported the view that more research employing a variety of lexical measures is needed. Further research may specifically focus on the operationalization of between different lexical measures and how they interplay in oral language production. Evidence from such research will inform and consolidate choices made regarding lexical use within the framework of TBLT.

STATEMENTS OF PUBLICATION ETHICS

The author declares that code of ethics for research and publication was closely adhered to. Ethical issues were given utmost importance and were handled with great care. Approval from ethics committee was not provided since the data reported in this research article were collected before 2020.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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Vocal Training Instructors' Assessment about the Opinions of Vocal Training on the Basis of Instructors

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ABSTRACT

After people discovered that sounds may exist in different ways, they included both their own voices and the sounds that exist outside as much as possible in numerous areas of their lives. The sources of the sounds, their formation, the use of sounds for different purposes, the human voices and its types and the use of human voices in musical works have also taken their place among other experiences. With the use of the human voices in musical works to create effective and harmonious products, vocal training has gained even more importance and human voices have started to be trained for different purposes by voice instructors. In this research, the research problem is based on the opinions of instructors who are conducting vocal training courses about the vocal training courses. It is aimed to examine the current situation of the instructors and vocal training courses based on the instructors, and to offer suggestions regarding the detected situations. This research has been organized with a quantitative methodology and the descriptive survey model has been used. Data were collected through a questionnaire created by the researcher. The opinions of the participants were evaluated according to the percentage/frequency values. The important findings, include that 56% of the participants do not find the number of weekly vocal training lesson sufficient, 76% take into account the opinions and wishes of the students in the selection of the musical works to be studied, 88% believe that there is a need for innovations in all dimensions regarding vocal training in music institutions in our country and 58% believe that there is no common terminology regarding vocal training in institutions that provide vocal training in our country.

Keywords: Human voice, vocal training, vocal trainer.

Ses Eğitimi Öğretim Elemanlarının Ses Eğitimi Dersine İlişkin Görüşlerinin Öğretim Elemanı Temelinde İncelenmesi

Öz

İnsanlar seslerin farklı şekillerde var olduğunu ve olabileceğini kavradıktan sonra, hayatlarının birçok alanına hem kendi sesini hem de kendi sesi dışında mevcut olan sesleri mümkün olduğunca dahil etmiştir. Ses kaynakları, sesin oluşumu, seslerin farklı amaçlarla kullanımı, insan sesi ve çeşitleri, insan seslerinin müzik eserlerinde kullanımı da edindiği diğer deneyimler arasında yerini almıştır. İnsan sesinin müzik eserlerinde kullanımının etkili ve ahenkli ürünler oluşturması ile sesin eğitimi daha da fazla önem kazanmış ve ses eğitimcileri tarafından farklı amaçlarla insan sesleri eğitilmeye başlanmıştır. Bu araştırmada, ses eğitimi derslerini yürütmekte olan öğretim elemanlarının ses eğitimi derslerine ilişkin görüşlerinin ne olduğu araştırma probleminden yola çıkılmış, ses eğitimi derslerinin öğretim elemanları temelinde mevcut durumunun incelenmesi, tespit edilen durumlarla ilgili olarak öneriler sunulması amaçlanmıştır. Nicel araştırma türünde olan bu çalışmada betimsel tarama modeli kullanılmış, araştırmacı tarafından oluşturulmuş olan anket aracılığı ile veriler toplanmıştır. Katılımcıların görüşleri yüzde/frekans değerlerine göre değerlendirilmiştir. Katılımcıların, %56'sının haftalık ses eğitimi dersinin sayısını yeterli bulmaması, %76'sının çalışılacak eserlerin seçiminde öğrencilerin görüş ve isteklerini dikkate alması, %88'inin ülkemizdeki müzik kurumlarında verilen ses eğitimine ilişkin tüm boyutlarda yeniliklere ihtiyaç duyulduğunu belirtmesi, %58'inin ülkemizde ses eğitimi verilen kurumlarda ses eğitimine ilişkin ortak terminoloji sağlandığına katılmaması tespit edilen önemli bulgulardan bir kısmıdır.

Anahtar kelimeler: İnsan sesi, ses eğitimi, ses eğitimcisi.

1 | INTRODUCTION

After realizing that they exist in an environment surrounded by sounds, people living in the universe, which can be defined as a 'whole inhabited by the living and the inanimate', have shown interest in the concept, the formation, the diversity and the development of sounds. In these processes, as people got to know and learn about the meaning and purpose of life, the physical characteristics and capacity of themselves and their surroundings, and the concept of sociability in relation to their communication with other people, and the universe that is inhabited by different sounds, they began further research the sounds and the voices. After understanding that voices may exist in different ways in different times and situations, people, who have added, used and adapted both their own voices and the sounds other than their own, as much as possible in many moments of their lives, increasing their level of knowledge about sounds day by day.

People have gathered some impressions based on the sounds they receive from various sources. With these impressions, they started to associate their feelings and thoughts. Using their creativity, they were able to carry the concept of sound towards more communicative, cultural, social, musical and artistic dimensions. After the sound-related knowledge reached to a more useful, understandable and valuable level over time, the concept of sounds and voices became a science, and the scientific fields such as voice physics, voice technology, vocal training and voice utilisation have emerged. According to Töreyin (2008), vocal training is the interaction process applied for goals, with pre-determined principles, methods and plans, in which individuals acquire the behaviors necessary to use their voice in accordance with their anatomical and physiological characteristics while speaking and singing (p.82). The training of human voices, which can be evaluated within the field of music training, can be carried out in two separate processes, such as the collective vocal training and the individual vocal training.

Vocal training practices within higher education institutions are carried out by music schools that have different missions and visions. There are vocal training courses with various purposes and titles in music teaching departments in training faculties, in music departments in fine arts faculties, in music and performing arts faculties, in state conservatories and in private conservatories. Some of the voice-vocal training courses in these schools aim to train and develop professional-level voice utilisation techniques, while some of them aim to teach the basic voice utilisation methods.

It can be said that vocal and singing training instructors have common points regardless of their purpose and institution. Some of them can be summarised as providing adequate development of students' correct use of vocal, teaching them how to protect their vocal health, teaching which repertoire and works can be used for which sounds, and being able to teach the future instructors how to give vocal training. Vocal and singing training instructors who aim to present and provide these processes and many other gains to their students, may apprehend different experiences every year and from every student during the process they teach, and they can take themselves to higher levels professionally with the time they spend teaching.

It can be said that besides the common-similar practice and working responsibilities of vocal and singing instructors, they also differ in terms of the training and working processes that they use. Vocal and singing instructors carry out their courses depending on the educational practices of their faculties or colleges. While carrying out these courses, they comply with the training curriculum and programs sent to their schools by the Council of Higher Education. In some cases, within the scope of the features and functions of the training program, they can also make decisions within the institutions they work for. They can add different courses to their programs or they can carry out different practices while teaching. Apart from these differences, they may also differ in the physical competencies of the building in which they teach, the state of all technological and mechanical hardware and equipment used in music and vocal training, the number of instructors (in terms of productivity of the instructor and the training), the number of students they teach, the status of the vocal training courses they carry out and other courses in the vocal training curriculum, and the support from their institution in terms of academic and cultural development.

Vocal and singing instructors in music training institutions carry out their job by interacting directly in many fields such as students' ability levels-social and communicative characteristics, the regulations on the implementation of the courses and special practices of their schools, the students' achievements and attitudes towards the course, their academic development opportunities offered to voice and voice instructors, the socio-

cultural characteristics of the environment where the institution they work in, other musical fields that directly support vocal and singing training courses and their potential to cooperate with their instructors, measurement-evaluation of the success of vocal and singing training course.

The general working principles of the instructors who carry out the vocal training courses are primarily to help students' vocal development, to be able to adequately train the voices of their students and to continue to develop themselves professionally in these processes. In these processes, starting from the necessity of each training activity to be an evaluation stage, they can evaluate the success of students with points or in some cases verbally according to different variables. In addition, instructors can evaluate the various qualities of the courses, their curricula, their own teaching activities and features, the working processes and opportunities of the institutions at some stages of their work processes, verbally or in writing, from an academic perspective.

RESEARCH QUESTION, AIM AND IMPORTANCE

In this research, vocal education, opera singing education, soloist education in different vocal music genres and chorist training areas were gathered under the main title of vocal training. In the research, the problem of what are the current views of the lecturers who are conducting the vocal training lessons about the vocal training lessons is set out. It is aimed to examine the situation of vocal training lessons on the basis of the instructors and to offer suggestions regarding the detected situations.

This research is considered to be important with regards to contribution to the development of the field of vocal training with the data obtained from the opinions of the vocal training instructors who are continuing their profession in academic environments / in the field, the opportunities for voice instructors/candidates to access up-to-date data on vocal training activities within the scope of research, the presentation of ideas that can be the basis for the career development of voice instructor candidates and to present up-to-date information, findings and suggestions to all studies related to vocal training.

A few studies were examined the topic of vocal trainers' opinions about vocal training. Some of those include the research "Evaluation of vocal training in academic institutions where music training is given in line with expert opinions" by Ayaz and Nayir (2017), and "Examination of the problems encountered in individual vocal training courses in the music training departments of training faculties according to the opinions of instructors and students" by Tonya (2008). There are also studies in which vocal training lessons are examined on more specific topics. In the research titled "The Usability of The Ballads with Piano Accompaniment Arranged For Bass-Baritone (Basso Cantante) in Voice (Music) Education" conducted by Özdemir (2010), the opinions of voice education instructors were obtained by applying a questionnaire. In the research titled "Examining the Methods of Voice Training Being Applied in Traditional Turkish Classical Music" by Altıntaş Özcan (2010), the opinions of vocal education instructors on the problem were collected through a questionnaire.

2 | METHOD

In this study, which is a quantitative research type, descriptive survey model was used. According to Büyüköztürk et al. (2009), descriptive research is the type of research is most widely used in the field of education and researched situation is defined as fully as possible. According to Creswell (2020, p. 481), the survey research design, is a quantitative research design in which data is collected by surveying a sample group or the whole population with a questionnaire or one-to-one interviews in order to explain the attitudes, views, characteristics and behaviours of a population. According to Karasar (2009, p. 77), An object, event or individual that is the subject of the research is defined as it is in its own conditions. In relation to this information, this study aims to determine the opinions of the vocal training instructors working at different universities in Turkey, based on the knowledge and experiences they have gained while continuing their vocal training duties.

PARTICIPANTS

Participants of this study are 50 instructors working at music training departments of universities in Turkey. All participants were selected with the criteria of giving vocal training courses in the music training departments of universities in Turkey, the study was on a voluntary basis. It has been identified that, among the participants: 76% are female and 24% are male, 72% working for 10+ years, 12% working for 7-9 years, 10% working for 1-3 years and 6% working for 4-6 years, 40% work in the faculty of education, 28% work in the state conservatory of western musical arts, 16% work in the faculty of fine arts, 12% work in the state conservatory of traditional Turkish music and 4% work in the faculty of performing arts/faculty of music and performing arts.

DATA COLLECTION PROCESS AND INSTRUMENTS

The data of the study were obtained with the "Survey for Determining Vocal training Instructors' Opinions on Vocal training Courses" prepared by the researcher.

The questionnaire is the method used to obtain planned and standard data from the participants on the research subject (acikogretim.istanbul.edu.tr). Thanks to the questionnaire, which is used to obtain written or verbal information from individuals, information about themselves, their environment or their institution is collected as quantitative and qualitative data (Arıkan, 2018, p. 97).

The questionnaire was created for this research and was used for the first time in this research. The stages of creating the questionnaire, which was used as a data collection tool, are as follows: First of all, the literature on the subject was scanned. After the survey, the main guiding question titles related to the physical and social environment, the training program and its elements, students and the instructor himself, which are thought to be effective in the creation of the survey questions, were determined. Based on these topics, questions were formed. The questions created were examined by three instructors working in the field. After the examinations, the necessary changes were made in line with the opinions and suggestions of the field experts and the content validity phase of the form was completed. The implementation of the developed questionnaire was made to 2 instructors working in the field of vocal training and it was determined that there was no negativity. Structured questions were included in the questionnaire.

The developed scale is in five-point Likert type. According to Tezbaşaran (1997), in the Likert-type scale, the participant grades the question in five categories according to his/her own attitude, with options such as 'I totally agree', 'I agree', 'I somewhat agree', 'I disagree' and 'I totally disagree'. The questionnaire, which was prepared as a Google form, was sent to the participants via the internet and the answered questionnaires were recorded and data were collected.

ANALYSIS OF DATA

In this study, which is structured with a quantitative approach, the data obtained from the questions in the questionnaire are presented in percentage and frequency values through graphical figures. The tendency of the answers of the vocal training instructors, which can be seen in these figures, were examined in a holistic manner and interpreted by evaluating the possibilities of interrelationship between different participant groups.

RESEARCH ETHICS

Zonguldak Bülent Ecevit University's ethical committee approved the data collection procedures of the study and data were collected by following the ethical standards.

3 | FINDINGS

FINDINGS REGARDING THE DEMOGRAPHICAL STUCTURE

It has been identified that, among the participants: 50% work with one student in the class, 26% work with two students in the class and 24% work with three students, 96% of them work with a permanent contract with their institution and 4% of them work without a permanent contract with their institution.

FINDINGS REGARDING THE ANSWERS OF THE QUESTIONNAIRE

Table 1. Opinions of the instructors on the proposition "Recently, I have had many difficulties in maintaining a sufficient instructor-student relationship with my students."

Question		n	%
Recently, I have had many difficulties in maintaining a sufficient instructor-student relationship with my students.	Strongly agree	0	0
	Agree	1	2%
	Undecided	0	0
	Disagree	24	48%
	Strongly disagree	25	50%
	Total	50	100%

As can be seen from Table 1, 50% 'totally disagree' and 48% 'disagree' with the proposition "I have had difficulties in establishing a sufficient instructor-student relationship with my students in recent years". It is remarkable that 98% of the participants have given answers in the same direction to this proposition.

Table 2. Opinions of the instructors on the proposition "I can regularly develop and update my vocal teaching technique and practices by participating in academic studies in order to provide effective information that will facilitate my students' learning"

Question		n	%
I participate in academic studies, and regularly develop and update my voice teaching techniques and practices in order to provide effective knowledge that will facilitate my students' learning.	Strongly agree	19	38%
	Agree	28	56%
	Undecided	3	6%
	Disagree	0	0
	Strongly disagree	0	0
	Total	50	100%

As can be seen from Table 2, 56% of the instructors 'agree' and 38% 'totally agree' with the proposition that they can regularly develop and update vocal teaching techniques and practices by participating in academic studies in order to present effective information that will facilitate their students' learning.

Table 3. Opinions of the instructors on the proposition "I cannot adequately pursue vocal training/technical studies due to my academic/administrative duties or other reasons"

Question		n	%
Due to my academic or administrative duties or due to other reasons, I cannot adequately pursue my own voice teaching job.	Strongly agree	2	4%
	Agree	17	34%
	Undecided	7	14%
	Disagree	17	34%
	Strongly disagree	7	14%
	Total	50	100%

As can be seen from Table 3, it is remarkable that 34% of the instructors 'agree' and 34% "disagree" with the given proposition.

Table 4. Opinions of the instructors on the proposition "the number of weekly vocal training courses is sufficient"

Question		n	%

The number of weekly vocal training courses is sufficient.	Strongly agree	2	4%
	Agree	14	28%
	Undecided	6	12%
	Disagree	18	36%
	Strongly disagree	10	20%
	Total	50	100%

As can be seen from Table 4, it is remarkable that total 32% 'agree' (4% say 'I totally agree') and 56% 'disagree' with the given proposition.

Table 5. Opinions of the instructors on the proposition "I have adequate-healthy communication with other vocal training instructors at other universities"

Question		n	%
I have adequate-healthy communication with other vocal training instructors at other universities.	Strongly agree	4	8%
	Agree	25	50%
	Undecided	13	26%
	Disagree	7	14%
	Strongly disagree	1	2%
	Total	50	100%

As can be seen from Table 5, 58% of the instructors 'totally agree-agree' with the given proposition. In Table 5, it is remarkable that 26% of the instructors expressed their opinion as "I somewhat agree" and 14% of the instructors expressed their opinion as "I do not agree" to the given proposition.

Table 6. Opinions of the instructors on the proposition "I take into account the opinions and wishes of the students in the selection of the musical works to be studied".

Question		n	%
I take into account the opinions and wishes of the students in the selection of the musical works to be studied.	Strongly agree	7	14%
	Agree	31	62%
	Undecided	7	14%
	Disagree	5	10%
	Strongly disagree	0	0
	Total	50	100%

As can be seen in Table 6, the total of those who answered the statement as "I totally agree" and "I agree", which are in the same direction, is 76%.

Table 7. Opinions of the instructors on the proposition "There is a need for innovations in all dimensions regarding the vocal training in the music institutions in our country"

Question		n	%
	Strongly agree	17	34%
	Agree	27	54%
There is a need for innovations in all dimensions regarding the vocal training in the music institutions in our country.	Undecided	5	10%
	Disagree	1	2%
	Strongly disagree	0	0
	Total	50	100%

As can be seen in Table 7, that 88% of the instructors need innovations regarding the vocal training given in music institutions when the answers given in line with the same opinion as "I totally agree" and "I agree" are examined.

Table 8. Opinions of the instructors on the proposition "Students should not have a right to absenteeism for vocal training courses except for compulsory reasons, such as health".

Question		n	%
	Strongly agree	15	30%
	Agree	14	28%
Students should not have a right to absenteeism for vocal training courses except for compulsory reasons, such as health.	Undecided	6	12%
	Disagree	13	26%
	Strongly disagree	2	4%
	Total	50	100%

As can be seen from Table 8, from the point of view of the grand total, the rate of answers given by the instructors in the direction of 'totally agree' and 'agree' is 58%, constituting a higher rate than the sum of those who say "I somewhat agree" and "I disagree". It is remarkable that one-fourth of the instructors answered "I disagree".

Table 9. Opinions of the instructors on the proposition " Presenting the products-performances formed at the end of the vocal training course in shows and concerts contributes to the vocal development of the students".

Question		n	%
	Strongly agree	30	60%
	Agree	17	34%
Presenting the products-performances formed at the end of the vocal training course in shows and concerts contributes to the vocal development of the students.	Undecided	3	6%
	Disagree	0	0
	Strongly disagree	0	0
	Total	50	100%

Judging by the answers on the same direction, it is remarkable that almost all of the instructors (94%) think that the presentation of the products-performances formed as a result of the vocal training course studies in shows and concerts contributes to the vocal development of the students.

Table 10. Opinions of the instructors on the proposition "Common terminology regarding the vocal training is provided in institutions in our country".

Question		n	%
	Strongly agree	0	0
	Agree	7	14%
Common terminology regarding the vocal training is provided in institutions in our country.	Undecided	14	28%
	Disagree	22	44%
	Strongly disagree	7	14%
	Total	50	100%

As can be seen from Table 10, the total rate of the answers "I disagree" and "I totally disagree", which are in the same direction, is 58%, and as such, more than half of the instructors have stated that there is no common vocal training terminology in the institutions that provide vocal training in the country. In addition, it is remarkable that 28% 'somewhat agree' to this proposition.

4 | DISCUSSION & CONCLUSION

The fact that almost all of the instructors stated that (I totally disagree and I disagree 98% in total) they have not had any difficulties in establishing a instructor-student relationship with their students in recent years can be seen as a positive finding in terms of vocal training. It can be said that good communication between these two representatives, which are two important factors in educational activities, is one of the requirements that will positively affect success. According to Baykara Pehlivan (2005, p. 17), effective communication skills are important in training due to professional requirements and individual characteristics. The learning process also means being in a healthy communication. In the research of Kaya et al (2016, p. 180-181), the opinions of the participating students on the communication status of their instructors have been obtained. It has been seen that the communication status of the instructors mainly depends on their academic titles, and their communication skills increase in direct proportion to their job titles. In addition, it has been found that students think common sharing areas should be increased in order to increase the level of intimacy with the instructors. In the research conducted by Yılar et al (2021, p. 2167), the communication skills of the instructors were evaluated by the undergraduate students. When the findings have been reviewed, it has been seen that the skills expected from the instructors in the communication process are - from the most intense to the least - as follows: empathy, understanding and tolerance, respectfulness, active listening, effective use of body language and rhetoric. Although it is important for the instructors to evaluate themselves in communication, it is thought that some research with students as participants, as in this one, can also provide important data on communication, and identifying the necessary deficiencies from different perspectives can provide important contributions to the situations in which solutions are sought in communication.

It was stated that the instructors agreed with the statement " I participate in academic studies, and regularly develop and update my voice teaching techniques and practices in order to provide effective knowledge that will facilitate my students' learning" with a total rate of 94%. It can be said that this rate is an important finding in terms of showing that the instructors are open to improvement by updating themselves academically and pedagogically in the necessary processes. It can be argued that the current achievements gained from such development studies can also provide new and more useful information to the students whom the instructors teach. As Ekici stated, two factors are emphasized in educational activities in the current information age: qualified instructors and contemporary teaching methods. Therefore, in line with the needs of modern life, it becomes a necessity for instructors to update and diversify their teaching methods and renew themselves in this way (2020, p.435).

Some of the academic staff working at universities can take on various administrative positions and coordinators in the educational institutions they work, and they can fulfill their responsibilities related to these administrative duties during working hours and sometimes even outside working hours. These responsibilities may sometimes require more work and research than expected and may leave the instructors in the necessity of

preparing documents that can take time. It can be argued that the instructors who carry out these duties are in consensus (34% says 'I agree') that they cannot continue their vocal training technical activities due to the fact that they spend more time mentally and physically tired compared to the instructors who do not have similar duties. However, there are also participants who answered this statement as "I do not agree" with 34% of the participants. In terms of the difference that may exist from institution to institution, compared to their colleagues with other managerial duties, it can be said that it is related to the fact that the instructors who approved this statement are in individual efforts together with the duties under their responsibility and have no difficulty in working on the field they teach, and that they are in development studies in their fields because their workload is not tiring or excessive in their institutions.

The answers of the instructors to the proposition that "the number of weekly vocal training courses is sufficient" can be examined in two ways as positive and negative. It can be seen in Figure 4 that the total rate of "I agree" is 32%, and the total rate of "I do not agree" is 56%. Slightly more than half of the instructors working in different types of schools stated that the number of weekly vocal training courses is not sufficient, the reasons for this are: More course hours are required with students since vocal training is an abstract special talent training field; it can be difficult to allocate enough time to each student due to the fact that they have to work with more than one student in a vocal training course; and they believe that their students can be more successful in the field of vocal training if they do more than one vocal training course a week. Regarding this finding, in Sevinç's (2004, p. 214) research, a consensus was reached by the vocal training instructors that the vocal training course should be compulsory one hour a week in all courses of undergraduate training. In the research of Ayaz and Nayir (2017, p. 179), voice instructors stated that they thought that the number of vocal training courses was insufficient. In Tonya's (2008, p.93) research, the participating instructors believe that the two-year duration of the vocal training course in the music teaching departments of the faculties of training is insufficient. In Ekici's research (2008: 177), lecturers stated that the voice training course should be taught: one hour a week for four years, at least two hours a week for three years, or two hours a week for two years. In Acar's (2014) research, it was stated by the voice trainers that the number of weekly lesson hours is insufficient.

58% of the instructors answered mostly as "I agree" and partially as "I totally agree" on the proposition "I am in adequate-healthy communication with the vocal training instructors at other universities". This percentage reveals that instructors working in the same field at different universities exchange opinions about the vocal training practices, preferences and techniques, and this can be considered as a pleasing situation. However, regarding the fact that 26% of the instructors expressed "I am undecided" and 14% "I do not agree", it can be argued that their individual preferences in maintaining social and academical communication and the fact that they cannot communicate adequately due to the fact that they cannot access face-to-face meeting opportunities have been effective. Related to this finding, Sevinç (2004, p. 214) argues that it would be beneficial for voice instructors to come together at least once a year by establishing interdepartmental relations. However, it has been seen that these initiatives for better communication remained only as initiatives which could not be realised, and the participants have stated that the interviews have been made on a personal basis generally.

When the answers of the instructors on the proposition "I take into account the opinions and wishes of the students in the selection of the works to be studied" are reviewed, it is seen that - based on the finding that the total of those who answered as 'totally agree' and 'agree', which tends in the same direction, is 76%, - thanks to the instructors taking the opinions of their students during the selection of the repertoire required for vocal training studies, it can be argued that an active process is created for both parties in the vocal training course, that the instructors thus increase the active participation of the students in the course and give their students opportunities to maintain their positive attitudes, and even listen to the opinions of the students and make them feel that they are socially valuable individuals. With regard to this finding, it can be seen that the views by Baydağ (2020, p. 395) in his research constitute different aspects of repertoire selection. The voice instructor should have appropriate resources according to different levels of voice characteristics and voice utilisation, and should be able to search for new repertoires. However, the voice instructor should consider the students' vocal and musical comprehension, perception and ability to apply. One should be precautious against the desire of students, who are excessively ambitious or eager to learn, to choose/sing works above their level. Regarding this finding, data from Ekici's (2008, p.180) research can be presented. In the selection of repertoire, some of the vocal education instructors determine

their repertoires based on the principle of close to far. Others stated that they choose the repertoire according to the voice registers and characteristics of their students.

It has been determined that 88% of the instructors (I absolutely agree and agree) state that they need innovations regarding the vocal training given in music institutions. Considering the duration of work experience obtained within the scope of the demographic characteristics of the instructors (72% of them work between 10 years and above and 12% between 7-9 years), the inferences of the instructors from their professional activities, along with the professional experience factor, the usability and actuality of the teaching programs used by the participants in the institutions they work, students' success, interest and attitude levels in the field of vocal training can be considered effective in obtaining the finding in this way. In relation to this finding, the research of Ayaz and Nayir (2017, p. 177), "opinions of voice instructors on improving the quality of vocal training curriculum" can be examined. Voice instructors stated that the vocal training course training program they use in their schools does not adequately meet the needs of the students in terms of the quality of vocal training. In Özakçe's (2019) research, the views of the instructors at the faculty of training, which is one of the institutions that provide vocational music training, about the teaching program they use for vocal training courses were examined. According to the findings, it can be said that individual vocal training course curriculums are not created for the field of curriculum development science. It has been concluded that the contents of the program do not meet the objectives sufficiently, due to the individual differences of the students, changes are made in the program by using the professional experience and technical equipment of the instructors, and the duration of the vocal training course is insufficient.

It has been observed that the answers given by the instructors to the proposition "Students should not have a right for absenteeism except for compulsory reasons such as health" regarding vocal training courses were not focused on a specific direction. It has been seen that there is not a large difference between the answers (Figure 8). Judging at the data in terms of grand total, it has been found that the rate of answers given by the instructors in the direction of 'I totally agree' and 'I agree', which is close to each other, is 58% in total, and it has a higher rate than the other answers. Absenteeism of students is limited and monitored by various regulations of the Council of Higher Education and by the regulations as per the rules of the universities. Based on the continuation of training and training studies with features such as a certain academic calendar, duration, and progress in subject order, the reason the opinion of slightly more than half of the instructors on the fact that students should not be absent except for the excuses of illness can be argued to be the fact that students believe that they should maintain their achievements in subjects continuously and in discipline, and that students believe in the necessity of doing vocal training practices at regular intervals. The fact that one fourth of the instructors answered as disagree is a remarkable rate (26%). It can be argued that the instructors who did not agree with the proposition approved this statement because they participated in the operation of the absenteeism directives to which the students were subject.

Almost all of the voice instructors (94%) have confirmed that the presentation of the works they have completed in the vocal training courses as performances in events such as shows and concerts provides benefits for the development of their students' vocal training. Students who receive vocal training may experience emotions such as excitement, anxiety, and anxiety of success/failure both during courses and in various singing performance presentations in front of some ensembles. These emotional processes, which can change according to the situation and time, can affect the performance of students positively or negatively. In vocal training courses, it is also possible to partially train such emotional processes to be kept under control as much as possible in a positive way. It is thought that almost all of the instructors agreed with this proposition, since the control of such emotional states, which is especially evident in performances in front of various groups, can be practiced and rehearsed. Regarding this finding, data from Ekici's (2008, p.181) research can be presented. According to the research data, the vocal trainers stated that the students should take part in various concerts in terms of motivation, self-confidence, diligence, disciplined work, socialization, being comfortable on the stage, and excitement control.

Regarding the fact that more than half of the instructors stated that there is no common vocal training terminology in the institutions where vocal training is given in our country, there is no printed source from the past to be used in vocal training studies and terminological expressions. All of the instructors who carry out vocal training courses today are trained by different vocal training masters. Due to the fact that these masters were inspired, influenced or researched from different world schools (Russian, French, German, Italian), different terminologies have emerged. In addition, it can be said that the richness and diversity of expression terms

originating from different teaching styles in music, instrument and vocal training, which is an important branch of art and art, is understandable. Also, it can be said that the vocal training instructors, who are the participants of the research, have found it appropriate to use the terminology they have chosen based on the sources they have examined with their own research. In relation to this finding, the research of Polat (2016, p. 42) can be examined. In this research, the confusion and ambiguity of terminology, which is caused by the use of vocal training and vocal training fields, which are given in our country, are discussed. First of all, it is argued that it is necessary to explain the usage needs of the foreign terms that meet/explain the fields of voice and singing training and how they are used in the society they belong to. With these explanations, it is stated that redefining the cultural texture of the society in naming the fields of teaching can solve the confusion of terminology.

Voice, which is a basic tool in human communication, is a positive factor both for the professional understanding of the instructor and for the students to express themselves verbally (Velsvik Bele, 2008, p. 41). Vocal training, which has hardly any concrete aspect, is carried out with a number of exercises, explanations and examples. Reaching the goals of this training is directly related to the instructor's narration, the method applied and the student's ability to understand (Helvacı, 2018, p. 127). The human voice, which is a natural instrument, is an important communication tool. When used with adequate technique, it can offer positive gains, and when used incorrectly, vocal health may be adversely affected. Correct voice training is needed for the realization of positive gains (Ertek Babaç & Dalkıran, 2019, p.2). As can be understood from these views, vocal training is an area where many concepts and special abilities are used combined. Voice, which is an important element for people, will continue to develop as an asset that is open for training, protection and examination.

STATEMENTS OF PUBLICATION ETHICS

I declare that the research has no unethical problems and I observe research and publication ethics. Data collection tool was approved by Zonguldak Bülent Ecevit University Ethic Committee.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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The relationship between critical thinking and problem solving: A meta-analysis with correlational studies

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ABSTRACT

This study aimed to examine the relationship (direction and magnitude) between critical thinking and problem solving by combining the results of the studies carried out between 01.01.2015-30.11.2020 via meta-analysis. In this study, which is a meta-analysis study, PRISMA guidelines were followed. The studies obtained after searching the relevant literature through some electronic databases using search patterns were reviewed by two researchers in terms of inclusion criteria and 43 studies were included. Since more than one data were shared in some of these studies, meta-analysis was carried out with 49 data. The mean effect size of the relationship between critical thinking and problem solving was 0.483 under random effects model which indicated that there was a medium relationship between critical thinking and problem solving. This effect size did not differ according to sub-groups of region, critical thinking type, level of schooling, discipline and publication type. The results obtained in this study are confirmed by theoretical background regarding critical thinking and problem solving and previous studies.

Keywords: Critical thinking, problem solving, meta-analysis, correlation, higher-order thinking skills.

Eleştirel düşünme ile problem çözme arasındaki ilişki: Korelasyonel çalışmalar ile bir meta-analiz

Öz

Bu meta-analiz çalışmasının amacı 01.01.2015-30.11.2020 tarihleri arasında yapılmış çalışmaların sonuçlarını birleştirerek, eleştirel düşünme ile problem çözme arasındaki ilişkiyi (yön ve büyüklük) araştırmaktır. Arama terimlerini kullanarak bazı elektronik veri tabanları aracılığıyla ilgili literatürün araştırılmasının ardından elde edilen çalışmalar dahil edilme ölçütleri açısından iki farklı araştırmacı tarafından incelenmiş ve analize 43 çalışma dahil edilmiştir. Bu çalışmaların bazılarında birden fazla veri paylaşıldığı için, meta-analiz 49 veri ile gerçekleştirilmiştir. Eleştirel düşünme ve problem çözme arasındaki ilişkinin etki büyüklüğü 0.483 olarak bulunmuştur ve bu değer eleştirel düşünme ile problem çözme arasında orta düzeyde bir ilişkinin olduğunu göstermektedir. Elde edilen bu etki büyüklüğü çalışmanın yapıldığı bölge, eleştirel düşünme türü, sınıf düzeyi, alan ve yayın türü alt gruplarına göre farklılaşmamaktadır. Araştırma kapsamında elde edilen sonuçlar, eleştirel düşünme ve problem çözmeye ilişkin teorik alt yapıyla ve geçmiş çalışmaların sonuçlarıyla örtüşmektedir.

Anahtar kelimeler: Eleştirel düşünme, problem çözme, meta-analiz, korelasyon, üst düzey düşünme becerileri.

1 | INTRODUCTION

Today, the main purpose of education is no longer to have individuals with basic knowledge, but to have individuals who can think effectively and are independent learners (Kaeppel, 2021). Higher order thinking skills, one of the 21st century skills (Partnership for 21st Century Learning, 2009), correspond to analyze, evaluate and create levels of the revised Bloom taxonomy and allow the individual to interpret information, adapt it to new cases, analyze it and create something original by going beyond the routine (Anderson et al., 2001). In fact, every human being has the ability to think at a basic level by nature and this is the most basic feature of the individual. However, people with basic thinking skills will fail to interpret their environment and solve problems, and if the individual does not have higher order thinking skills, this thinking process will be biased, incomplete and erroneous (Nosich, 2011). Therefore, higher order thinking skills enable the individual to think effectively, to have the skills of this century and to keep up with the developments and innovations occurred in this age. Besides, the individual with higher order thinking skills can think more effectively, and in this thinking process, the individual has an active role, takes responsibilities and becomes a person who researches, solves problems, can make logical decisions and produce original products. For this reason, one of the primary purposes of education is to improve individuals' thinking skills in the 21st century (Al-Zou'bi, 2021; Van Gelder, 2005).

Paul (1990) defines critical thinking (CT) as a mode of thinking about any subject or content in which the individual evaluates whether the information is valid, logical and correct or whether the result obtained is reasonable. Beyer (1995) defines CT as a process of making a judgment about the quality of knowledge. Therefore, it is possible to consider CT as a careful and rational judgment or decision-making process (Facione, 1990). This process includes the evaluation of information, claims or judgments according to certain standards (Facione, 1998). According to Halpern (2003), CT is the employing necessary cognitive skills and strategies which increase the possibility of reaching desired results. In other words, CT can be seen as cognitive skills and strategies that individuals use in solving problems (Sternberg, 1999a). Some of these cognitive skills and strategies are questioning, problem solving (PS) (Watson & Glaser, 1964), analysis, evaluation, inference, reaching a conclusion (Facione, 2000), decision making (Halpern, 2003), synthesis, defining and solving the problem, reaching a conclusion and evaluating the results (Angelo, 1995). The process in which these strategies and cognitive skills are used is a purposeful, criteria-based and self-regulative process (Facione, 2000; Lipman, 1988). In this process, which is a logical thinking process (Nosich, 2011), individuals take responsibility, query, understand the logic of the questions, reach conclusions and believe in the results after evaluating them (Lipman, 1988; Nosich, 2011).

CT is directly related to many thinking skills. CT, which is a multifaceted thinking process, includes different thinking skills depending on the situation (Bittner & Tobin, 1998). However, although CT includes different thinking skills, it is not totally same with these thinking skills. CT, which can be considered as an umbrella for other thinking skills (Bittner & Tobin, 1998), is not just a decision-making skill, although it includes decision-making. In addition, although it includes the stages of PS, it is not just about PS skills. Therefore, even if it includes different thinking skills in different problem situations, it is wrong to limit CT to a single thinking skill. On the other hand, other thinking skills also include CT in their own processes. For example, creative thinking skill can be employed in the CT process, and CT skills are used in the evaluation of the product or idea that emerges in the creative thinking process (Sternberg, 1999b).

CRITICAL THINKING and PROBLEM SOLVING

When problem is defined as the difference between the existing and the desired state or the difficulties need to be overcame by individuals in the journey of reaching this desired situation (Bransford & Stein, 1993), PS can be seen as the work of bringing out the most useful solutions to eliminate these difficulties/problems faced by individuals (Morgan et al., 2017). PS, which is a complex cognitive skill, involves skills such as reasoning and establishing cause and effect relationships (Açıkgöz, 2016). PS can also be defined as the cognitive activities used by individuals to reach a certain aim (Anderson, 1993) such as realizing the problem, examining the problem in all its aspects, collecting information and data regarding the solution, generating alternative solutions, evaluating alternatives and choosing the best solution (Kaya, 2008).

While the aim of PS is moving from an undesired situation to a better one, the main purpose of CT is not only to find a solution to a problem, but to collect evidence to defend thoughts, claims and judgments, to evaluate the

source of the collected evidence and to present it logically (Hickman, 1993). Therefore, while PS aims to solve the problem encountered, CT is not only about this and goes beyond PS (Meyers, 1998). While the result is important in PS, CT focuses on the process rather than the result. CT is needed during the whole PS process. According to Paul and Elder (2001), CT skills are employed in defining the problem, revealing the reasons and assumptions behind it, comparing different ideas on its solution, collecting information, data and evidence to reach a solution, and evaluating the source of this information, data and evidence. According to Fisher (2005), both CT and creative thinking skills are employed in the PS process. CT skills are needed in defining the elements of the problem, analyzing the problem rationally, comparing the alternatives to solve the problem and selecting the most appropriate and useful one. In short, while PS deals with a solution for a problem, CT focuses on all stages of the process and also includes evaluating the solutions which appear at the end of PS process.

Regarding the existent literature, there are many studies which suggest that CT is significantly related to PS (Irwanto et al., 2018; Kim & Choi, 2014; Kousar & Afzal, 2021; Kutluca, 2018; Memduhoğlu & Keleş, 2016; Shim et al., 2019; Tümkaya et al., 2009). On the contrary, there are also other studies which concluded that CT is not significantly related to PS (Demiral, 2019; Friedel et al., 2008; Gülünay, 2016; Junsay, 2016). Therefore, it is possible to say that studies on these issues have revealed some ambiguous results. In addition, the studies have yielded different results regarding the magnitude of the significant relationships found between CT and PS. So, meta-analysis studies on the relationship between CT and PS can offer a holistic portrait of the association between these thinking skills because meta-analysis studies allow the knowledge accumulated in a specific area to be interpreted in a consistent way by combining the results of previous research conducted by diverse people (Hunter & Schmidt, 1990). This study aimed to investigate the relationship (direction and magnitude) between CT and PS by combining the results of the studies carried out between 01.01.2015-30.11.2020 via meta-analysis. To this end, answer to the following question was sought for:

1. What is the relationship (direction and magnitude) between CT and PS skills and does this relationship vary by different variables?

2 | METHOD

In this study, which is a meta-analysis study, PRISMA guidelines proposed by Moher et al. (2009) were followed.

COLLECTION of STUDIES and INCLUSION and EXCLUSION CRITERIA

Studies found after literature review should be involved in the analysis in consideration of certain criteria (Springer et al., 1999). However, the criteria need to be set very carefully as qualities of the collected studies can decrease provided that the criteria are too broad while very few studies may be collected which may prevent the generalizability of the results if the criteria are too strict. Accordingly, inclusion criteria were determined firstly. Then, the studies were reviewed in terms of inclusion criteria by two different researchers.

According to Rosenthal (1979), one of the main problems in meta-analysis studies is publication bias (PB). Including only studies published in academic journals in meta-analysis is an important problem that may cause PB, since studies that have reached a significant difference or relationship results have more chance to be published in the academic journals than the others which concluded non-significant results (Rothstein et al., 2005). Therefore, including as many and different types of studies as possible in meta-analysis can prevent this problem that may cause PB and prevent obtaining more reliable and valid results. For this reason, it was aimed to include all studies that have focused on the relation between CT and PS and reported necessary statistical data in the analysis. So, studies published in the research journals, conference papers, book chapters and unpublished postgraduate theses are involved in the analysis.

The criteria which were used in order to examine the studies before including the meta-analysis can be seen below:

1. The study must be carried out between 01.01.2015 and 30.11.2020.

2. The study must be a correlational one which examines the relationship between CT and PS.

3. The measurement tools that have sufficient psychometric properties must be used in the studies.

4. The study must provide enough statistical data to estimate the ES.

In order to reach studies investigating the relationship between CT and PS, some online databases, namely, Google Scholar, Web of Science, Scopus, ULAKBİM and Turkish National Thesis Center were searched with "critical thinking" OR "critical thinking skills" OR "critical thinking disposition" AND "problem solving" OR "problem solving skills" search pattern in Turkish and English from 15.11.2020 to 30.11.2020.

The literature review resulted in 9296 studies in total. Firstly, the studies were investigated through their titles and abstracts and 9106 studies were eliminated due to some reasons (e.g., duplicates, not Turkish or English, etc.) Then, 190 studies were reviewed by two researchers and 147 of them were excluded due to some reasons (e.g., not a correlation one, did not report the necessary statistical data, etc.). Finally, 43 studies were included in the analysis. Since more than one data were shared in some of these studies, meta-analysis was conducted with 49 data (from 43 unique studies). Flow diagram for literature review can be seen in Figure 1.
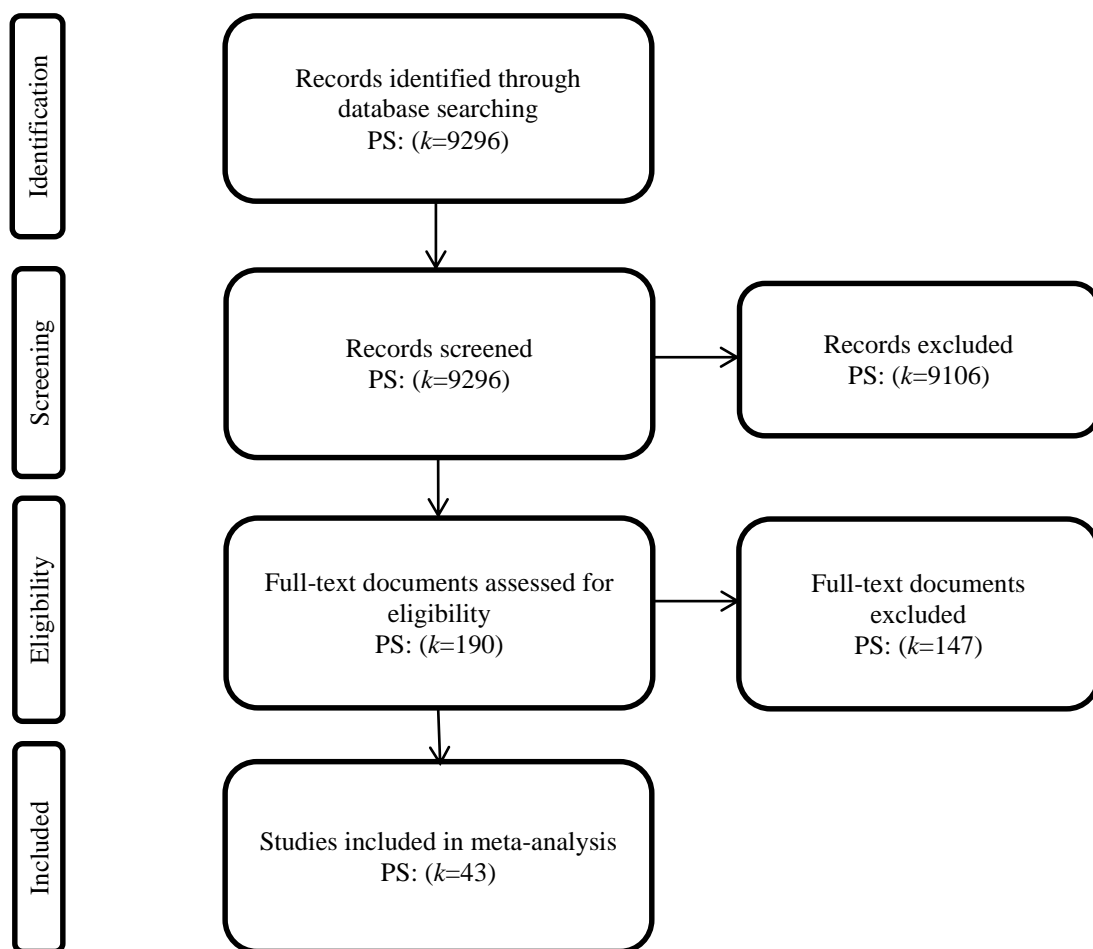
PS: Problem solving skills

Figure 1. *Flow Diagram*

Then, the bibliographies of the collected studies were examined in detail and it was tried to reach other studies. However, no study that can be included in the analysis has been found. In short, total sample number of the studies included in meta-analysis was 11829.

CODING of STUDIES

The studies were coded with a coding form. The form contains information such as year of the study, name of the study, publication type (article, thesis, conference paper), author(s), sample characteristics, countries where

the study was carried out, the measurement tool used and the data required for ES calculations. The studies involved in the analysis were coded by two independent people (author of this study and a second person who has meta-analysis experience). Full consistency was seen between the coders (r=1.00).

DATA ANALYSIS and INTERPRETATION

The ES was calculated using Comprehensive Meta-Analysis (CMA) package program. The Pearson correlation coefficient and sample size information were used to calculate the ES. While calculating the ES, the Pearson correlation coefficient was first converted to Fisher's Z, analyses were made and then it was converted back to Pearson correlation coefficient. The confidence interval for the calculations was determined as 95% in this study. Upon deciding the level of ESs, less than 0.10, between 0.11 and 0.30, between 0.31 and 0.50, greater than 0.51 were adopted to be very weak, weak, medium and strong, respectively (Cohen et al., 2007).

PB, which is an important problem for the validity of the meta-analysis studies (Kromrey et al., 2006; Rothstein et al., 2005), should be checked before calculating the ES. In this study, funnel plot, Rosenthal's fail-safe N test, Duval and Tweedie's Trim and Fill, and Egger's regression intercept methods were used to check the PB.

According to Hedges and Olkin (1985), Q statistics can be used to investigate heterogeneity. Q value greater than the critical limit in X^2 table shows heterogeneity among studies. In addition, the I^2 value which may have values between 0% (indicates no heterogeneity) to 100% (indicates high-level heterogeneity) can also be used in checking heterogeneity (Petticrew & Roberts, 2006). Therefore, in this study, in order to decide whether there is heterogeneity or not, the obtained Q and I^2 values were examined.

Sub-group analyses were conducted according to sub-groups of region where the study was conducted, CT type (disposition or skill), level of schooling (primary school, secondary school, etc.), discipline (education, science etc.) and publication type (published or unpublished) using Analog ANOVA. With Analog ANOVA, we can compute various Q values such as between-group (Q_B), within-group (Q_W), and total (Q_{TOTAL}). Q_B value can be used to determine if the moderator variable is a real moderator or not (Lipsey & Wilson, 2001). Q_B value which is significant and less than the critical limit in X^2 table indicates that mean ESs vary between categories of the moderator variables.

3 | FINDINGS

RESULTS on PUBLICATION BIAS

Funnel plot and trim-and-fill methods were employed to check the PB. The funnel plot was shown in Figure 2.
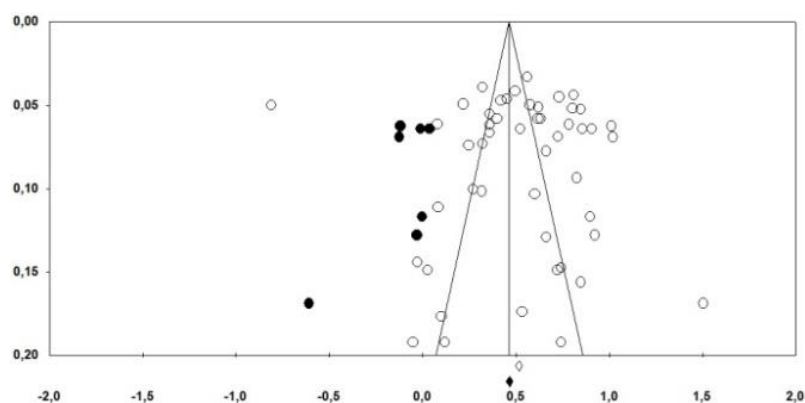
Figure 2. *Funnel Plot*

Empty circles in the funnel plots symbolize the studies involved in meta-analysis and the black ones refer to the imaginary studies which must be involved to eliminate PB totally (Duval & Tweedie, 2000). Also, symmetrically distributed funnel plot indicates no PB. As presented in Figure 2, we can say that the funnel plot seems symmetric. Furthermore, trim-and-fill method showed that only seven studies must be included to eliminate

the PB totally. Given the ESs were computed (49) in this study, it can be said that these imaginary studies can be neglected. Also, the fail-safe N number (33919) was much greater than the number (255) calculated using the formula of 5k+10 (Fragkos et al., 2014). Besides, Egger's intercept was 0.596 [95% CI=-3.233—4.426], p=0.755. Overall, we can say that there was no PB for this current study.

RESULTS on the RELATIONSHIP BETWEEN CRITICAL THINKING and PROBLEM SOLVING

Table 1 shows the ESs and the results of the heterogeneity tests in fixed and random effects models.

Table 1. ESs and Heterogeneity Test Results

| Model | ES | k | SE | Z | %95 CI | | df | Q | p | I^2 |
					Lower	Upper				
Fixed	0.475	49	0.009	55.724*	0.460	0.488	48	1381.45	0.000*	96.52
Random	0.483	49	0.051	10.323*	0.403	0.556				

*P<0.05

Note that the Pearson's r was first transformed to Fisher's Z, and after analyses were made, it was back transformed to Pearson's r and ES shows the Pearson's r values.

As seen in Table 1, in the random effects model, the ES was 0.483 [95%CI=0.403—0.556] with a standard error of 0.051. Also, the ES was 0.475 [95%CI=0.460—0.488] with a standard error of 0.009 in the fixed effects model. The data were also tested for heterogeneity and $Q_{(df=48)}$ value was found as 1381.45 (p<0.05). The obtained Q value was higher than the critical limit in X^2 table (df=48, $X^2_{(0.05)}$=65.171). Therefore, it can be said that there was heterogeneity among the studies. Also, as seen in Table 1, the calculated I^2 value (%96.52) showed a high level of heterogeneity. So, in this study, ES was calculated with random effects model. Indeed, as it is really hard to have homogeneity among the studies conducted in disciplines related to social sciences, meta-analysis with the studies from social sciences should always be conducted with random effects model (Schmidt & Hunter, 2015; Borenstein et al., 2009). The mean ES was calculated as 0.483 according to random effects model. Based on Cohen et al.'s (2007) benchmarks, this value showed that there was a medium and positive relationship between CT and PS.

Fisher's Z and 95% CI

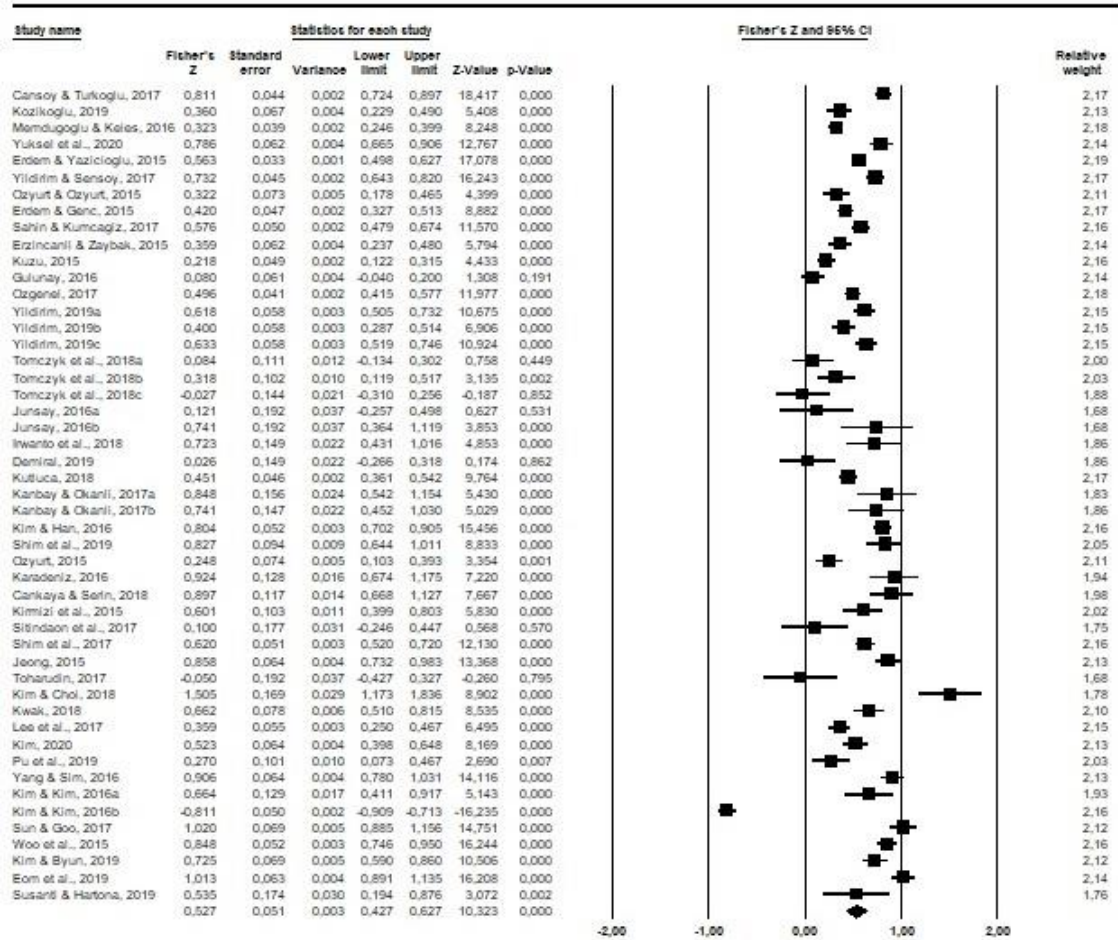| Study name	Fisher's Z	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	Relative weight
Cansoy & Turkoglu, 2017	0.811	0.044	0.002	0.724	0.897	18.417	0.000	2.17
Kozikoglu, 2019	0.360	0.067	0.004	0.229	0.490	5.408	0.000	2.13
Memdugoglu & Keles, 2016	0.323	0.039	0.002	0.246	0.399	8.248	0.000	2.18
Yuksel et al., 2020	0.786	0.062	0.004	0.665	0.906	12.767	0.000	2.14
Erdem & Yazicioglu, 2015	0.563	0.033	0.001	0.498	0.627	17.078	0.000	2.19
Yildirim & Sensoy, 2017	0.732	0.045	0.002	0.643	0.820	16.243	0.000	2.17
Ozyurt & Ozyurt, 2015	0.322	0.073	0.005	0.178	0.465	4.399	0.000	2.11
Erdem & Genc, 2015	0.420	0.047	0.002	0.327	0.513	8.882	0.000	2.17
Sahin & Kumcagiz, 2017	0.576	0.050	0.002	0.479	0.674	11.570	0.000	2.16
Erzincanli & Zaybak, 2015	0.359	0.062	0.004	0.237	0.480	5.794	0.000	2.14
Kuzu, 2015	0.218	0.049	0.002	0.122	0.315	4.433	0.000	2.16
Gulunay, 2016	0.080	0.061	0.004	-0.040	0.200	1.308	0.191	2.14
Ozgenel, 2017	0.496	0.041	0.002	0.415	0.577	11.977	0.000	2.18
Yildirim, 2019a	0.618	0.058	0.003	0.505	0.732	10.675	0.000	2.15
Yildirim, 2019b	0.400	0.058	0.003	0.287	0.514	6.906	0.000	2.15
Yildirim, 2019c	0.633	0.058	0.003	0.519	0.746	10.924	0.000	2.15
Tomczyk et al., 2018a	0.084	0.111	0.012	-0.134	0.302	0.758	0.449	2.00
Tomczyk et al., 2018b	0.318	0.102	0.010	0.119	0.517	3.135	0.002	2.03
Tomczyk et al., 2018c	-0.027	0.144	0.021	-0.310	0.256	-0.187	0.852	1.88
Junsay, 2016a	0.121	0.192	0.037	-0.257	0.498	0.627	0.531	1.68
Junsay, 2016b	0.741	0.192	0.037	0.364	1.119	3.853	0.000	1.68
Iwanto et al., 2018	0.723	0.149	0.022	0.431	1.016	4.853	0.000	1.86
Demiral, 2019	0.026	0.149	0.022	-0.266	0.318	0.174	0.862	1.86
Kutluca, 2018	0.451	0.046	0.002	0.361	0.542	9.764	0.000	2.17
Kanbay & Okanli, 2017a	0.848	0.156	0.024	0.542	1.154	5.430	0.000	1.83
Kanbay & Okanli, 2017b	0.741	0.147	0.022	0.452	1.030	5.029	0.000	1.86
Kim & Han, 2016	0.804	0.052	0.003	0.702	0.905	15.456	0.000	2.16
Shim et al., 2019	0.827	0.094	0.009	0.644	1.011	8.833	0.000	2.05
Ozyurt, 2015	0.248	0.074	0.005	0.103	0.393	3.354	0.001	2.11
Karadeniz, 2016	0.924	0.128	0.016	0.674	1.175	7.220	0.000	1.94
Cankaya & Serin, 2018	0.897	0.117	0.014	0.668	1.127	7.667	0.000	1.98
Kirmizi et al., 2015	0.601	0.103	0.011	0.399	0.803	5.830	0.000	2.02
Sitindaon et al., 2017	0.100	0.177	0.031	-0.246	0.447	0.568	0.570	1.75
Shim et al., 2017	0.620	0.051	0.003	0.520	0.720	12.130	0.000	2.16
Jeong, 2015	0.858	0.064	0.004	0.732	0.983	13.368	0.000	2.13
Toharudin, 2017	-0.050	0.192	0.037	-0.427	0.327	-0.260	0.795	1.68
Kim & Choi, 2018	1.505	0.169	0.029	1.173	1.836	8.902	0.000	1.78
Kwak, 2018	0.662	0.078	0.006	0.510	0.815	8.535	0.000	2.10
Lee et al., 2017	0.359	0.055	0.003	0.250	0.467	6.495	0.000	2.15
Kim, 2020	0.523	0.064	0.004	0.398	0.648	8.169	0.000	2.13
Pu et al., 2019	0.270	0.101	0.010	0.073	0.467	2.690	0.007	2.03
Yang & Sim, 2016	0.906	0.064	0.004	0.780	1.031	14.116	0.000	2.13
Kim & Kim, 2016a	0.664	0.129	0.017	0.411	0.917	5.143	0.000	1.93
Kim & Kim, 2016b	-0.811	0.050	0.002	-0.909	-0.713	-16.235	0.000	2.16
Sun & Goo, 2017	1.020	0.069	0.005	0.885	1.156	14.751	0.000	2.12
Woo et al., 2015	0.848	0.052	0.003	0.746	0.950	16.244	0.000	2.16
Kim & Byun, 2019	0.725	0.069	0.005	0.590	0.860	10.506	0.000	2.12
Eom et al., 2019	1.013	0.063	0.004	0.891	1.135	16.208	0.000	2.14
Susanti & Hartono, 2019	0.535	0.174	0.030	0.194	0.876	3.072	0.002	1.76
	0.527	0.051	0.003	0.427	0.627	10.323	0.000	

Figure 3. *Forest Plot*

According to the forest plot, Erdem and Yazıcıoğlu's (2015) study had the largest effect on the mean ES while Junsay's (2016) and Toharudin's (2015) studies had the smallest effect. Besides, out of 49 ESs, only three were negative. So it can be said that there was a positive relationship between CT and PS.

RESULTS on the SUB-GROUP ANALYSES

The results of the sub-group analyses are shown in Table 2.

Table 2. Results of the Sub-Group Analyses

Sub-groups		k	ES	%95 CI Lower Limit	%95 CI Upper Limit	df	Heterogeneity test Q_B-value	Heterogeneity test p
Region	Asia-pacific	22	0.531	0.350	0.675	1	0.913	0.339
	Europe	27	0.441	0.374	0.505			
CT type	CT skills	10	0.323	0.107	0.509	1	3.340	0.068
	CT disposition	39	0.516	0.428	0.594			
Level of schooling	Elementary school	3	0.501	0.383	0.603	3	5.062	0.167
	High school	3	0.361	0.187	0.513			
	University	34	0.522	0.416	0.614			
	Adult	9	0.368	0.213	0.505			
Discipline	Education	15	0.450	0.347	0.543	1	1.650	0.199
	Health sciences	16	0.600	0.380	0.756			
Publication type	Published	42	0.495	0.403	0.578	1	1.279	0.258
	Unpublished	7	0.407	0.271	0.527			

Note that the Pearson's r was first transformed to Fisher's Z, and after analyses were made, it was back transformed to Pearson's r and ES shows the Pearson's r values.

As it can be seen in Table 2, the heterogeneity value of the sub-group of region (Q_B=0.913; p>0.05), CT type (Q_B=3.340; p>0.05), level of schooling (Q_B=5.062; p>0.05), discipline (Q_B=1.650; p>0.05) and publication type (Q_B=1.279; p>0.05) were less than the X^2 table critical values. So, we can say that there was not a statistically significant difference between the categories of the moderator variables. In other words, the magnitude of the relationship between CT and PS did not differ according to region, CT type, level of schooling, discipline and publication type.

4 | Discussion & Conclusion

The aim of this study was to investigate the relationship (direction and magnitude) between CT and PS. For this purpose, the findings of the previous studies that are about the relationship between CT and PS were analyzed with meta-analysis method. After literature review, 43 studies that met the criteria to be included in the study were found and meta-analysis was carried out with 49 data (from 43 unique studies).

The ES of the association between CT and PS was found to be 0.483 and this ES did not differ according to sub-groups of region, CT type, level of schooling, discipline and publication type. Based on the views in the literature which state that CT and PS skills are closely related (Hickman, 1993; Fisher, 2005), we can say that a medium and positive relation between CT and PS is an expected result. According to MacPherson (1997) individuals' CT skills and dispositions are important in order to develop PS skills. In addition, CT dispositions are effective in PS activities (Barile, 2003) and CT skills are used while solving problems (Pereira, 2014). So, results of this study are confirmed by the previous research. Also, it is possible to find other studies concluding trainings designed to develop CT also improved PS (Işıklar & Abalı Öztürk, 2022; Kanbay & Okanlı, 2017; Shim et al., 2019). Therefore, the fact that activities designed to develop CT improve both CT and PS support the existence of a strong relationship between these higher-order thinking skills. In their study which aims to examine the relationships among CT dispositions, metacognitive awareness, and PS of students using structural equation model, Boran and Karakuş (2022) found that CT dispositions and PS are significantly related to each other. Also, Özgenel (2018) found that CT dispositions were a significant predictor of PS in his study. Similarly, Kutluca (2018) concluded that CT significantly predicted PS in his study aiming to investigate how some cognitive elements including CT affect PS skills. Besides, Orhan (2022) concluded that CT dispositions significantly predicted PS skills in his study. Besides, there are some other studies indicating CT and PS are closely related to each other (Kanbay & Okanlı, 2017; Lismayani et al., 2017; Pereira, 2014; Song et al., 2022). Therefore, we can say that the results of previous research support this study.

According to sub-groups analyses, we can say that both CT skills and dispositions are strongly related to PS and this relationship is constant for all school levels and disciplines. This can be seen as an important result because it shows us the close relationship between CT and PS at all school levels and disciplines. Also, it shows us that both CT skills and dispositions which are two main components of CT are significantly related to PS skills.

In short, it was found that there was a positive and medium relationship between CT and PS in this meta-analysis study. Previous literature indicated that CT is significantly associated with PS. The results of this meta-analysis study also support and contribute to this theoretical relationship. Therefore, it can be said that improvement of CT and PS skills should be aimed together in class because any improvement in one of these higher order thinking skills will also have positive effect on the other one.

LIMITATIONS AND IMPLICATIONS FOR OTHER STUDIES

This study has several limitations. Firstly, it is hard to decide the direction of the relationship between two variables with correlation studies. This limitation can be seen as an obstacle that limits correlation studies. Therefore, this can be shown as the first limitation of this study which aimed to calculate a general ES by using the results of correlation studies in the literature. In other words, it is impossible to answer the question of whether the PS skills are high because of high CT skills or whether the CT skills are high because of high PS skills. So, other studies should be carried out to reveal the association between CT and PS more clearly. Secondly, we can say that this study may have method bias because just correlational studies were involved in the analysis. So, the results of experimental studies can also be used in future meta-analyses. Lastly, this study is limited in its scope because it only included the studies carried out between 01.01.2015-30.11.2020.

CONFLICT OF INTEREST

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

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Appendix A: Studies about the Relationship between Critical Thinking and Problem Solving Included in Meta-Analysis

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Examining The Effect of Interactive Feedback Procedure on the Individualized Education Program (IEP) Goals

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ABSTRACT

An Individualized Education Program (IEP) is essential for both assisting students to meet their needs and enabling professionals to evaluate the students' progress. The purpose of this study was to enhance the teacher candidates' performance of writing IEP goals and objectives by using interactive feedback procedures. Seventy-three pre-service teachers in elementary education program participated in the study. They were required to write IEP goals according to case scenarios at three different times. A two-factor analysis of variance with repeated measures was completed for the dependent variables. The results of this study indicate that there are statistically significant differences between the means at each measurement time for pretest-posttest-maintenance scores. Implementation of interactive feedback procedures is found to be successful at improving the IEP goals and objectives writing skills of the teacher candidates. Limitations and implications for practitioners are presented.

Keywords: goal writing, pre-service teacher education, individualized education program (IEP), interactive feedback, students with special needs

Etkileşimli Geribildirim Prosedürlerinin Bireyselleştirilmiş Eğitim Programı (BEP) Amaçları Üzerindeki Etkisinin İncelenmesi

ÖZ

Bireyselleştirilmiş Eğitim Programı (BEP), hem öğrencilerin ihtiyaçlarına cevap vermek hem de onların ilerlemelerini değerlendirebilmek için kritik öneme sahiptir. Bu çalışmanın amacı, öğretmen adaylarının etkileşimli geri bildirim prosedürlerini kullanarak BEP amaç ve hedeflerini yazma performanslarını arttırmaktır. Araştırmaya sınıf öğretmenliği programında öğrenim gören 73 öğretmen adayı katılmıştır. Öğretmen adaylarından, kendilerine verilen olay senaryolarına üç farklı zamanda BEP amaçları yazmaları istendi. Bu amaçlar puanlandıktan sonra, tekrarlı ölçümlerde iki faktörlü varyans analizi uygulandı. Çalışmanın sonuçları, ön test-son test- izleme puanları için ortalamalar arasında istatistiksel olarak anlamlı farklılıklar olduğunu göstermektedir. Buna göre, etkileşimli geribildirim prosedürleri uygulaması öğretmen adaylarının BEP amaç ve hedeflerini yazma becerilerini geliştirmede başarılı bulunmuştur. Araştırmacılar, bulguları güncel alan yazın ile tartışmış ve uygulamacılar için çeşitli öneriler sunmuşlardır.

Anahtar kelimeler: amaç yazma, öğretmen eğitimi, bireyselleştirilmiş eğitim programı (BEP), etkileşimli geribildirim, özel gereksinimli öğrenciler

1 | INTRODUCTION

Educational mandates and legislation concerning students with special needs around the world aim to meet their needs related to education, employment, and independent living. Developing a well-written Individualized Education Program (IEP) is one of the expected steps to meet the needs of each student with a disability in public school settings (Caruana, 2015). The purpose of developing an IEP is to create an educational map that includes goals, objectives, and ways of how special education services enhance educational standards for a student (Thompson et al., 2001). The IEP goals should not only assist students with disabilities to meet their educational and functional needs, but they also enable stakeholders to monitor and evaluate potential progress throughout the timeframe (Boavida et al., 2010; Ruble et al., 2010; Sanches-Ferreira et al., 2013). Moreover, the IEP goals are essential for students with disabilities to support their learning process and growth (Räty et al., 2018) with a focus on their strengths in order to assure their progress in all academic, social, and life-related skills (Caruana, 2015). Despite the legally defined content, known significance, and decades of development, many IEP goals, and objectives are still poorly written (Boavida et al., 2010; Pretti-Frontczak & Bricker, 2000; Rakap, 2015; Sanches-Ferreira et al., 2013). Researchers who conducted studies related to the quality of IEP goals and objectives reported that the goals and objectives had missing required components, deficiencies in the components, lacked sufficient information about addressed skills, and/or were simply not functional (Boavida et al., 2014; Lynch & Beare, 1990; Pretti-Frontczak & Bricker, 2000; Ruble et al., 2010). Well-written IEP goals need to focus on a student's needs and strengths (IDEA, 2004) and must contain clear and specific objectives (Jung, 2007) that are functional (Pretti-Frontczak & Bricker, 2000), measurable (Jung, 2007; Lignugaris-Kraft et al., 2001; Ruble et al., 2010), and observable (Ruble et al., 2010; Wolery et al., 1988). Historically, a goal or an objective should include four essential components including the student's name, condition, behavior, and performance criteria (Alberto & Troutman, 2013; Lignugaris-Kraft et al., 2001; Mager, 1962; Wolery et al., 1988).

S*tudent's name* should be included in goals and short-term objectives as the learner's name instead of referring to him or her as "the student" or "the child". As an essential part of individualization, it is a requirement to include "who" is performing the behavior. The teacher or the instructor cannot be the subject of a written goal (Kargın, 2007) since the subject is the learner.

Condition is also a crucial component for writing quality IEP goals. It has one requisite part, which includes a clear description of under what conditions a certain behavior will occur in order to accept that the behavior is learned by the student (Lignugaris-Kraft et al., 2001; More & Hart-Barnett, 2014). In addition, there are two optional parts: accommodation or needed assistance and the setting for the evaluation (Lignugaris-Kraft et al., 2001). A goal or an objective might include necessary accommodations, prompts, and/or the assessment environment to specify the student's demonstration of competence.

Furthermore, *behavior* is another essential component. Every goal and objective must include a clearly defined, observable, and measurable behavior. Therefore, what a student will actually do can be seen, heard, and/or counted (Sanches-Ferreira et al., 2013). The teacher or the instructor should be able to describe behavior as that which can be easily agreed upon by every observer. When goals and objectives include non-observable behaviors, such as comprehending, knowing, or understanding, it becomes impossible for teachers to count, measure, and/or collect data (Boavida et al., 2010; Pretti-Frontczak & Bricker, 2000).

Last, *criteria* should be considered for writing the IEP goals and/or short-term objectives since they need to include a performance criterion for teachers to evaluate a student's accomplishment of the targeted behavior (Jung et al., 2003). A performance criterion has three potential components including the mastery level, the number of times the learner will perform the behavior to reach the mastery level, and the schedule to evaluate student mastery (Lignugaris-Kraft et al., 2001). Therefore, including the criteria in the goal statement is essential to determine how accurately the learner demonstrates the behavior in order to state that the behavior has been acquired.

In addition to these four components to write a technically high-quality IEP goal, the functionality of the goal has also been found to be essential in the previous research related to writing quality IEP goals (Alberto & Troutman, 2013; Bateman & Linden, 2006; Boavida et al., 2010). *Functionality* is defined as a concept that values the immediacy and future utility of a targeted goal (Karal & Wolfe, 2020; Lucas et al., 2014; Pretti-Frontczak & Bricker, 2000). Along with the usefulness, a goal and/or an objective should be socially valid, age-appropriate, and positively worded (Ferguson, 2011; Lucas et al., 2014). Functionality should be seen as the fifth component since it is likely to be necessary for a student's success (Boavida et al., 2010), and it allows students to be independent in everyday functioning (Pretti-Frontczak & Bricker, 2000). The non-functional goals do not generate a needed skill in either current or future environments and waste instructional time (Karal & Wolfe, 2020). Table 1 provides examples and non-examples for each component of an IEP goal.

Table 1

Examples and Non-examples for Each Component of an IEP Goal

Components	Example	Non-Example
Condition	Given a worksheet with 10 subtraction problems without regrouping,	Given 10 seconds,
Student's name	Mary	The student
Behavior	will write correct answers	will recall the acreage of her country
Criteria	90% accuracy on 3 consecutive weekly exercises.	60% of the time.
Functionality	Functional	Non-functional
Goal	Given a worksheet with 10 subtraction problems without regrouping, Mary will write correct answers with 90% accuracy on 3 consecutive weekly exercises.	Given 10 seconds, the student will recall the acreage of her country 60% of the time.

ENHANCING THE QUALITY OF IEP GOALS

IDEA requires an IEP team including at least one regular education and one special education teacher as well as the child with a disability, a family member, a representative of the local education agency, and other individuals who have knowledge or special expertise regarding the child. Because teachers provide information about the present level of performance and potential of the child, they have critical roles as both writers and implementers of the IEP. Thus, it is crucial for teachers to have a deep understanding of how to manage IEP goals and objectives. Furthermore, the increasing need of implementing inclusive practices in diverse classrooms and its influences on teacher education programs require educators to enhance the quality and quantity of the mandatory courses related to special education (Obradović et al., 2011).

One of the objectives of these mandatory and/or elective courses is to enable teacher candidates to have insight into the field of special education including how to write high-quality goals and objectives. In Turkey, there is a limited number of studies related to the IEP development process. In the study conducted by Rakap (2015), written IEPs were investigated and the overall quality of goals and objectives was found to be generally poor. It was also found that IEP goals and objectives were not written in detail and teachers lack knowledge in the development of IEPs including the performance of the individuals, the criteria, and the description of problem behavior (Akarsu & Atbasi, 2021). In the studies conducted by Tike-Bafra and Kargın (2009) and Ozturk ve Eratay (2010), teachers stated that developing IEPs requires extra workload and implementing IEPs is difficult in crowded classrooms. When the IEP goals and objectives lack the quality of being functional and age-appropriate, most teachers lower their expectations toward students with disabilities (Ruble et al., 2010). Learning about and practicing writing adequate goals during pre-service education is found to be effective as well as it is beneficial for the in-service training opportunities (Davis & Bates, 1997) to increase the achievement of students from various backgrounds. Therefore, it is necessary to improve pre-service and in-service teachers' writing skills.

FEEDBACK

Feedback is one of the most effective practices that help individuals to build and improve their skills and knowledge regardless of the educational stage (McLean et al., 2014; Sadler, 2010). Feedback is defined as the

communication opportunity after the instruction between the teacher and students to improve their learning and performance (Hattie & Timperley, 2007; Pereira et al., 2016; Poulos & Mahony, 2008; Shute, 2008). Therefore, even though feedback is a consequence of performance (Hattie & Timperley, 2007), it is a process more than a one-way information transfer and a product (Beaumont et al., 2011). Many studies have found feedback to be one of the key elements that have the strongest influence on the teaching quality to support individuals' learning action/task and to help overcome their mistakes effectively as well as to improve their knowledge on the subject matter (Agricola et al., 2020; Carless, 2006; Havnes et al., 2012; Pereira et al., 2016).

Despite the extensive body of literature about the benefits and advantages of feedback, it is not always effective (Price et al., 2008) or unambiguously positive (Van der Schaaf et al., 2013). Students may not understand the given feedback (Hyatt, 2005), may not be able to interpret what is written (Higgins et al., 2001), might be only interested in a grade (Stothart, 2008), or might perceive it as though they are being directed toward the answer of the assignment or the exam (McLean et al., 2014). These issues might be related to the students' previous experiences with feedback (Blair & McGinty, 2013; Robinson et al., 2013) or the content of the feedback (Higgins et al., 2001). When feedback lacks clarity about the expectations of a teacher (Bowl, 2003) and creates ambiguity (Price et al., 2010), it leads to frustration and disengagement in students concerning the proceeding and subsequent learning (Perreira et al., 2016; Poulos & Mahony, 2008). Many of these problems occurred when providing just a written comment as feedback (Agricola et al., 2020; Carless et al., 2011; Havnes et al., 2012). Verbal feedback along with written feedback appears to be a solution to overcome these problems associated with one-way, inadequate feedback (Agricola et al., 2020; Blair & McGinty, 2013) Feedback conversations between the learner and the instructor will have an impact on the efficiency of the process because learners do not only acquire written comments but also have opportunities to exchange information about their performance (Nicol & McFarlane-Dick, 2006; Sadler, 2010). This interactive process where interpretations and expectations are discussed develops the repeated feedback cycles (Beaumont et al., 2011; Carless et al., 2011).

Considering the efficiency of feedback on students' performance, the purpose of the current study was to enhance the teacher candidates' performance of writing IEP goals and objectives by using interactive feedback procedures. Both written and verbal feedback was used to enhance not only the overall quality of the IEP goal writing but also the quality of each component. The study was to serve as an initial analysis of interactive feedback effectiveness in improving the IEP goal writing quality.

2 | METHOD

PARTICIPANTS AND SAMPLING

Convenience sampling is defined as selecting participants from a group of individuals who conveniently are available for the study (Fraenkel et al., 2011). Therefore, convenience sampling was employed for this investigation. Before we started to collect the data, the study was approved by the ethical board of the institute. The participants were enrolled in one of the two sections of a course titled *Introduction to Special Education* taught by one of the researchers of this study. One of the main objectives of this course is to teach pre-service teachers how to write IEP goals and objectives. They also learn how to make necessary accommodations for all students in inclusive classrooms.

Seventy-three pre-service teachers who were in their senior year of the elementary education program voluntarily participated in the study after they received a brief explanation regarding the study's purpose and procedures. Thirty-six of the participants were in section one and 37 were in section two. For the purpose of this study, both sections were combined for the analysis since they received the same instruction from the same researcher as their instructor. The ages of all participants ranged from 22 to 23. Fifty-one percent of the participants were female, and 49% of the participants were male. The majority of the participants were Turkish (96%) while only (4%) of the participants indicated other ethnicities. Further demographics showed that all the participants had neither written an IEP goal nor had they had any teaching experience with students with disabilities

PROCEDURES

The implementation of this study was carried out for nine weeks of the course. The procedures had three components: IEP training, case scenarios, and interactive feedback.

IEP TRAINING

The pre-service teachers received a two-hour IEP training session conducted by the researcher of this study. The training involved a one-hour PowerPoint lecture on how to write the present level of performance, long-term goals, and short-term goals and objectives. The second half of the training included various activities that helped participants build upon what was learned and provided an opportunity to practice their IEP goal writing skills. The activities included dividing up the components of a given goal, correcting an inaccurately written goal, and finding the missing component of a goal. The activities also consisted of writing IEP goals based on a case scenario.

CASE SCENARIO

Case scenarios are used to enhance learning in special education research (Karal & Wolfe, 2020; McLinden et al., 2007, 2010). There were three different case scenarios describing a hypothetical student's characteristics besides the case scenario used for the class activity in the training. They presented information about elementary students who were placed in an inclusive education setting. Each case scenario involved information about the student's diagnosis, the current level of academic performance, and his or her strengths and weaknesses in both social skills and daily living skills. Once the case scenarios were prepared, two assistant professors in the field of special education reviewed and approved the appropriateness of the scenarios. The special needs category of case scenarios was selected among the ones who are more likely to be eligible for inclusive education such as students with a learning disability, a mild intellectual disability, and the gifted (see Appendix).

INTERACTIVE FEEDBACK

The interactive feedback procedure was included in the content to ensure that the pre-service teachers receive adequate support to increase their knowledge and performance on writing IEP goals and objectives. This procedure included written and verbal feedback on the goals and objectives that they wrote based on the case scenarios provided by the researcher. The participants received feedback for their first and second goal-writing tasks that were equal to a total of two hours of interactive feedback. Detailed written feedback was provided to the participants regarding the IEP goal writing. The written feedback contained comments, corrections, examples, and non-examples of an IEP goal. After the participants received the written feedback, the researcher provided one hour of verbal feedback to explain the points that the participants need to improve. The verbal feedback included a PowerPoint presentation on the mistakes and inaccuracies when writing an IEP goal. In the remaining time, any questions of the participants about IEP goal writing were answered. The instructor provided opportunities to the pre-service teachers to clarify the issues of goal writing and let them discuss their performance on their goal-writing task in small groups.

INSTRUMENTATION

The participants completed the IEP goal writing at three different times: after a week of the training (pretest), after a week of receiving the first feedback (posttest), and after four weeks of receiving the second feedback (maintenance). The pre-service teachers were asked to read the instruction in the case scenario and to write the IEP goals and objectives based on the common core standards by considering the characteristics of the student. The appendix includes an example of a case scenario, the common core standards, and the feedback table. The common core standards were selected from four different areas, which are reading and writing, math, language and communication, and fine/gross motor skills. Each goal-writing task included four different common core standards. Each participant was supposed to write a total of 12 goals for all applications. They received feedback based on the goals and objectives that they wrote.

Additionally, there was an IEP scoring table that included the five components of an IEP goal: student's name, behavior, criteria, condition, and functionality. The participants could see their total scores on the IEP goal writing as well as the scores for each component when they received feedback. The researchers evaluated the goals for each area of Common Cores based on the five components. In the table, each component score ranged between 0

to 4 points. If the participants included one of the components in the goal, they received 1 point for that component. If one of the components was not included or was written inaccurately, the participants received 0 points for that component of the goal. Since there were four different goals, the total points available from a single component equaled 4 points. The sum of each correctly written component indicating the total score equaled 20 points. Moreover, the table also involved a section for the researcher to provide an example goal for the participants regarding their mistakes and inaccuracies in the goals. This section enabled the participants to compare their incorrectly written goals with the correct ones (See Appendix).

INTERRATER RELIABILITY

The first author of this study scored all the participants' IEP goal writings for the pretest, posttest, and maintenance data. Then, to estimate the interrater reliability of the scoring, the data for the pretest, posttest, and maintenance was scored by the second researcher of this study. The interrater agreement score was calculated as the number of agreements divided by the total number of possible points and multiplied by 100. For pretest, posttest, and maintenance, the interrater agreement was found as 96%, 97%, and 95%, respectively. Based on the guidelines of Hartmann et al. (2004), the interrater agreement of this study was sufficient.

DESIGN AND DATA ANALYSIS

This study was a repeated measures design examining the differences in the participants' mean scores on the IEP goal writing within groups and between the two sections of the course over three points in time. First, based on the IEP scoring table, the scores of the participants on the first IEP goal writing were used as pretests. Second, they received the first verbal and written feedback, which was considered the first treatment phase. Third, the participants completed the second IEP goal writing, and their scores were used as posttests. Then, the instructor conducted the second treatment phase as the second set of verbal and written feedback on the second IEP goal-writing task was provided to the participants. Four weeks after the second treatment phase, the participants returned the third IEP goal writing, which was employed as the maintenance condition.

A two-factor analysis of variance (ANOVA) with repeated measures, comparing the two sections of the course and pretest-posttest-maintenance scores within groups, was completed for the dependent variables. In this case, the total score and the scores for each component of an IEP goal including behavior, criteria, condition, and functionality were used for the data analysis. The component, the student's name, was not a part of the analysis since all the participants included it in all of the IEP goals that they wrote. Additionally, effect sizes were calculated by using partial eta-squared for differences between each IEP component.

RESEARCH ETHICS

The researchers followed ethical guidelines while conducting the study and reporting the results. All participants were ensured of their safety and privacy. Also, they were reminded several times that it was voluntary to attend the study and that they were free to leave if they no longer wanted to participate. The researchers obtained IRB approval from the Sinop University Ethics Committee for Human Research, and no ethical concerns were declared regarding the study by the committee members.

3 | FINDINGS

The current study investigated the question of whether pre-service teachers in elementary education program improve their IEP goal writing skills by receiving interactive feedback. To examine whether there was a statistically significant mean difference between the participants' scores on their three distinct IEP goal writings, a two-factor ANOVA with repeated measures was conducted. Within-group factors included the total pretest-posttest-maintenance scores and the pretest-posttest-maintenance scores for each component of an IEP goal. The between-group factors involved the two sections of the course.

TESTS OF STATISTICAL ASSUMPTIONS

Prior to conducting a two-factor ANOVA with repeated measures, the following assumptions were tested to confirm that the data were suitable for data analysis. First, the assumption of normality was tested. Careful inspection of the skewness and kurtosis values showed that the assumption of normality was met. The skewness value of .281 and the kurtosis value of .555 are generally considered normal within the range of +/-2 (Lomax & Hahs-Vaughn, 2012). Second, the assumption of homogeneity of covariance was calculated. The results of the Box's M Test are not statistically significant for the total scores, and the scores for each component of an IEP goal indicated that the homogeneity of covariance was met as $F(6, 36445.963) = 1.800$ for total score, $p = .095$; $F(6, 36445.963) = 1.792$, $p = .096$ for behavior; $F(6, 36445.963) = .896$, $p = .497$ for condition; $F(6, 36445.963) = 1.751$, $p = .609$ for criterion; and $F(6, 36445.963) = .768$, $p = .695$ for functionality. Third, the assumption of sphericity was examined. The results of Mauchly's test indicated that the assumption of sphericity was met as $X^2(2) = 1.161$, $p = .560$ for total score, $X^2(2) = 2.471$, $p = .291$ for behavior, $X^2(2) = .622$, $p = .733$ for condition, $X^2(2) = 1.304$, $p = .521$ for criterion, and $X^2(2) = 3.548$, $p = .170$ for functionality. Last, the assumption of homogeneity of variance was tested at each time period (pretest, posttest, and maintenance). Levene's test suggested that the assumption of homogeneity of variance was met for total pretest-posttest-maintenance ($p_{pre} = .070$, $p_{post} = .529$, $p_{maint} = .0480$), for behavior ($p_{pre} = .830$, $p_{post} = .064$, $p_{maint} = .097$), for condition ($p_{pre} = .484$, $p_{post} = .394$, $p_{maint} = .573$), for criterion ($p_{pre} = .542$, $p_{post} = .465$, $p_{maint} = .049$), and for functionality ($p_{pre} = .168$, $p_{post} = .600$, $p_{maint} = .547$).

BETWEEN-GROUPS FACTORS

The results of a two-factor ANOVA with repeated measures indicated that there was no statistically significant difference between the participants' scores of the two sections of the course on IEP goal writing over time. Means and standard deviations of the pretest-posttest-maintenance conditions for each section of the course were provided in Table 2.

Table 2. *Means and Standard Deviations of the Total Scores*

	Group	*M*	*SD*
Pretest	A	12.33	2.255
	B	13.05	3.109
Posttest	A	16.00	2.255
	B	16.08	2.431
Maintenance	A	16.50	1.920
	B	17.35	1.338

Two groups did not change at different rates as, $F(2, 142) = .898$, $p = .409$ for total, $F(2, 142) = 1.317$, $p = .271$ for behavior, $F(2, 142) = 2.783$, $p = .065$ for condition, $F(2, 142) = 1.229$, $p = .296$ for criterion, and $F(2, 142) = .129$, $p = .879$ for functionality.

WITHIN-GROUP FACTORS FOR TOTAL SCORES

There were significant differences between the means at each measurement time for total pretest-posttest-maintenance scores as $F(2, 142) = 105.384$, $p < .001$. The effect size was found as $\eta^2 = .597$. The results indicated a very large effect size based on Cohen's guidelines (1988) as $.01 =$ small effect, $.06 =$ moderate effect, and $.14 =$ large effect. Additionally, the pairwise comparison results for total pretest-posttest-maintenance indicated that there was a significant difference between pretest and posttest ($p < .001$), posttest and maintenance ($p = .011$), and pretest and maintenance ($p < .001$).

WITHIN-GROUP FACTORS FOR COMPONENTS

There were also significant differences between the means at each measurement time for condition, criterion, and functionality as $F(2, 142) = 19.194$, $p < .001$; $F(2, 142) = 71.322$, $p < .001$, and $F(2, 142) = 76.935$, $p < .001$, respectively. No significant difference was found between the means over time for behavior as $F(2, 142) = 1.701$, $p = .186$. The effect sizes were found as $\eta^2 = .213$ for condition, $\eta^2 = .501$ for criterion, and $\eta^2 = .520$ for

functionality. Based on the guidelines proposed by Cohen, the results suggested large effect sizes for each component.

Pairwise comparisons were examined for those that were found to have a statistically significant difference between the means for the three time periods. For condition, the means of pretest and posttest ($p = .010$), posttest and maintenance ($p = .009$), and pretest and maintenance ($p < .001$) statistically significantly differed from each other. For criterion, there was a statistically significant difference between the means for pretest and posttest ($p < .001$) and pretest and maintenance ($p < .001$) while no statistically significant difference was found for the posttest and maintenance ($p = .099$). Similar to criterion results, for functionality, pairwise comparisons showed a statistically significant difference between the means for pretest and posttest ($p < .001$) and pretest and maintenance ($p < .001$); in contrast, no statistically significant difference was found for posttest and maintenance ($p = .223$). Mean differences between the posttest and pretest, maintenance and pretest, and maintenance and posttest are provided in Table 3 for the total score and the scores of each component.

Table 3. *Mean Differences for the Scores of Three Points in Time*

	MD			
	Condition	Criterion	Functionality	Total
Posttest - Pretest	.512	1.353	1.206	3.347
Maintenance – Pretest	1.002	1.655	1.412	4.232
Maintenance –Posttest	.490	.302	.206	.885

4 | DISCUSSION & CONCLUSION (DISCUSSION AND CONCLUSION PARTS MAY BE SEPARATED WHEN NEEDED)

As the number of students from diverse backgrounds has been growing in inclusive classrooms, the responsibility of elementary education teachers has increased to address the students' various needs (McHatton & McCray, 2007; Unluol Unal et al., 2022). Writing quality IEP goals and objectives plays an essential role to promote positive outcomes for students with special needs (Lignugaris-Kraft et al., 2001). Thus, both the pre-service and in-service teachers need to know how to write quality IEP goals and objectives to ensure the success of those students (Kamens, 2004; Räty et al., 2018). To improve the teachers' goal writing skills, implementing the *feedback procedures* was considered since it is one of the useful practices that help individuals learn the subject matter (Agricola et al., 2020; Carless, 2006). Therefore, the purpose of this study was to examine the impact of interactive feedback procedures on pre-service teachers' IEP goal writing skills.

In Turkey, several studies indicated that the quality of the IEPs is poor (Rakap, 2015), teachers have limited knowledge about how to develop IEPs (Akarsu & Atbasi, 2021), and they think implementing IEPs in crowded classrooms is demanding (Tike-Bafra & Kargın, 2009). The current study suggested that interactive feedback is beneficial for pre-service teachers to improve their IEP goal writing skills and therefore using these procedures might address the issues related to the quality of the IEPs and lack of knowledge. The results of a two-factor analysis of variance with repeated measures indicated that the pre-service teachers' total scores on the IEP goal writing task statistically significantly increased from pretest to posttest, pretest to maintenance, and posttest to maintenance. According to the results, the interactive feedback procedure is effective for teacher candidates. Several factors might be the cause. First, the interactive feedback procedure used in this study allowed pre-service teachers to exchange information about their strengths and weaknesses in writing IEP goals and objectives. The interactive feedback procedures created opportunities for pre-service teachers to clarify the issues that they need to improve, talk through their questions, and discuss their interpretations of the IEP goals and objectives. Moreover, the interactive feedback procedure helped the instructor clarify the expectations on the IEP goal-writing task throughout in-class discussions. Second, employing visual presentations appeared to be an appropriate method (Bartsch & Cobern, 2003) for pre-service teachers to improve their goal writing performance. Additionally, the visual presentation includes common mistakes that pre-service teachers made when writing IEP goals. We also

provided students with examples and non-examples selected from the pre-service teachers' written goals after the researchers of this study gathered them from both pretest and posttest implementation. Thus, demonstrating the common mistakes and providing how to correct the inaccuracies in their written IEP goals might be another reason that helped the pre-service teachers improve their IEP goal writing skills. This finding is also consistent with the previous research studies indicating the effectiveness of two-way feedback on students' academic outcomes (Nicol, 2010). Furthermore, past studies also supported the idea of encouraging students and teachers to actively use the interactive feedback procedure to improve their performance (Laurillard, 2002). Third, small group discussions might have helped the pre-service teachers fortify their active learning and engagement (Yazedjian & Kolkhorst, 2010) when writing IEP goals and objectives. By constructing student-student interaction, the pre-service teachers were able to develop more collaborative dialogues (Blair & McGinty, 2013).

This study also examined the components of condition, behavior, criteria, and functionality to find out whether there was a statistically significant difference between the means at three points in time. The results for the *behavior* component were found to be not statistically significant for all implementations including pretest to posttest, pretest to maintenance, and post- to maintenance. This might be explained by the following reasons. The mean score for the behavior component in IEP goals of teacher candidates was 3.21 for pretest implementation. Considering that the highest score available was 4.00 for each component, it can be seen that their pretest scores were already in the expected range, which left little to no room for improvement. Teacher candidates seemed to have knowledge about how to employ measurable and observable verbs as well as address one behavior at a time. This knowledge might come from either the training that was provided at the beginning of the study or from taking the courses focusing on behavioral approaches in classroom management (i.e., Educational Psychology and Classroom Management; Ozyurek, 2005).

The findings indicated a statistically significant difference for the *condition* component for all scores including pretest to posttest, pretest to maintenance, and post- to maintenance. Additionally, the findings for *criteria* and *functionality* were statistically significant for the scores of pretest to posttest and pretest to maintenance while no significant difference was found for the posttest to maintenance score. However, even though it was not significant for posttest to maintenance, there was a mean difference between posttest to maintenance scores. For each component mentioned above, the data indicated an increase in the maintenance scores of the pre-service teachers even though it was gathered after four weeks of interactive feedback implementation. This result suggested the pre-service teachers improved their IEP writing skills with the support of the visual presentation handout, written feedback, and small group discussion used for the interactive feedback procedure for four weeks. The finding, the increase in the maintenance condition, is consistent with the previous research since the researchers found an improvement in the maintenance scores of the participants even though several weeks had passed after the training (Courey et al., 2012).

The results also indicated that there were no statistically significant differences between the pre-service teachers' mean scores of the two sections of the course on IEP goal writing at any of the three points in time. This finding was expected because the same researcher administered the interactive feedback procedure to both sections of the course by applying the procedures. This finding also indicated that the effectiveness of the interactive feedback procedure on pre-service teachers' IEP writing skills was consistent with the two sections of the course.

Last, the results also showed that the effect sizes at each measurement time for pretest-posttest-maintenance scores of the total and the components were large meaning that the magnitude of the difference of the scores at three time points was considerable. This finding indicates the practical importance of the research findings and suggests that the research results were generalizable to teaching IEP goal writing skills for pre-service teachers.

LIMITATIONS AND FUTURE RESEARCH

The results of this study should be interpreted within the context of three potential limitations. First, the IEP goals and objectives provided in this study were mainly based on the case scenarios developed by the researchers. Although the cases provided in this study were created based on the researchers' experiences from real-life environments, future researchers might replicate this study with real cases rather than hypothetical ones to have more rigorous research results. Second, the data were collected from pre-service teachers enrolled in elementary education program; therefore, the study is limited to teacher candidates from a similar population only. Future

researchers should conduct this study with in-service teachers to generalize the results to the teachers actively working in the field. Moreover, collecting data from in-service teachers might also enable future researchers to directly observe and evaluate the implementation of IEPs as well as the development process. Additionally, there was no control group to compare the scores of the participants who received the interactive feedback procedure. A confounding factor might be the reason for the improvement of the participants' IEP writing skills rather than originating from the interactive feedback procedure.

IMPLICATIONS FOR PRACTITIONERS

The results of this study have several implications in the field of special education. First, teachers and educators need assistance when writing objectives that demonstrate specificity (Lynch & Beare, 1990). It was evident that the feedback procedures followed in this study can be used to assist pre-service teachers when writing high quality IEPs in their future classrooms. Furthermore, since implementing the IEPs packed with measurable, observable, and functional goals is more likely to foster students' development (Pretti-Frontczak & Bricker, 2000), the interactive feedback process will help teachers and educators develop better goals and objectives which, in turn, will lead to more effective implementation of IEPs. Last, the assessment we used to evaluate the quality of IEP goals and objectives in this study might also be used as a self-assessment method by both pre-service and in-service teachers along with other professionals in the IEP team to evaluate their own ability to track their progress in IEP goal writing.

CONCLUSION

The purpose of this study was to enhance the teacher candidates' performance of writing IEP goals and objectives by using interactive feedback procedures. The results of this study suggest that pre-service teachers' IEP goals improved regarding the overall quality and the quality of each component during the implementation of interactive feedback. Since the IEP requires the involvement of teachers, policymakers, parents, and students with special needs, any attempt on improving the quality of an IEP will help all stakeholders and result in more positive outcomes for students with special needs. Although more research is still needed for the development and implementation of IEPs, this study will contribute to the field of special education by introducing effective procedures to improve the writing quality of IEP goals and objectives.

STATEMENTS OF PUBLICATION ETHICS

Research and publication ethics were observed carefully throughout the study. The researchers ensured the safety and privacy of all participants and followed ethical principles while conducting the study and reporting the findings. The IRB was approved by the Sinop University Ethics Committee of Human Research with the decision number 2020/80 on 23.06.2020.

RESEARCHERS' CONTRIBUTION RATE

The first author collected the data and conducted the data analysis. The second author scored the goals and objectives for data analysis. All three authors equally contributed to designing the research, reviewing the literature, and discussing the findings.

CONFLICT OF INTEREST

The authors declared no potential conflicts of interest.

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APPENDIX

Mary is an 8-year-old student who is enrolled in second grade. Mary's mother is working as a nurse and her father is a government employee. When Mary was in first grade, you realized that Mary was above her peers and referred her for special education services. After a series of tests and observations, Mary was identified with giftedness and started receiving special education services. Therefore, an Individualized Educational Program should be developed for Mary.

Based on the observations and evaluations, Mary's reading, writing, and mathematical skills are at fourth grade level. She usually demonstrates leadership skills when she communicates with her peers. In her conversations with her friends, she enthusiastically shares what she learned from the documentaries. Mary spends her after-school hours in robotics lab. Her parents have been struggling with answering her questions and asks for your suggestions on the activities they could do with her from time to time. Mary's parents usually consult with you to plan her future career and increase her future life standards.

INSTRUCTION: You plan on doing some activities for Mary and therefore you select some of the topics from 4th grade curriculum. Please write appropriate IEP goals from the curriculum topics below.

OBJECTIVES:
1. Comparing the texts and evaluating them

    _____

2. Using punctuation marks and capital letters accordingly

    _____

3. Solving problems that require additions with natural numbers

   _____

4. Making prepared speeches

   _____

Feedback Table

Components	Student's Name	Behavior	Condition	Criteria	Functionality	Total
Score						

Example	

Evaluating The Opinions of Classroom Teachers Assigned in the Training Program in Primary Schools (IYEP)

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ABSTRACT

The purpose of this study is to evaluate IYEP, which has been implemented throughout the country since the academic year of 2018-2019, based on the opinions of teachers. The sample of the study, which was planned as qualitative research and conducted in case study design, consisted of 10 classroom teachers who worked in the province of Bartın and implemented the program during 2019-2020 academic year. The data were collected using a semi-structured interview form and analyzed through the content analysis method. The findings have revealed that the classroom teachers participating in the study think that the program has had a positive effect on student achievement and especially helped students participate in classroom activities, gain self-confidence and feel the sense of achievement more, which supported students' self-improvement. The general problems of the process indicated by the teachers are problems arising from the implementation hour on weekdays, arrival and departure times of commuting students, inadequate information of parents about the program, common instruction for students with different levels, problems in meeting nutritional needs of students especially during the courses on weekdays, and teachers' lack of knowledge about the student. Furthermore, the suggestions for the development of the program include organizing IYEP introductory events for teachers, parents and students at the beginning of the academic year, starting the program from the 2nd grade and continuing throughout the primary school education, separating the activity books as modular books and diversifying the materials, reducing the number of students in the classrooms and focusing on individual studies, planning the program in a way that includes transportation at the weekend, creating more homogeneous classes, and carrying out more studies for the psychosocial support dimension of the program.

Keywords: Classroom Teacher, Classroom Teaching, Primary School, Training Program in Primary Schools (IYEP)

İlkokullarda Yetiştirme Programı (İYEP) Sürecinde Görev Alan Sınıf Öğretmenlerinin Programa Yönelik Görüşlerinin Değerlendirilmesi

ÖZ

Bu araştırmayla 2018 yılından itibaren ülke genelinde uygulanmaya başlanan İYEP' in öğretmen görüşleri doğrultusunda değerlendirilmesi amaçlanmıştır. Nitel araştırma olarak planlanan ve durum çalışması deseninde yürütülen araştırmanın çalışma grubunu Bartın ilinde görev yapan ve 2019-2020 eğitim öğretim yılında programı uygulamış 10 sınıf öğretmeni oluşturmaktadır. Veriler yarı yapılandırılmış görüşme formu kullanılarak toplanmış ve içerik analizi tekniği ile çözümlenmiştir. Elde edilen bulgular sonucunda araştırmaya katılan sınıf öğretmenleri, programın öğrenci başarısına olumlu yönde etki ettiğini, özellikle öğrencilerin sınıf içi etkinliklere katılmasına, özgüven kazanmalarına ve başarma duygusunu daha fazla hissetmelerine katkı sağladığını ve bu durumun öğrencilerin öz gelişimlerini desteklediğini düşünmektedir. Süreçle ilgili öğretmenlerin ifade ettiği sorunlar genel itibariyle; hafta içeri programın uygulama saatinden kaynaklı sorunlar, taşımalı öğrencilerin okula geliş ve gidiş saatleri, velilerin programla ilgili yeterince bilgisinin olmaması, seviye farkları olan öğrencilerin bir arada eğitim alması, özellikle hafta içi yapılan kurslarda öğrencilerin beslenme ihtiyaçlarının karşılanmasında sorunlar yaşanması, programı uygulayan öğretmenin öğrenciyi tanımaması şeklinde dile getirilmiştir. Programın geliştirilmesi için ortaya konan öneriler ise; öğretmen, veli ve öğrencilerin programla ilgili daha fazla bilgi sahibi olması için eğitim öğretim yılı başında İYEP tanıtım toplantılarının yapılması, programa 2. sınıftan itibaren başlanması ve öğrencinin ilkokul eğitimi boyunca devam edilmesi, etkinlik kitaplarının modüler kitaplar olarak ayrılması ve materyallerin çeşitlendirilmesi, sınıflardaki öğrenci sayısının azaltılarak bireysel çalışmalara ağırlık verilmesi, programın hafta sonu taşımalı eğitimi kapsayacak şekilde planlanması, sınıfların daha homojen bir yapıda oluşturulması, programın psikososyal destek boyutu için daha fazla çalışmalar yapılması olarak belirlenmiştir.

Anahtar kelimeler: Sınıf Öğretmeni, Sınıf Eğitimi, İlkokul, İlkokullarda Yetiştirme Programı (İYEP)

1 | INTRODUCTION

Starting from the primitive societies, individuals have participated in the education process first through interaction within the family and then through the school system emerging in the social process and become a part of this system that enables the institutionalization of education (Güven, 2010, p. 3). Just like other systems, education system also consists of input, process, output and evaluation (control) components, and any change, inaccuracy or deficiency in any of these components affects the functioning of the system and the quality of the end product (Tan, 2005, p. 5). At this point, students are expected to achieve the learning outcomes in the curriculum, and educational institutions are expected to ensure the relevant achievement of students (Gürler, 2020, p. 267). However, it is not possible for all students to achieve the target outcomes during the process, and students cannot make equal use of the education process due to personal, social and environmental factors (Balantekin, 2020, p. 154). The fact that students reach the target level of knowledge and skills during the education process is directly proportional to their academic achievement or academic performance. The factors affecting achievement are mostly divided into two categories as in-school and out-of-school factors. In-school factors that stand out are number of teachers, class size, school facilities (library, laboratory, etc.), quality of teachers and administrators, and out-of-school factors include socioeconomic status of the family, high number of family members, and health problems of family members (Öksüzler & Sürekçi, 2010, p. 82). Failure is considered as one of the most important problems of the education system because it prevents the need for qualified manpower from being fulfilled. Moreover, it causes waste of country resources, loss of motivation in educators, students and families, and many other relevant problems (Dam, 2008, p. 77).

Government bodies are primarily responsible for healthy continuation of the education process and for the quality of educational institutions to meet the needs of the individual and society (Nartgün & Dilekçi, 2016, 538). In recent years, Turkey has shown a numerical development in education in areas such as the number of students per classroom and schooling rates (Gençoğlu, 2019, p. 857). On the other hand, in terms of academic achievement, Turkey is below the overall average score of the participating countries in all areas (science literacy, reading skills and mathematical literacy) according to the national report of the Program for International Student Assessment (PISA-2015). In the same report, there are also regional differences among students regarding achievement in the country (Taş, Arıcı, Ozarkan, & Özgürlük, 2016). The idea that remedial mechanisms should be established in order to eliminate regional differences and ensure all students to acquire basic knowledge and skills is included in the 64th Government Program, stating: "We will take measures and implement remedial programs in order to support learning of students whose learning and development level is behind their peers" (Presidency of the Republic of Turkey, 2015, p. 43). Furthermore, in the 2015-2019 Strategic Plan of the Ministry of National Education, increasing academic success levels of students is included as a goal (Ministry of National Education [MoNE]-Directorate for Strategy Development, 2015, p. 31).

Eventually, in order to ensure equality of opportunity in education, it is considered that measures are required for students who cannot achieve the outcomes in the curriculum so that everyone can make equal use of the education process (Balantekin, 2020, p. 154). This requirement is especially noteworthy for primary education period, which constitutes the source for future learning because reading skills and mathematical literacy levels of a student who has graduated from primary school should be able to form the basis for the next learning. In addition to academic knowledge, primary education institutions aim to provide students with the ability to express themselves, to use a language that will enable them to live in harmony with society, and to perform mathematical operations that will be useful in daily life (Kırnık, Susam, Özbek, 2019, p. 389). In this respect, primary education is the most important stage in which academic and social development of students is supported, and it is the determinant of the qualitative characteristics of other stages (Education Reform Initiative, 2020, p. 32).

Accordingly, in order to respond to the educational needs of the country and to ensure the development in education at the national level, IYEP (Training Program in Primary Schools) remedial program was initiated in cooperation with UNICEF (Toptaş & Karaca, 2019, p. 420).

Training Program in Primary Schools (IYEP) and Implementation Schedule

IYEP is a national program which ensures that students, who attend 3rd grade in primary schools, do not have a diagnosis for special education, cannot achieve the learning outcomes at an adequate level in reading, writing, reading comprehension skills as well as natural numbers and four operations in natural numbers due to various reasons during the previous school years, achieve the relevant outcomes and also receive psychosocial support (MoNE-Directorate General for Basic Education, 2019a, p. 1). Besides, it aims to improve these students' multifaceted development, sense of achievement and self-confidence, and to ensure their attendance to school (MoNE-Directorate General for Basic Education, 2019b, 8). The target group of the program consists of students who cannot adequately achieve the learning outcomes determined within the scope of the program and disadvantaged children such as asylum seekers, immigrants, children under temporary protection, and children of seasonal agricultural workers (MoNE-Directorate General for Basic Education, 2019a, p. 1).

IYEP was initiated on 16 June 2016, and its pilot implementation was carried out in 12 provinces in the 2nd term of the 2017-2018 school year (Ağrı, Ankara, Bingöl, Edirne, Hatay, Istanbul, Konya, Mardin, Ordu, Siirt, Sivas, Şanlıurfa). In these 12 provinces; 4,403 schools, 5,329 teachers and 87,003 students were involved in the program. In the 2018-2019 school year, it was expanded to the whole country. In both the piloting and the first year of the whole-country implementation, the program was applied to the 4th graders in addition to the 3rd graders. In the 2018-2019 school year; 302,097 students received IYEP education, and 89.77% of these students were successful in IYEP according to the results of the evaluation. As of 2019-2020, the program has been implemented only in the 3rd grades. The reason for this situation is that 3rd grade is considered an important level for support programs in the international literature. The Directive on Training Program in Primary Schools, in which the relevant procedures and principles are determined, came into force with the Ministerial Consent No. 15733452 dated 2 September 2019, and the implementations for the program were started in schools as of the second week of October (Education Reform Initiative, 2019, p. 3; MoNE-Directorate General for Basic Education, 2019b, p. 9; TEDMEM, 2020, p. 128, 129).

Due to the Coronavirus (Covid-19) pandemic, which spread rapidly throughout the world during the program in the 2019-2020 school year, the Ministry of National Education closed the schools as of 13 March 2020, first until the end of March, then until the end of the 2nd semester as a countermeasure against the spread of the pandemic in educational institutions and initiated distance education. Therefore, in accordance with the official letter no. 5497866 dated March 13, 2020 by the Ministry of National Education, Directorate General of Personnel, the Training Program in Primary Schools was also suspended. In the 2020-2021 school year, due to the interruption of face-to-face education in educational institutions during the Covid-19 pandemic in the previous year, a remedial distance education program was initiated between 31 August 2020 and 18 September 2020, and as of 21 September 2020, face-to-face education has been resumed only in pre-schools and 1st grades with the adaptation week as one day per week (MoNE-Directorate General for Basic Education, 2020). Afterwards, face-to-face education was gradually started in other grades; however; distance education was resumed again as of 20 November 2020 based on the course of the pandemic. Despite the Ministry's approval no.16434352 dated 10.11.2020, in which principles and procedures of the Training Program in Primary Schools were determined (Kamuajans, 2020), the procedures and calendar regarding the IYEP implementation process, which had not yet started, were postponed until the reopening of schools for face-to-face education (MoNE-Directorate General for Secondary Education, 2020). After the resumption of face-to-face education in primary schools on March 2, 2021, a new approval no. 22992575 dated March 24, 2021 was granted by the Ministry regarding IYEP implementation process, and works and procedures were resumed in line with the 2020-2021 IYEP implementation calendar. However, as a result of the course of the pandemic and in line with the recommendations of the Scientific Committee, distance education was resumed as of April 15, 2021, and the ongoing IYEP process was ceased. It was stated that the IYEP materials on hand should be preserved until a new decree by the Ministry of National Education (MoNE-Directorate General for Basic Education, 2021b). Afterwards, face-to-face education in public and private primary schools was resumed in classes with fewer students 2 days a week as of June 1, 2021 (MoNE-Directorate General for Basic Education, 2021c). IYEP, on the other hand, continued in line with the planning made by schools as of June 1, 2021 until 02 July 2021, which was the end of the school year (MoNE-Directorate General for Basic Education, 2021c, 2021d).

The Content of the Program

IYEP is prepared by taking the minimally-required learning outcomes from the existing curricula. Teaching materials are developed in a modular and spiral structure, thus providing the opportunity to receive education in a way that responds to different learning needs. The program considers individual learning needs, differences and learning speed, and while determining the outcomes, those in the mathematics and Turkish language teaching programs of the first two grades of primary school are taken into account. The foundations of the program were established in three areas as Turkish, mathematics and psychosocial support. There are a total of 6 modules in the program, 3 in Turkish and 3 in math course. According to the program, students can receive education only in Turkish, only in math, or in both courses. Psychosocial support is given to all students participating in the program (MoNE-Directorate General for Basic Education, 2019c, p. 8).

One of the steps that should be taken to support students in cases such as developing positive attitudes towards school and lessons, being in harmony with their friends and teachers is to provide psychosocial support (Kırnık et al., 2019, p. 390). When school environments are examined today, there are many students coming from families in different life situations and living with different age groups. These students face many problems that affect their education life and academic achievement. For example, many situations including poverty, family problems, illness, disability, neglect, abuse, violence, and tendency to crime can be considered as the reasons that affect students' attendance and academic success. In order to solve these problems, existence of guidance and psychological counseling services in the school environment is important. There is a need for a professional approach and teamwork within the school to solve such problems that affect psychosocial development of students (Özbesler & Duyan, 2010, p. 19, 20). Therefore, a qualified psychosocial support plan to be carried out for disadvantaged children will promote the program to achieve its purpose.

Student Determination Process

In order to effectively plan, execute, monitor and evaluate IYEP, IYEP commissions are established in provinces/districts and schools. The commissions in schools are formed during the teachers' board meeting at the beginning of the school year. The commission is chaired by the school principal or deputy principal and consists of three classroom teachers and school counselor, if available. In primary schools with multi-age classrooms, the commission is composed of existing teachers. In primary schools where there is only one teacher, the principal teacher acts as the commission (MoNE-Directorate General for Basic Education, 2019d). In order to determine the students who will participate in the program, the Student Determination Tool (OBA) is sent to schools by the Ministry of National Education. It is an assessment tool consisting of 15 open-ended questions from Turkish course and 31 open-ended questions from math course. For teachers to make an objective scoring, Teacher Instructions Form (OYF) which contains graded scoring keys is used (MoNE-Directorate General for Basic Education, 2019b, p. 13). 3rd grade teachers implement OBA in their own classes and enter the results into the IYEP processes module on the e-School Management Information System within 3 working days (MoNE-Directorate General for Basic Education, 2019d). In order not to cause a feeling of discrimination during the application of OBA in the classroom, students with special education needs are also given the tool, but their data are not entered into the system (MoNE-Directorate General for Basic Education, 2021a, p. 4). According to the results of OBA, the type of program (Turkish, Mathematics or both) and the module from which the students will receive education are determined (TEDMEM, 2019, p. 128). Then, changes and adjustments about the students to be involved in IYEP are made by the school commission, and finally the participation of the students in the program is decided. It is essential that an IYEP group consists of 1-6 students. A second group cannot be formed before a group of 6 students is established, but this number can be increased up to 10 students. Moreover, a "Parent Permission Form" is obtained from the parents of the students who will be included in IYEP (MoNE- Directorate General for Basic Education, 2019d).

Program Implementation Process

During the implementation of IYEP, "Student's own classroom teacher, other classroom teachers of the school, excessive norm classroom teachers in the district, classroom teachers in the district who want to take part in the program, classroom teachers who are assigned and paid a course fee and in the case that none of the classroom

teachers mentioned herein are available, teachers who are assigned and paid a course fee can take part in the program" (MoNE-Directorate General for Basic Education, 2019d). Students start the courses from the module that they are found to be deficient (MoNE-Directorate General for Basic Education, 2019a, p. 4).

Table 1. The Number of Learning Outcomes of the Modules in the Program

Courses	1st Module learning outcomes	2nd Module learning outcomes	3rd Module learning outcomes	Total number of learning Outcomes
Turkish	3	10	3	16
Math	10	7	5	22
Total	13	17	8	38

Source (MoNE, Directorate General for Basic Education, 2019c)

As seen in Table 1, there are a total of 16 learning outcomes in the Turkish course during the program, 3 in Module 1, 10 in Module 2, and 3 in Module 3. In the mathematics course, there are a total of 22 learning outcomes, 10 in the 1st module, 7 in the 2nd module, and 5 in the 3rd module. There are 38 learning outcomes in total in the program.

The order of the learning outcomes is based on the principle of progressivity, from simple to complex (MoNE-Directorate General for Basic Education, 2019a, p. 4).

Table 2. Recommended Duration for the Modules in the Program

Courses	Recommended duration for 1st Module (Lesson hours)	Recommended duration for 2nd Module (Lesson hours)	Recommended duration for 3rd Module (Lesson hours)	Total recommended duration (Lesson hours)
Turkish	5	72	19	96
Math	24	24	16	64
Total	29	96	35	160

Source (MoNE, Directorate General for Basic Education, 2019c)

As seen in Table 2, Turkish course lasts for a total of 96 hours, with the first module being 5, the second module being 72, and the third module being 19. In the mathematics course, the first module is 24, the second module is 24 and the third module is 16, and it takes a total of 64 hours. The program consists of 160 lesson hours in total.

The duration of the program cannot exceed 2 hours per day on weekdays, 6 hours per day on weekends, and 10 hours per week in total (MoNE-Directorate General for Basic Education, 2019a, p. 3). Classes for the weekday program are held outside the school's own lesson hours. Within the scope of the program, up to 160 hours of additional teaching are offered to the students in total (MoNE-Directorate General for Basic Education, 2019b, p. 13). Along with the program, many materials have been prepared for teachers, students and administrators. Some of these materials include Turkish Activity Book, Turkish Guide Book, Mathematics Activity Book, e-School IYEP Module User Guide, Psychosocial Support Guide, and Implementation Guide. These materials can be accessed from the website of the Directorate General for Basic Education (TEDMEM, 2020, p. 128).

The transition between the modules in the program is ensured by the teacher in charge, and the students who are found to have achieved the target learning outcomes as a result of the evaluation by the teacher are allowed to move to the next module (MoNE-General Directorate for Basic Education, 2019d). At the end of the program, the assigned teachers apply the Student Evaluation Tool (ODA) to the students in order to determine the level that students in the program have reached and to evaluate the program. In order to provide an objective evaluation, the results are evaluated through the Teacher Instructions Form (MoNE-Directorate General for Basic Education, 2019b, p. 15). ODA results must be entered by the assigned teacher into the IYEP module on e-School

Management Information System within 3 working days. Afterwards, within 2 weeks following the end of the program, an "evaluation report" is prepared by the school commission and submitted to the school administration to be sent to the provincial/district directorate of national education (MoNE-Directorate General for Basic Education, 2019d).

The Purpose of the Study and the Sub-Problems

IYEP is a training program which has been in practice at primary education level throughout the country starting from the 2018-2019 school year and included millions of students. In the literature review conducted on the program, it was observed that most of the studies were carried out with classroom teachers assigned in IYEP, and some studies included school administrators (Avlukyarı, 2019; Aydın & Yakar, 2020; Balantekin, 2020; Dilekçi, 2019; İğli & Ulutaş, 2020; Kırnık, Susam & Özbek, 2019; Kozikoğlu & Tosun, 2020; Toptaş & Karaca, 2019; Yıldız & Kılıç, 2019). As stated by Gençoğlu (2019), IYEP, which is a national support and training system model, is planned to be included in and support our education system to achieve the general and distant education objectives. It is very important, at primary education level, to develop basic math and literacy skills and to have an application for solving the problems underlying students' academic failures through the psychosocial support process. However, when the literature is reviewed, it is considered that IYEP, which is mostly described as a positive practice open to development, has some deficiencies in the planning, implementation and information dimension, as well as the follow-up and continuity of the process. In addition, the disruptions in education due to the Covid-19 (Coronavirus) pandemic, which was effective all over the world during the academic years of 2019-2020 and 2020-2021, prevented the efficient progress of IYEP. At this point, the aim of the present study is to identify the problems faced by classroom teachers, who are the implementers of the program, and to offer solutions to these problems. For this purpose, interviews were held with the classroom teachers who were involved in the process and implemented the program, and as a result of these interviews, evaluations and suggestions were made regarding the program. It is aimed that these evaluations and suggestions will be a guide for teachers, administrators and decision makers participating in the process to take the necessary measures to increase the practicality and effectiveness of the program. Besides, it is expected that the evaluations and suggestions will contribute to the literature on IYEP, which includes a limited number of studies. In this context, answers will be sought to the following sub-problems in accordance with the general purpose.

Research Questions

Considering the classroom teachers assigned in IYEP process;

1. What are their opinions about the adequacy of IYEP learning outcomes for Turkish and math course?

2. What are their opinions about the effect of IYEP on student success?

3. What are their opinions about the psychosocial support dimension of IYEP?

4. What are their opinions about the contribution of IYEP to students' self-improvement?

5. What are their opinions about the process of student determination for IYEP?

6. What are their opinions about the activity books used in IYEP?

7. What are their opinions about the weekly implementation time of IYEP?

8. What are their opinions about the informing process prior to IYEP?

9. What are the problems that they have identified regarding IYEP?

10. What are their suggestions for the improvement of IYEP?

2 | METHOD

This section includes information about the research model, study sample, data collection and analysis.

Research Model

This study was planned as qualitative research, which is defined as a research process in which data collection techniques such as observation, interview and document analysis are used, and which enables perceptions and events to be addressed in a realistic and holistic way in their natural environment (Yıldırım, 1999, p. 10). In qualitative research, there is an effort to reach a deep perception about the event or phenomenon being examined (Morgan, 1996 as cited in Baltacı, 2019, p. 370). In the present study, the case study method, which is one of the qualitative research methods, was used since it was aimed to examine and evaluate the Training Program in Primary Schools based on the opinions of the classroom teachers involved in the implementation. According to Mcmillan (2000), case studies are studies in which one or more events, environments, programs, social groups or interrelated systems are examined in detail (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2019, 268).

Study Sample

The study sample consists of 10 classroom teachers who work at different primary schools in the province and districts of Bartın and who have implemented the program. While determining the schools within the scope of the research, it was especially considered that the schools were located in different dwelling units (city center, district, town and village). The participants in the study sample were determined through criterion sampling, which is one of the purposive sampling methods. In criterion sampling, the observation units in the research are composed of people, events, cases or objects with certain qualities. Accordingly, units with the specified criteria are involved in the sampling (Büyüköztürk et al., 2019, 94). Due to the Covid-19 outbreak in the 2020-2021 school year, the IYEP program could not be implemented adequately. For this reason, the criterion in the study was determined as classroom teachers who were working in public primary schools and applied IYEP in the 2019-2020 school year. Teachers who met the specified criterion were included in the study on a voluntary basis. Personal characteristics of the classroom teachers involved in the study are presented in Table 3.

Table 3. Characteristics of the Classroom Teachers Involved in the Study

Personal Characteristics		f	%
Gender	Female	4	40
	Male	6	60
Years in the Profession	11-20 years	6	60
	21 years and more	4	40
Age	31-40	4	40
	41-50	4	40
	51 and over	2	20
Education	Associate	2	20
	Undergraduate	7	70

	Postgraduate	1	10
The Location of the School where IYEP is Implemented	City center	4	40
	District	2	20
	Town	1	10
	Village	3	30
The Reason for Taking Part in IYEP	Desire to be beneficial for students	8	80
	Other (professional development, economic reasons etc.)	2	20
IYEP Implementation Period	Weekdays	8	80
	Weekend	2	20
	Total	10	100

According to the information in Table 3, a total of 10 classroom teachers including 4 females and 6 males are involved in the study. In terms of professional seniority, 6 participants have 11-20 years of experience in the profession, and 4 of them have 21 and more years. As for age, 4 participants are 31-40 years old, 4 are 41-50, and 2 are 51 and over. Considering the status of education, 2 participants have associate's degree, 7 have undergraduate's degree, and 1 has master's degree. When the location of the schools where the teachers give IYEP courses are examined, it is observed that 4 schools are in the city center, 2 in districts, 1 in a town, and 3 are in villages. 8 of the teachers participating in the study indicate their reason for taking part in IYEP as the desire to be beneficial for students whereas 2 teachers state that they are involved in the program for professional development and economic reasons. Finally, 8 of the teachers implemented the program during weekdays, and 2 of them at the weekend.

Data Collection

A semi-structured interview form developed by the researchers was used as the data collection tool in the study. In the development process of the form, IYEP directive, manual and activity books (Turkish Activity Guide Book, Math and Turkish Activity Book) used in the program were utilized, and the relevant literature was reviewed. The developed form was examined by a classroom teacher who implemented the program and two academicians who were experts in the field of classroom teaching. As a result of the expert opinion, necessary revisions were made and the form was finalized. In this way, open-ended questions that can be answered by the teachers involved in the process, including the adequacy of IYEP Turkish and math learning outcomes, effect of IYEP on student achievement, psychosocial support aspect, student determination process, adequacy of the activity books, weekly implementation period, teacher informing process, identified problems and suggestions for improvement. Accordingly, the teachers were addressed 7 questions for personal information such as age, education, the period of their IYEP application, and 22 questions aiming to obtain detailed information about the program.

The data were collected on a voluntary basis from classroom teachers working in public primary schools in Bartın during the 2020-2021 school year. During the data collection process, a continuous face-to-face education environment could not be provided in schools, and distance education continued due to the pandemic. For this reason, the semi-structured interview form was shared online with the teachers participating in the study. Interviews were also held via online applications (Zoom app). In order to consider the principle of confidentiality,

teachers' opinions were presented by using codes instead of their names. Therefore, the participants were coded as "T1, T2, T3, T4, T5, T6, T7, T8, T9, and T10".

Data Analysis

Content analysis technique was used in the data analysis process. Content analysis is a research technique that helps to draw repeatable and valid conclusions from the data regarding their content (Krippendorff, 1980, 25 as cited in Koçak & Arun, 2006, 22). The data summarized and interpreted in descriptive analysis are analyzed more deeply in content analysis, and concepts and themes that can be ignored in descriptive analysis can be noticed in this way (Selçuk, Palancı, Kandemir, & Dündar, 2014, 431). During the research process, the responsess given by the participants to the interview questions were first transferred to the digital environment under the relevant question title. By examining the responses obtained from the participants, the researchers made a list of sub-themes and sample statements for these sub-themes based on similar statements, and it was ensured that these sub-themes and sample statements were under the same theme. While revealing the themes, the interview questions were utilized, and the themes were created in accordance with these questions (level of competence, student achievement, self-improvement, identified problems and suggestions for the development of the program). In addition, the findings were supported by direct quotations from the statements of the participants. In cases where the participants had more than one opinion on the questions, the frequency and percentage values were obtained based on the total opinions in the sample statements.

Research Ethics

Ethical permission of the research was approved by Bartın University Social and Human Sciences Ethics Committee. Ethics committee document number is 2021-SBB-0263.

The semi-structured interview form developed as a data collection tool used in the study was validated by obtaining opinions from three experts. During the data collection phase, a voluntary participation consent form was obtained from the teachers. For the validity of the data, transcription was made after the interviews and these articles were approved by the interviewees. Sample quotes from teachers are provided to present findings reflecting the data. To ensure the reliability of the research, 20% of the codes were checked by an expert as a second coder and intercoder reliability was calculated, 92%. Miles and Huberman's (1994) formula was used for the calculation:

Reliability = 100*(number of agreements/ total agreements + number of disagreements)

Coder recoded in a given period after pre-coding to ensure internal consistency. Finally, internal consistency coefficient was calculated as 94% which can be considered reliable (Miles & Huberman, 1994).

3 | FINDINGS

In this section, the findings of the study are presented. The findings consist of teachers' opinions regarding the adequacy of Turkish and math learning outcomes in IYEP, adequacy of the activity books for Turkish and mathematics, adequacy of the student determination tool, psychosocial support dimension of IYEP, its contribution to student achievement and self-improvement, weekly implementation period, information process prior to the implementation, problems encountered in the program and solution offers to these problems.

1. **Opinions of Classroom Teachers on the Adequacy of Turkish and Math Learning Outcomes in IYEP**

The opinions of the classroom teachers involved in the IYEP process were received regarding the adequacy of Turkish and math learning outcomes, and are presented in Table 4.

Table 4. Teacher Opinions Regarding the Adequacy of Turkish and Math Learning Outcomes

	Theme	Sub-Themes		Sample Statements for Sub-Themes	Participants	f	%
Turkish	Adequacy	Adequate	Because	Activities are performed for reading, writing and reading comprehension.	T2, T3, T5, T6, T7, T8, T9, T10	8	80
		Partially Adequate	Because	New outcomes are required.	T1	1	10
		Inadequate	Because	Activities for reading comprehension are not included enough.	T4	1	10
Total						10	100
Math		Adequate	Because	Outcomes regarding comprehension of four operations and acquisition of problem solving skill are appropriate for student level.	T1, T2, T3, T4, T6, T7, T9, T10	8	100
		Partially Adequate	-	-	-	-	-
		Inadequate	-	-	-	-	-
Total						8	100

According to the relevant opinions, 8 teachers find the Turkish lesson outcomes adequate whereas 1 teacher considers them as partially adequate and 1 teacher as inadequate. The teachers state that Turkish outcomes are for literacy and reading comprehension and aim to eliminate the deficiencies experienced by students in the field of literacy. Some sample statements by the teachers who find the Turkish outcomes sufficient are given below:

T3: *"Yes, I found it adequate. There were ideal learning outcomes for illiterate students and students with difficulty in reading comprehension."*

T8: *"I find it sufficient because it includes learning outcomes that are important for eliminating the deficiencies in primary literacy and increasing the level of reading comprehension."*

On the other hand, teachers who find Turkish learning outcomes partially sufficient or insufficient think that the program starts from a very basic level, more short texts for reading comprehension are required in the program, and various outcomes such as "identify story elements, recognize text types, guess synonyms and antonyms" should be added to the curriculum. Sample statements by the teachers who find the outcomes partially sufficient or insufficient are given below:

T4: *"3rd grade students already recognize the sounds. They have trouble combining and understanding. However, the program applies the curriculum as if the students have just started primary school. A program for reading and comprehension with short texts would be more appropriate."*

T1: *"I would like to answer regarding the outcomes of module 3 since I have been working on the relevant outcomes for the Turkish lesson in the IYEP process. The learning outcomes as follows can be included in module 3: "Recognize text types. Determine the story elements in a text they read. Determine a suitable title for the content of what they write. Use capital letters and punctuation in appropriate places. Write the question suffix in compliance with the rule. Guess synonyms/antonyms of words. Fill in the forms in accordance with the instructions."*

8 teachers find the learning outcomes in the math course adequate whereas 2 teachers did not make any comments because they did not teach in this field. The teachers agree on that it is necessary to start from the basic level for the students to acquire the four-operation skills. Some sample statements by the participating teachers are presented below:

T3: *"Yes, it was adequate. Simple four-operation skills and story problems were quite ideal for the level of the kids."*

T4: *"The learning outcomes for math course were adequate."*

In this context, the classroom teachers participating in the study find the application sufficient in terms of Turkish and math course outcomes.

2. Opinions of Classroom Teachers on the Contribution of IYEP to Student Achievement

The opinions of the classroom teachers involved in the IYEP process were received regarding the contribution of the program to student achievement, and are presented in Table 5.

Table 5. Teacher Opinions Regarding the Effect of the Program on Student Achievement

	Theme	Sub-Themes	Sample Statements for Sub-Themes	Participants	f	%
Turkish	Student Achievement	Academic Success	Reading skill improves.	T1, T2, T3, T5, T6, T7, T8, T9	8	33,3
			Reading comprehension improves.	T2, T3, T6, T8, T9, T10	6	25,0
			Writing skill improves.	T1, T3, T5, T7, T8	5	20,8
			Ability to narrate what is read improves.	T8, T10	2	8,3
			Ability to interpret improves.	T10	1	4,2
		Motivation	Motivation for the course increases.	T9	1	4,2
		Self-Confidence	Self-confidence increases.	T10	1	4,2
	Total				24	100
Math		Academic Success	Four-operation skills improve.	T1, T3, T9, T10	4	33,3

	Problem solving skill improves.	T3	1	8,4
Motivation	Motivation for the course increases.	T3, T4, T5, T9	4	33,3
Self-Confidence	Self-confidence increases.	T1, T3, T5	3	25,0
Total			12	100

According to Table 5, the classroom teachers participating in the study made their explanations regarding the sub-themes of academic success, motivation, and self-confidence.

Considering the contribution of the program to student achievement in Turkish course, the teachers participating in the study indicate that the instruction delivered in Turkish course especially improves students' reading (33.3%), reading comprehension (25%) and writing (20.8%) skills. Besides, it is stated to contribute to students' ability to narrate what they read (8.3%) and to interpret (4.2%). In line with the teachers' comments regarding the motivation sub-theme, the program is stated to increase motivation for the lesson (4.2%). Moreover, teachers who mention the sub-theme of self-confidence indicate that the program increases self-confidence (4.2%). Some of the sample statements by the teachers are given below:

T8: *"They can write meaningful and regular sentences, read short texts fluently, understand and narrate what they read, answer questions about the text, write short texts."*

T9: *"In the literacy process, illiterate students will learn to read, and their reading speed will increase, their comprehension will be better, and they will be interested in the lesson."*

T10: *"Students support themselves in terms of self-confidence, as the program consists of texts appropriate for the level of the students regarding the learning outcomes for comprehension-narration-reading. Students should be able to narrate events by interpreting and supporting what they read with different words."*

Considering the contribution of the program to student achievement in math course, the teachers participating in the study indicate that the instruction delivered in math course improves four-operation skills (33.3%) and problem-solving skills (8.4%). The teachers who mention the motivation sub-theme state that the program increases student motivation for the lesson (33.3%). In addition, it is stated that students' self-confidence increases (25%). Accordingly, some of the sample statements by the teachers are presented below:

T1: *"Math modules, in which basic operation skills and prerequisites for these operations are given, will contribute to the academic success of students in math. Self-confidence and the sense of keeping up with the class level that it provides the student with will reflect positively on academic success."*

T9: *"Students' four-operation skills improve; their interest in the lesson increases, and this increases academic success."*

T3: *"Four-operation skills may develop. Simple problem-solving skills may develop. Moreover, the child's sense of achievement and self-confidence will increase here.*

In this context, the teachers involved in the study indicate that Turkish and math courses delivered within the scope of the program have a positive effect on student achievement.

3. Opinions of Classroom Teachers on the Psychosocial Support Dimension of IYEP

The classroom teachers who took part in the IYEP process were asked what they knew about the psychosocial support dimension of the program. As a result of the responses received, it was observed that nine of the

participating teachers did not have knowledge about the psychosocial support of IYEP, and only one teacher commented on the subject. Some sample statements by the teachers involved in the study are presented below:

T3: *"I do not have any knowledge of this subject."*

T4: *"I do not have any information."*

T8: *"I do not know about the psychosocial support. I did not fill out any form."*

T10: *"It is important information in revealing the relationship between the psychosocial status of the student and the level of academic success."*

In the light of the data, it is observed that the practitioner teachers are not sufficiently aware of the information and documents related to the psychosocial support of IYEP, such as the psychosocial support guide and the psychosocial support student information form.

4. Opinions of Classroom Teachers on the Contribution of the Program to Students' Self-Improvement

The opinions of the classroom teachers about the contribution of the program to the students' self-improvement were received and presented in Table 6.

Table 6. Teacher Opinions on the Contribution of the Program to Students' Self-Improvement

Theme	Sub-Themes	Sample Statements for Sub-Themes	Participants	f	%
Self-Improvement	Active Participation	Willingness to participate in the classroom activities	T1, T2, T4 T5, T7, T8, T9 T10	8	21,6
		Voluntary participation in homework and assignments	T1, T3, T8	3	8,1
	Sense of Self-Confidence	Gaining self-confidence	T1, T2, T3, T4, T5, T8, T9, T10	8	21,6
	Sense of Achievement	Happiness arising from learning	T1, T2, T3, T8	4	10,9
	Emotional Awareness	Recognition of strengths	T1, T3, T4	3	8,1
		Proper expression of emotions	T5	1	2,7
	Taking Responsibility	Regular review of lessons	T2, T4, T6	3	8,1
	Level of Attention	Increased level of attention in lessons	T2, T5, T7	3	8,1
	Adaptation to Society	Socialization	T1, T8	2	5,4
	Positive Attitude towards School	Increased attendance to school	T5, T6	2	5,4
Total				37	100

Considering Table 6, the classroom teachers participating in the study think that the program contributes to students' self-improvement. Accordingly, the teachers base their explanations on the sub-themes of active participation, sense of self-confidence, sense of achievement, emotional awareness, taking responsibility, level of

attention, adaptation to society and positive attitude towards school. Teachers who emphasize the active participation sub-theme have the opinion that the program has a share in students' willingness to participate in classroom activities (21.6%), and voluntary participation in homework and assignments (8.1%). Moreover, teachers mentioning the sub-theme of self-confidence state that the program helps students gain self-confidence (21.6%). Regarding the sub-theme of sense of achievement, teachers state that students experience happiness arising from learning (10.9%). In addition, according to the teachers who express their opinions on the sub-theme of emotional awareness, the program allows students to recognize their strengths (8.1%) and to express their emotions properly (2.7%). Furthermore, considering the sub-theme of taking responsibility, they state that the program enables students to review lessons regularly (8.1%), and for the level of attention, they indicate that the program helps increase the level of attention towards lessons (8.1%). Besides, regarding the sub-theme of adaptation to society, the program enables students to socialize (5.4%), and as for positive attitude towards the school, the relevant teachers indicate that the program contributes to increased attendance to school (5.4%). Some of the sample statements by the teachers are as follows:

T1: *"Even though the students involved in the IYEP program have the feelings of sadness and inadequacy at first, these feelings will be replaced by achievement, self-confidence, and participation in the group again with the success of the program in time. As the IYEP process is completed, the willingness to participate in classroom activities, voluntary participation in homework and assignments and consummatory behaviors will be ensured."*

T10: *"Students are worried at the beginning of the program. However, as the program progresses, their levels of academic achievement improve, and their sense of self-confidence increases."*

T3: *"Students will feel more comfortable. Being together with students at their own level will increase their self-confidence. With simple activities, their sense of achievement will improve. They will be able to get to know themselves."*

T5: *"They will gain confidence, express their basic feelings properly, and speak comfortably in public."*

T4: *"Due to one-to-one attention, they participate in the lesson activities. They regularly review their lessons as they participate in IYEP activities every day."*

T2: *"There will be benefits such as being eager to participate in the lesson activities, reviewing the lessons regularly, and concentrating on the lesson."*

T7: *"It will make contributions in terms of participating in the activities and concentrating on the lesson."*

T8: *"The students who learn that they will be involved in the IYEP process become anxious first. Moreover, when they learn that they will be studying with another teacher, their anxiety increases. However, as they make progress in the process and realize that they are successful; they gain self-confidence and become happy. When they are given the opportunity to prove themselves by the teacher in their class, their self-confidence increases and their friendships improve. They are prevented from feeling detached from their peers. As far as I have observed, and according to the information I have received from the teacher in charge, the students who attend IYEP can become more active in the lessons. At least, they want to speak; they are willing to attend the lesson, and can participate in classroom activities. In addition, they develop a positive attitude towards their homework since they can read, albeit slowly, and understand what is written in the questions, and try to answer them in their own way."*

T6: *"They become more willing to come to school. They start studying more regularly."*

The teachers who implement the program think that the program is especially effective in helping students participate in classroom activities (21.6%) and gain self-confidence (21.6%). Thus, it is believed that, throughout the process, these students will feel the sense of achievement (10.9%) more than before, and it will promote students' self-improvement.

5. Opinions of Classroom Teachers on the Adequacy of the Student Determination Tool

The opinions of teachers regarding the adequacy of the student determination tool (OBA) used in determining the students to be included in the program were received and presented in Table 7.

Table 7. Teacher Opinions on the Adequacy of the Student Determination Tool

Theme	Sub-Themes		Sample Statements for Sub-Themes	Participants	f	%
Adequacy	Adequate	Because	The questions serve the purpose.	T6, T7, T8	3	23,0
			It does not cause exam anxiety.	T1, T10	2	15,4
			The instructions are clear and understandable.	T10	1	7,7
	Partially Adequate	Because	OBA should be implemented for a longer time.	T8	1	7,7
			The teacher instructions form should remind the subjects of previous years.	T9	1	7,7
			OBA should not be implemented and evaluated by students' own classroom teacher but by a different teacher.	T8	1	7,7
	Inadequate	Because	The questions do not serve the purpose.	T2, T4	2	15,4
			Teacher observation should be more determinative.	T3, T5	2	15,4
	Total				13	100

According to Table 7, within the framework of the sample statements by the teachers who have positive opinions about the adequacy of OBA, teachers state that the questions serve the purpose (23.0%), OBA does not cause exam anxiety (15.4%) and the instructions are clear and understandable (7.7%). Teachers who consider OBA partially adequate, on the other hand, think that the time of application of OBA (7.7%) should be longer, the teacher instructions form should include reminders for the subjects of previous years (7.7%), and for a more objective assessment, the determination tool should be implemented and evaluated not by students' own classroom teacher but by a different teacher (7.7%). In the sample statements by the teachers who have negative opinions about the adequacy of OBA, the teachers agree on the fact that the questions do not serve the purpose (15.4%), and that teacher observation should be more determinative (15.4%). Accordingly, some of the sample statements from the opinions of the teachers are given below:

T7: *"OBA consists of appropriate questions to determine the level of students."*

T2: *"No, the questions do not serve the purpose adequately."*

T10: *"I find it reliable since the previous information is given clearly during the implementation process of the relevant tool. The aim here is to reveal the areas where the student needs to be improved. The main reason for the occurrence of test anxiety depends on the attitude of the teacher during the application process."*

T8: *"The questions serve the purpose. It is conducted without prior notice in order not to cause exam anxiety. The application period is not sufficient especially for Turkish course. It can take some time to conduct it in crowded classrooms. Turkish and math courses can be practiced on different days. That OBA is conducted by the classroom*

teacher raises questions about objectivity. It should not be their own classroom teacher who applies and evaluates this scale."

T2: *"No, the questions are not relevant enough."*

T5: *"I think the OBA tool is unnecessary. The class teacher should determine the students to be admitted to IYEP."*

According to the data in the table, the student determination tool is considered sufficient by the majority based on the teacher opinions. The advantages of OBA indicated by the teachers include that it does not cause exam anxiety, and its instructions are clear and understandable, as well as that the questions serve the purpose. However, there are also views that the current form should be improved or alternative determination methods (such as teacher observation) should be considered.

6. Opinions of Classroom Teachers on the Adequacy of the Activity Books for Turkish and Math Courses

The opinions of the classroom teachers regarding the Turkish and math activity books used in the IYEP instruction process were received and presented in Table 8.

Table 8. Teacher Opinions on the Adequacy of Turkish and Math Activity Books Used in the Program

Theme	Sub-Themes		Sample Statements for Sub-Themes	Participants	f	%
Adequacy	Adequate	Because	The content in the books serves the purpose.	T7, T1, T6, T10, T5	5	25,0
			They attract attention.	T2, T7	2	10,0
	Partially Adequate	Because	They should be prepared in a more interesting way.	T1, T5, T3 T6, T8	5	25,0
			More reinforcement activities should be included.	T1, T3, T8	3	15,0
			The number of sources should be increased.	T2, T10	2	10,0
	Inadequate	Because	They should be adapted to student level.	T4, T8, T9	3	15,0
	Total				20	100

The positive views about the adequacy of the activity books in Table 8 are that the content of the books serves the purpose (25.0%) and is interesting (10.0%). The statements that the activity books are partially sufficient indicate that they should be prepared in a way that will be more interesting (25.0%), more reinforcement activities should be included (15.0%), and the number of sources should be increased (10.0%). Some of the teachers in the study think that the current activity books are not sufficient and need to be adapted to the students' level (15.0%). Accordingly, some of the sample statements from the teachers' opinions are presented below:

T7: *"The content serves the purpose. It attracts attention as it is supported by visuals."*

T3: *"Turkish course books can be made more fun. There can be more activities in the reading and writing process. In my opinion, low achievement of a student in this program results from the fact that he/she mostly has difficulty in reading comprehension. Therefore, more reading comprehension exercises can be done for students who can read and write, and participate in this program."*

T10: *"I find the prepared activities suitable for students' level. However, I can say that if the modules in the book are separated module by module as individual books or study journals instead of a single book, it will appeal to students more."*

T5: *"They are suitable for students' level but could be more interesting."*

T9: *"Texts should be selected as appropriate for student level."*

According to the data in the table, the activity books used during the program are mostly considered partially adequate by the teachers. Accordingly, based on the expressions of the teachers, the activity books are considered adequate (35%) in terms of the content serving the purpose of IYEP and being interesting. There are also teachers who do not find the books sufficient in their current form and think that they should be adapted to the level of students (15.0%). Nevertheless, the opinions expressed mostly agree on that the books are partially adequate (50.0%) and that they need to be improved. In addition, the participant teachers express that the books should include more reinforcement activities and be more interesting, and that the number of sources should be increased.

7. Opinions of Classroom Teachers on the Weekly Implementation Period

The opinions of the classroom teachers taking part in the IYEP process regarding the implementation of the program for a maximum of 10 lesson hours per week were received. Consequently, it is revealed that all the 10 teachers find the period sufficient. Some of the sample statements by the teachers are as follows:

T1: *"I taught 6 hours a week. I think it was enough. Fewer hours may prolong the process and lead to boredom, and more hours (he/she has 30 hours) may cause a decrease in the efficiency of the course."*

T3: *"Since the commuting students are in the majority, I taught for 1 hour on weekdays. The time is enough."*

T4: *"The course duration is sufficient, but the different levels of students prevented us from using this time efficiently."*

T10: *"10 hours a week is enough. Since the calendar time was sufficient in the planning made in line with the schedule, I planned as 8 hours per week."*

8. Opinions of Classroom Teachers on the Information Process Prior to IYEP

The classroom teachers participating in the study were asked whether they had received any training on the scope and details of the application, and information about the process prior to the IYEP implementation. Accordingly, 5 teachers stated that they did not receive training, and 5 teachers stated that they attended training seminar. Since the study covers the 2019-2020 school year, it indicates that the teachers who participated in the program that year were informed at the school board meetings or school commissions, and the teachers who gave the IYEP course before participated in the training seminar in previous years. Therefore, the teachers who have received training can have more information about the progress, scope, details and thus the process of the program compared to those who have not received any training. In order for the program to be carried out more consciously, it is considered beneficial to deliver trainings on IYEP to the 3rd grade teachers who have not received information about the subject before, and to the teachers who will implement the program. Some of the statements of the participating teachers are as follows:

T1: *"No information was given about the IYEP application. It would be beneficial to hold an activity for 3rd grade teachers about the details of IYEP exam and the process."*

T3: *"No. We made a joint decision with the commission formed at the school."*

T8: *"I received a few hours of training explaining the scope and details of IYEP."*

T6: *"I attended a seminar."*

9. Opinions of Classroom Teachers on the Problems Encountered during the IYEP Process

The opinions of the classroom teachers about the problems encountered during the IYEP process were received and presented in Table 9.

Table 9. Teacher Opinions on the Problems Encountered During the Program

Theme	Sub-Themes	Sample Statements for Sub-Themes	Participants	f	%
Identified Problems	Appropriate Time Period	Problems related to implementation hour of the program on weekdays	T3, T5, T7, T8	4	22,2
		Arrival and departure times of commuting students	T1, T3, T8	3	16,6
		Problems experienced in meeting students' nutritional needs	T1, T3	2	11,1
	Parents Dimension	The parents lack knowledge of IYEP and thus disapprove	T1, T6, T10	3	16,6
		Parents are indifferent to student's education	T10	1	5,6
	Student Dimension	Students with different levels are taught together	T1, T4	2	11,1
		Difficulties are experienced in maintaining classroom control lesson breaks	T1	1	5,6
	Teacher Dimension	The teacher who implements the program does not know the student	T1	1	5,6
		The additional wage paid to teachers who implement the program is low	T1	1	5,6
	Total			18	100

When Table 9 is examined, it is observed that the opinions of the teachers about the problems that arise during the process were consulted, and the problems were discussed in the dimensions of "Appropriate Time Period", "Parents", "Student", and "Teacher". The problems that the teachers put forward regarding "Appropriate Time Period" include respectively those related to implementation hour of the program on weekdays (22.2%), arrival and departure times of commuting students (16.6%), and those experienced in meeting students' nutritional needs (11.1%). The problems in the "parents" dimension are expressed as the lack of knowledge of the parents about IYEP, thus their disapproval of the program (16.6%), and their indifference to the education of the student (5.6%). The problems that arise in the "student" dimension are respectively stated as students with level differences taught together (11.1%) and difficulties in maintaining classroom control during lesson breaks (5.6%). The problems encountered in the "teacher" dimension are emphasized as the practitioner teacher's lack of knowledge about the student (5.6%) and the low wage paid to the teachers who implement the program (5.6%). Accordingly, some of the sample statements from the opinions of the teachers are presented below:

T1: *"We encountered problems such as transportation of students to and from school, control of students in break times, lessons conducted as similar to the application of multi-grade classes, not having your own students, parents' reluctance to send the kids, and nutritional problems of students. I would like to state that the most important problem is transport. There were also inequities about the allowance. It is an issue to be questioned that the branch teacher with whom we teach at the same time is paid doubly."*

T8: *"We had a problem due to the implementation time. The commuting students who stayed for IYEP had problems in arriving at their homes after the course."*

T5: *"I had a problem with the implementation time."*

T6: *"The reluctance of the parents."*

T10: *"The parents' indifference and unwillingness to give permission for their kid's involvement in IYEP."*

T7: *"I believe that the efficiency decreases because it is after school."*

T4: *"I think the class size is a problem. It is more efficient to work with students who have the same level."*

While identifying the problems that they encountered during the IYEP process, the teachers participating in the study mostly expressed opinions about the problems that they had due to the implementation hour of the program on weekdays (22.2%). Moreover, other main problems stated include the arrival and departure times of the commuting students (16.6%) and lack of knowledge of the parents about IYEP, and thus their disapproval of the program (16.6%). Furthermore, the teachers emphasized the other problems encountered during the process as students with level differences taught together (11.1%), problems in meeting the nutritional needs of the students especially during the weekdays (11.1%), difficulties in maintaining classroom control during break times (5.6%), lack of knowledge of the practitioner teacher about the student (5.6%), the low allowance paid to the teachers implementing the program (5.6%), and parents' indifference to the students' education (5.6%).

10. Suggestions of the Classroom Teachers for the Improvement of the Program

In order for IYEP to be more efficient, the opinions of the classroom teachers participating in the study were received and presented in Table 10.

Table 10. Teacher Opinions on the Improvement of the Program

Theme	Sub-Themes	Sample Statements for Sub-Themes	Participants	f	%
Improvement of the Program	Student Determination	Student Selection by the Teacher	T5, T9	2	5,4
		Candidate Student Selection by the Teacher	T1	1	2,7
		Testing the Candidate Students	T1	1	2,7
		Student Determination with Repetitive Assessment	T10	1	2,7
		Use of Different Assessment Tools	T10	1	2,7
		Identification of the Reasons Affecting Academic Success	T10	1	2,7
		Observation by Developmental Expert	T10	1	2,7
		Assessments by Counseling Center	T10	1	2,7
		Attention to Individual Differences	T1	1	2,7
		Creating a Homogeneous Class	T1, T3	2	5,4
	Grade to Start the Program	Starting in 2nd Grade	T1, T6, T7, T2, T4, T8	6	16,3
	Implementation Time/Period	Long Time/Period Implementation	T3, T8	2	5,4
		Weekend Implementation	T3, T8	2	5,4
		Weekday Implementation	T5		

				1	2,7
Student Attendance and Monitoring	Compulsory Attendance	T3		1	2,7
	Long-term Student Monitoring	T2		1	2,7
	Decreasing the Number of Students	T4		1	2,7
	Including Mid-Level Students	T8		1	2,7
Learning Outcomes	Aiming to Exceed the Comprehension Level	T1		1	2,7
	Increasing the Number of Learning Outcomes for Turkish	T1		1	2,7
	Combining Module 2 and 3 in Turkish	T1		1	2,7
	Extending the Durations for Math Modules	T1		1	2,7
Implementation Process	Activity-Based Practices	T3, T4		2	5,4
	Spiral Implementation	T2		1	2,7
Parent Involvement	Parent Support	T3		1	2,7
	Informing Parents	T3		1	2,7
Materials	Varying the Materials	T4		1	2,7
Total				37	100

When Table 10 is examined, it is observed that the teachers made their suggestions regarding the improvement of IYEP under the sub-themes of student determination, grade to start the program, implementation time/period, student attendance and monitoring, learning outcomes, implementation process, parent involvement, and materials. Considering the sub-theme of student determination, the participants emphasized the importance of determination of students by the teacher (5.4%), creating a homogeneous class (5.4%), determining candidate students (2.7%), and testing only the candidate students (2.7%), determining students with repetitive assessments (2.7%), using different assessment tools (2.7%), determining the reasons affecting the academic success of students (2.7%), observations of developmental experts (2.7%), assessments of guidance and research center (2.7%), and paying attention to individual differences (2.7%). As for the grade to start the program, the importance of starting IYEP in the second grade (16.3%) was mentioned. Regarding the implementation time/period, the teachers emphasized respectively the long-term implementation (5.4%), the weekend implementation (5.4%) and the weekday implementation (2.7%). The teachers mentioning student attendance and monitoring considered it necessary to ensure compulsory attendance (2.7%), to monitor the students participating in the program in the long-term (2.7%), to reduce the number of students in IYEP classes (2.7%) and to include mid-level students in the program (2.7%). In addition, based on the opinions about the learning outcomes, it is required that the outcomes of the application should exceed the level of comprehension (2.7%), the number of outcomes for Turkish should be increased (2.7%), the 2nd and 3rd modules of the Turkish course should be combined (2.7%), and the durations for the math modules should be extended. For the implementation process, it was considered necessary to pay attention to activity-based practices (5.4%) and spiral implementation (2.7%). Besides, the teachers mentioned the importance of parent involvement and pointed out that the parents should have more information about the application (2.7%) and parent support was required (2.7%). Finally, it was emphasized that the materials should be varied (2.7%). Accordingly, some of the sample suggestions by the teachers are as follows:

T1: *"Instead of applying IYEP student determination activities to all students, I would start by applying them to students who are likely to attend the IYEP course and make the process easier for the classroom teachers and*

school administrators. The determination exam causes a waste of paper, energy, time and motivation. Here, it is necessary to trust the teachers and administrators and conduct the exam on certain students. I would reduce the number of lesson hours by combining the 2ⁿᵈ and 3ʳᵈ Turkish modules in the program because when module 2 is finished, students reach a certain stage in reading and comprehension. I would otherwise extend the duration of the 3ʳᵈ module and add from the 2ⁿᵈ and 3ʳᵈ grade Turkish learning outcomes and aim to train students at the grade level. According to the studies to be carried out on these two suggestions, I could start the program in 2ⁿᵈ grade. Addressing the program with special education approach (BEP) and turning it into a combined classroom causes students and teachers to stay away from the program, and it is against the principle of individual differences of the curriculum. In the math modules of the program, I would aim to go above the level of comprehension by extending the duration of the 2ⁿᵈ and 3ʳᵈ modules a little longer because students participating in the program are apparent. It is obvious that these students have difficulties in ensuring the continuity of knowledge.”

T8: *“First of all, it should start in the 2ⁿᵈ grade. The duration of the program should be arranged in a way that continues throughout the education period. The time allocated to the learning outcomes should be extended. Mid-level students can also benefit from the program. It can be more efficient if implemented at the weekend.”*

T3: *“I would suggest that the lessons are delivered at the weekend by spreading over a wider period and that only the students from the same module are involved in the same class in the program. I also suggest that more activities should be performed, and that it is taken more seriously by families. First, a meeting should be held with the parents, they should be informed and included in the process. The program should definitely be planned as 1 day at the weekend. Students who really need the program should be identified, and their participation in the process should be mandatory.”*

T4: *“If it were possible, I would work with 1, maximum 2 students. A single book about the lessons is not enough, it is necessary to prepare activity books and materials. In addition, it would be more appropriate to start from the 2ⁿᵈ grade.”*

T2: *“Starting from the 2ⁿᵈ grade, these students should be made to repeat the learning outcomes every year. The IYEP implementation should continue. Students participating in IYEP should be monitored during secondary education as well.”*

T10: *“I used to organize OBA not at one time, but at 3 times in 2-week periods with different measurement tools. I would conduct other tests on the student to be accepted with OBA, and determine different underlying problems. It is necessary for development specialists to examine the biological reasons that affect academic achievement of the student, and for counseling and research center to carry out the necessary psychosocial tests.”*

The teachers participating in the study mostly emphasized the sub-theme of student determination (32.4%) in their suggestions proposed for IYEP to be more efficient. Accordingly, it was considered important that the classroom teacher had more influence in determining the student to be included in the program (10.8%) and more homogeneous groups with approximate student levels were formed (5.4%). Moreover, the teachers particularly stated that the program should be started in the second grade (16.3%). Besides, in the sub-theme of implementation period/time, the prevailing opinions included long-term implementation of the program (5.4%) and the implementation on weekends (5.4%). As for the sub-theme of the implementation process (8.1%), it was stated that the program should include more activity-based practices (5.4%). Apart from these, views on the sub-themes of student attendance and monitoring (10.8%), learning outcomes (10.8%), parent involvement (5.4%), and materials (2.7%) were also emphasized regarding the improvement of the program.

4 | DISCUSSION & CONCLUSION

It is known that learning deficiencies have consequences that may occur in further education levels such as academic failure, grade repetition, absenteeism, and getting out of formal education and these consequences may cause both individual and social harm. It is a fact that an early intervention is required to minimize such consequences and that IYEP has an important function in this regard (TEDMEM, 2020, p. 129). In this study, the opinions of the participating teachers about the IYEP process were taken, and they were asked to evaluate the

program. In this section, the findings were discussed in line with the purpose of the study, and suggestions were proposed by presenting the results. Therefore, the teachers' opinions were received regarding the adequacy of Turkish and math learning outcomes of IYEP, its contribution to student achievement and self-improvement, psychosocial support aspect, and student determination process. Additionally, teachers were also asked about the activity books, weekly duration, and briefings for the teachers prior to the program. In this context, the problems identified and the suggestions proposed by the teachers for the improvement of the program shed light on the purpose of the study.

The opinions of the teachers about the adequacy of Turkish and math learning outcomes in IYEP are included within the scope of the research. In this context, the majority of the teachers find the learning outcomes in Turkish lesson adequate. The teachers think that reading, writing and reading comprehension activities are appropriate for the level of students, and that these activities will help students overcome their deficiencies in the field of literacy. In parallel with the findings obtained, it is concluded in the research conducted by Balantekin (2020) that IYEP contributed to Turkish lesson of the students. In another study, it is revealed that it contributes more to the development of listening, speaking and reading skills (Avlukyarı, 2019). Besides, the opinions expressed by the teachers include that the learning outcomes in the 3rd module of Turkish should include the outcomes of subjects such as text knowledge, punctuation marks, and vocabulary. As a matter of fact, in the study conducted by Kırnık, Susam, and Özbek (2019), the learning outcomes of IYEP Turkish course were considered inadequate by the participating teachers, due to lack of learning outcomes in certain fields such as vocabulary, punctuation, interpretation and questioning skills. Regarding the math learning outcomes, it is expressed by the teachers that they are appropriate for the level of the students. The learning outcomes for comprehension of four-operation skills and acquisition of problem-solving skills are appropriate for the student level. On the other hand, in the study conducted by Kozikoğlu and Tosun (2020), nearly half of the teachers participating in the research indicated that achievements learning outcomes developed within the scope of IYEP were very simple. In addition to the relevant study, the opinions of teachers in other studies support the findings, provide similar results and state that the math learning outcomes are considered suitable for the student level (Kırnık et al., 2019; Toptaş & Karaca, 2019). Besides, in the study conducted by Aydın and Yakar (2020), teachers stated that they had the opportunity to care for students one-to-one during the implementation process and thus students completed the learning outcomes and skills that they lacked. This shows that the learning outcomes in the program are suitable for the level of students, and that the opportunity to pay individual attention to fewer students can prevent incomplete learning.

The opinions of the classroom teachers assigned in the IYEP process were received regarding the contribution of IYEP to student achievement, and they stated that the program contributed to Turkish and math courses. In addition to academic success, the program also increases students' motivation and self-confidence towards the lessons. The findings obtained in the study by Dilekçi (2019) are similar, and a great majority of the teachers have positive opinions regarding the effect of IYEP on the lesson performance and motivation of the students. There is a direct proportion between motivation and course performance, and the more the student's motivation increases, the more the course performance will improve (Vatansever Bayraktar, 2015). On the other hand, in the study conducted by Yıldız and Kılıç (2019), regarding whether IYEP increases academic achievement or not, some teachers state that there is a partial increase or that this achievement is not permanent, while others indicate that it does not cause an increase. According to the available findings, the teachers think that IYEP Turkish course helps improve reading, reading comprehension and writing skills in particular. It is also revealed in various studies that it contributes to student achievement in Turkish lessons, development of literacy skills and positive attitudes towards school (İğli & Ulutaş, 2020; Kırnık et al., 2019). Moreover, regarding IYEP math course, the teachers think that it mostly contributes to the development of four-operation skills and motivates students for math. In the study conducted by Toptaş and Karaca (2019), the teachers generally think that IYEP math course is highly efficient, and that students experience achievement more and their self-confidence increases with these courses. On the other hand, in the study by Avlukyarı (2019), it is stated that problem-solving skills and the ability to gain mathematical concepts are partially achieved in mathematics lessons. It is also indicated that individualizing the program more, reorganizing the application period, having activity resources for grades and workbooks for home will be beneficial to achieve the learning outcomes for mathematics course. 2019 Education Evaluation Report by Turkish Education Association states that, among the 3rd and 4th grade students involved in the program, 87.06%

of the students instructed in math, 87.08% of the students instructed in Turkish and 87.41% of the students instructed in both courses were successful in all modules according to the Student Evaluation Tool (ODA) results (TEDMEM, 2020, p. 129). Consequently, even though the program seems to make substantial contribution to student achievement, it also means that the same program does not contribute enough to the Turkish and mathematics course achievement of approximately 13% of the students. In this case, it is considered that the program increases student achievement, but there are measures to be taken (such as ensuring the continuity of all students in the program, increasing the number of resources, applying individualized education) in order to prevent incomplete learning. It can be stated that allocating more time to students who have problems in learning will contribute to their learning (Kırnık et al., 2019).

Within the scope of the research, the teachers were asked for their opinions about the psychosocial support dimension of the program, and it was identified that a great majority of the teachers did not have an idea about the psychosocial support of IYEP. It is believed that this situation is due to the lack of any informative/educational activity for teachers that will enable them to provide psychosocial support throughout IYEP, and it is stated that schools' guidance teachers and guidance research centers (RAM) should play a more active role in this area (TEDMEM, 2019, p. 138, 139). According to Gençoğlu (2019), providing psychosocial support together with Turkish and math courses is one of the strengths of the program, and recognizing and working on the obstacles against learning is important in reaching the objectives of the program; however, in the study conducted by Avlukyarı (2019), it is revealed that teachers have problems regarding psychosocial support and cannot find time to carry out relevant activities. When the literature is reviewed, it is also observed that teachers carry out more classroom activities increasing motivation as regards to psychosocial support dimension (Kırnık et al., 2019).

The teachers participating in the study indicate that the program, as regards to supporting students' self-improvement, contributes to promotion of their cognitive, affective and social development such as taking responsibility, actively participating in the lessons, gaining self-confidence, improving their attention levels towards the lesson, gaining a positive attitude towards school, expressing their emotions correctly, recognizing their strengths, feeling the sense of socialization and achievement.

Achievement increases individuals' effort to be successful because a successful student will be motivated to learn in order to succeed again, and it will bring in new achievements (Akbaba, 2006). As a matter of fact, the research conducted by Kozikoğlu and Tosun (2020) supports the findings, indicating that teachers consider IYEP helpful in developing a sense of responsibility, making students feel the sense of achievement, increasing self-confidence, academic success, level of willingness to study, self-efficacy, and the number of positive relationships between students. Likewise, in the study conducted by Dilekçi (2019) in a similar direction, some positive opinions that teachers have mostly expressed on IYEP include that the program allows students to improve themselves and increase their self-confidence, and contributes to reducing level differences between students and developing a sense of belonging to the school. Therefore, it is believed that the activities performed by the teachers during the program are of great importance in supporting students' self-improvement.

The opinions of the teachers regarding the adequacy of the student determination tool (OBA) used to determine the students to be included in the program were consulted, and the majority agreed on that OBA was adequate. The opinions about the adequacy of the student determination tool include that the questions serve the purpose, the instructions are clear and understandable, and the tool does not cause exam anxiety. In the study conducted by Toptaş and Karaca (2019), teachers' opinions on student determination and assessment tools were asked, and the majority of the teachers who participated in the study found the questions in the student tools for the mathematics course suitable for the purpose of IYEP. In the present study, there are also opinions indicating that the student determination tool is partially adequate. The common view here is that OBA is sufficient and that innovations are required in its current form. For instance, the implementation period may be longer, it may be conducted and evaluated by a different teacher, or subjects from previous years may be included for review. On the other hand, the study also involves opinions considering OBA inadequate. In particular, the teachers agree on that the questions do not serve the purpose and that teacher observation should be more determinative. Some teachers also state that the classroom teachers know their students best, and it would be appropriate if they determine the students to be included in the program. In the study conducted by Yıldız and Kılıç (2020), the majority of the teachers expressed

that the student selection was not carried out properly. In the relevant study, it was stated that the exam was not suitable for determining the students and that teachers should be involved in the process. Findings from different studies also support this view, and indicate that the student selection/determination process for IYEP is not sufficient and it brings in some problems (Dilekçi, 2019; Kozikoğlu & Tosun, 2020). Nonetheless, it is known that IYEP has a flexible design regarding the mistakes that may arise from measurement errors in the assessment and evaluation process, such as inclusion or removal of the student in the program with the decision of the commission, and changing the module of the student (Gençoğlu, 2019). This is very important in minimizing the mistakes that may arise from measurement errors in the student determination process.

The classroom teachers who participated in the study were asked about their opinions on the adequacy of the activity books (Turkish and mathematics) used in IYEP courses. As a result of the opinions expressed, the activity books are found partially adequate. Even though the content of the books is considered interesting and suitable for the purpose of IYEP, the majority thinks that the books need improvement. Accordingly, it is stated that the books should be revised in order to be more interesting (increased print quality, more visuals, etc.), include more reinforcement activities, and increase the number of sources (modular books suitable for the level differences between modules). The activities in the books should be selected from activities that complement each other, enable active participation and interaction, and increase students' language and mental skills (Çevik & Güneş, 2017, 285). In addition, books with vivid and bright-color covers, and content including a lot of pictures, which are of quality, relevant, authentic and interesting, are liked more by primary school students (Altunkaynak, 2018, 114). In the research conducted by Balantekin (2020), the importance of preparing a flexible book including more activities reserved for modules and offering alternatives for teachers is emphasized. In the study by Kozikoğlu and Tosun (2020), the opinions of the teachers indicate that it is wrong to gather different modules in a single book. It is also stated by the teachers that lack of materials constitutes a problem and that the materials should be diversified for a more effective and efficient implementation of IYEP (Dilekçi, 2019; Kozikoğlu & Tosun, 2020). The findings obtained from these studies are parallel with the present research results. On the other hand, in the study by Toptaş and Karaca (2019), it is stated by the participating teachers that the activities in the math activity book are sufficient and that the book is interesting and colorful.

The teachers participating in the study were asked their opinions about the adequacy of having a maximum of 10 lesson hours per week in terms of program duration, and all of the teachers considered a maximum of 10 lesson hours per week as sufficient. It is observed that the teachers' opinions considering the weekly lesson hours sufficient are determined by certain factors such as that commuting students are included in the program, students attend IYEP courses after their daily lessons in class, and this situation causes fatigue. Moreover, it is observed that none of the participating teachers used the maximum 10 lesson hours per week since there are 6 lessons per day in primary schools. Adding a few more lesson hours every day will decrease students' interest in the program, and factors such as fatigue and hunger will interfere and cause problems in motivation and concentration on the lesson. Adding IYEP courses to the weekly lessons may cause fatigue and low motivation in the students involved in the program (Kozikoğlu & Tosun, 2020). In the program, 96 lesson hours are determined for the 16 learning outcomes of Turkish course, and 64 lesson hours for the 22 learning outcomes of the math course (MoNE - Directorate General for Basic Education, 2019c). In the research by Kırnık et al. (2019), it is stated that since IYEP learning outcomes are suitable for student level, no additional time is required during the implementation of the program, and the course duration is sufficient. On the other hand, one of the teachers in the study emphasizes that the course duration is sufficient, but the difference in student levels prevents the effective use of time so the course duration should be made more efficient. In order to solve this problem, it is suggested that more time should be allocated for individual work by making the program more flexible, and individual work should be focused on by decreasing the number of students in class (Avlukyarı, 2019).

The teachers were asked whether an in-service training was delivered to explain the details, scope and procedure of the IYEP program before starting the implementation. In line with the data obtained from the teachers, it was identified that 5 teachers received training seminar whereas 5 teachers did not. The research covers the 2019-2020 school year, and it is observed that the teachers participating in IYEP application in previous years received training seminar about the process, but the teachers included in the program that year obtained information through school board meetings or school commissions. As a result of the study conducted, it is

anticipated that an in-service training to be held at the beginning of the year for the 3rd grade teachers and the implementers of the program who have not received training before will be beneficial because even though the school board/commission meetings are held for informative purposes, they cannot replace in-service training, and some information is given only superficially. In the study conducted by Toptaş and Karaca (2019), it is also stated that school administrators and classroom teachers should be informed more about IYEP. As a result of in-service trainings, the quality of the instruction delivered by the teachers increases (Erdem & Şimşek, 2013, 99). In order for the program to be successful and achieve the intended outcome, it is important that the teachers who will conduct the implementation have sufficient knowledge about the program (Kozikoğlu & Tosun, 2020).

The teachers participating in the study were asked about the problems that they encountered during the IYEP process and they stated the problems respectively as the limited period available for the implementation of the program, arrival and departure times of commuting students, lack of knowledge of parents about IYEP and therefore their disapproval of the program, teaching students with level differences together, problems experienced in meeting nutritional needs of students, difficulties in maintaining classroom control in break times, lack of knowledge of the practitioner teacher about the student, low allowance to the teachers implementing the program, and the indifference of the parents to the student's education. In line with the results of the present study, it is stated in the TEDMEM (2019) 2018 Education Evaluation Report that some problems may be encountered in double-shift schools, schools with commuting students and multi-class schools regarding the IYEP implementation process. It is presented in the report that, especially in these schools, there is need for time, place, teachers, and arrangements in student transportation on weekdays, and for food and transport at the weekends. The problems revealed in the research by Aydın and Yakar (2020) show similarities with those identified in this study. These problems include teaching students from different modules at the same time, the allowance paid to the teachers being less than that of the teachers working in DYK (Remedial and Training Courses) in secondary and high schools, the absenteeism of the students, their tiredness, inadequate quality and quantity of the course materials, classroom problem and parents' indifference to the program. Gençoğlu (2019) states in his study that the motivation of teachers is important for the healthy execution of IYEP and that the teachers expect to be paid an incremental allowance or given additional service points. In their research, Yıldız and Kılıç (2020) indicate in their study that the planning of IYEP is not well-prepared, the courses have started without the necessary infrastructure and materials, and the stakeholders including the teacher-student-parent group have not been informed enough. In addition to the identified problems, in the study by Kırnık et al. (2019), it is stated that certain problems arise from that participation of students in IYEP depends on parents, teachers do not want to be assigned in IYEP, the assigned teachers work in different schools, the number of students included in IYEP is high, and there is no control mechanism for IYEP.

Within the scope of the research, a general evaluation of IYEP was made by the classroom teachers who were the implementers of the program. Accordingly, the participating teachers were asked to make some suggestions for the program to be executed more efficiently and improved. Various suggestions made by the teachers include starting the program in second grade, forming more homogeneous groups so that the student levels in the groups are close to each other, increasing the influence of the classroom teacher in determining the students to be included in the program, identifying the reasons that affect academic success, focusing on activity-based practices by considering individual differences, varying the materials, planning the implementation for the long term. They made various suggestions, such as planning it as a semester/term and implementing it at the weekends. In particular, that the program should be started in second grade and cover a long period/term is a suggestion made by the teachers predominantly. It is also observed in studies that this issue is frequently mentioned by teachers for the improvement of IYEP (Balantekin, 2020; Dilekçi, 2019; İğli & Ulutaş, 2020; Kırnık et al., 2019).

In order to improve IYEP and ensure a more efficient execution, as well as to contribute to the program's developers, practitioners and researchers, some recommendations have been made in parallel with the study results. For the developers and practitioners of the program, it can be recommended that the activity books used during the program should be separated as modular books rather than a single book and be prepared in a more interesting way, more activities should be included, and material support should be provided for teachers to use in the lessons. It can also be suggested to form more homogeneous classes where the levels of the students are close

to each other. Moreover, the program can be planned as one day at the weekend, and transportation and meal support may be provided for students who need to commute. Another recommendation is that the program is implemented starting from the 2nd grade and continued throughout the primary education; the student's education and success may be monitored later on. It can be planned that the opinion of the classroom teacher becomes more effective in the student determination process (For example, OBA is applied to the candidate students determined by the teacher…). In order to provide more detailed information about the function, purpose and scope of the program, it can be suggested to organize seminars for school administrators, classroom teachers and school counselors within the body of Directorates of National Education, and parent meetings for parents within the body of school headships. Another suggestion is that activity-based practices considering individual learning speed can be performed by decreasing the number of students in IYEP groups. In order for the psychosocial support dimension of the program to serve the purpose, the teacher implementing IYEP, the student's own classroom teacher, school guidance counselor, and guidance and research centers work more coordinately within the provincial directorates of national education. In order to increase the motivation of teachers, the allowance paid for IYEP courses can be increased. Furthermore, it can be suggested that IYEP, which mostly involves disadvantaged children, should be supported by experts and various institutions and organizations (developmental experts, psychologists, provincial directorates of family and social services…) to identify and solve the problems that affect academic achievement of students. For researchers, it may be suggested to conduct research based on the opinions of school administrators and parents in addition to the opinions of teachers about the program, to carry out quantitative and mixed studies apart from qualitative ones, and to conduct more research on the content or the psychosocial support dimension of the program.

Statements of Publication Ethics

Ethical permission of the research was approved by Bartın University Social and Human Sciences Ethics Committee. Ethics committee document number is 2021-SBB-0263.

Researchers' Contribution Rate

Authors contributed equally rate to the research.

Conflict of Interest

We confirm that there are no conflicts of interest associated with this study.

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Middle School Students' Views about STEM Activities Used in Teaching Ratio and Proportion

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ABSTRACT

The purpose of the study was to investigate middle school students' views about STEM activities used in teaching ratio and proportion concepts in a mathematics classroom. The research was designed as a phenomenology study. Participants were eight middle school students who were selected among 20 students based on different proportional reasoning skills. Data were collected through semi-structured interviews. In the mathematics classroom where the participants of the study were selected, the subject of ratio and proportion was taught to the students with the help of STEM activities. Students had the chance to experience how the mathematics lesson was taught with STEM activities. After all the STEM activities were completed, semi-structured interviews were held with each participant. According to the findings, the students focused on the positive aspects of STEM activities. Students mentioned that STEM activities were enjoyable, interesting, and collaborative. Moreover, students stated that the activities provided active participation, permanent learning, creative thinking, and developed hand skills. Additionally, students argued that STEM activities were interdisciplinary, technology related, and related to everyday life.

Keywords: STEM education, ratio and proportion, middle school students

Ortaokul Öğrencilerinin Oran ve Orantı Konusunun Öğretiminde Kullanılan STEM Etkinliklerine Yönelik Görüşleri

ÖZ

Bu araştırmanın amacı, ortaokul öğrencilerinin oran ve orantı kavramlarının öğretiminde kullanılan STEM etkinlikleri hakkındaki görüşlerini incelemektir. Araştırma bir fenomenoloji çalışması olarak tasarlanmıştır. Katılımcılar, farklı orantısal akıl yürütme becerilerine dayalı olarak 20 öğrenci arasından seçilen sekiz ortaokul öğrencisidir. Veriler yarı yapılandırılmış görüşmeler yoluyla toplanmıştır. Araştırmanın katılımcılarının seçildiği matematik sınıfında oran ve orantı konusu STEM etkinlikleri yardımıyla öğrencilere öğretilmiştir. Öğrenciler, STEM etkinlikleriyle bir matematik dersinin nasıl yürütüldüğünü deneyimleme şansı bulmuşlardır. Tüm STEM etkinlikleri tamamlandıktan sonra her bir katılımcı ile yarı yapılandırılmış görüşmeler yapılmıştır. Elde edilen bulgulara göre; öğrenciler STEM etkinliklerinin olumlu yönlerine odaklanmışlardır. Öğrenciler, STEM etkinliklerinin eğlenceli ve ilgi çekici olduğunu ve işbirlikçiliği desteklediğini belirtmişlerdir. Bunun yanında, öğrenciler etkinliklerin aktif katılımı, kalıcı öğrenmeyi, yaratıcı düşünmeyi ve el becerilerini geliştirmeyi sağladığını söylemişlerdir. Ayrıca öğrenciler, STEM etkinliklerinin disiplinler arası, teknoloji ve günlük yaşamla ilgili olduğunu ileri sürmüşlerdir.

Anahtar kelimeler: STEM eğitimi, oran ve orantı, ortaokul öğrencileri

1 | INTRODUCTION

Individuals in the developing world are required to investigate, research, reason, and adapt what they produce to a variety of situations (Akgündüz et al., 2015; Çepni, 2017). For this reason, educational approaches that support 21st century skills, such as critical thinking, groupwork, collaboration, problem-solving, creativity, and logical reasoning, should be included by creating science and technology-friendly learning settings. A qualified workforce is a result of high-quality learning environments (Bowman, 2010; Rennie et al., 2012). Countries that need productive individuals have begun to invest in various educational approaches. One of these educational approaches is the Science, Technology, Engineering and Mathematics (STEM) education. STEM education facilitates learning by removing the boundaries between science, technology, mathematics, and engineering disciplines (Gallant, 2010). The four disciplines in STEM acronym could be summarized as, Science – is a branch of the world around us, Technology – all kinds of human-made products to meet people's wishes and needs, Engineering – the design processes that children use to solve problems, and Mathematics – the language of numbers, shapes, and quantities (Jolly, 2014).

STEM education, which should be provided from kindergarten to university, allows students to apply what they have learned to a variety of settings. This production-oriented education requires the effective application of technology while also enhancing creativity, critical thinking, and problem-solving skills (Ministry of National Education [MNE], 2018). These features, which are demanded by the 21st century, have become essential for countries that want to keep up with the rest of the world's education. It is foreseen that the transfer of science and mathematics, technology and engineering disciplines used in the application process, which make up STEM education, to classroom environments can offer solutions to current and future problems (Gökbayrak & Karışan, 2017; Lacey & Wright, 2009; MNE, 2019; National Research Council [NRC], 2012).

The application of STEM education in schools and how it would be adapted to the education system were discussed. Considering the studies on this subject, content and context were emphasized (Roehrig et al., 2012). The content focused on developing a new curriculum by bringing together the STEM disciplines (Science, Technology, Engineering, and Mathematics) under one roof (Breiner et al., 2012). In the context, it was emphasized that one of the disciplines was centered and the other disciplines were used as a tool to facilitate teaching (Moore et al., 2014; Yamak et al., 2014). In a similar way, the STEM activities in the current study put mathematics at the center. In Turkey, it was observed that studies examining STEM activities for teaching mathematics concepts were fewer than studies on teaching science concepts. However, in recent years, it was seen that there was an increase in STEM studies with mathematics concepts (Aydın, 2019; Çiftçi, 2018; Daymaz, 2019; Delen & Uzun, 2018; Erçetin, 2021; Macun, 2019). Correspondingly the current study investigated middle school students' views about STEM activities used in teaching ratio and proportion concepts in a mathematics classroom. The STEM activities planned in this study considering suggestions about STEM education and the engineering design process (Bender, 2017; Massachusetts Department of Education [DoE], 2016; MNE, 2016; NRC, 2010). Students first identify a problem within its parameters, then study and develop various solutions, build a prototype, test, and assess the answer, and ultimately discuss and share with one another in the engineering design process (Bender, 2017; Massachusetts DoE, 2016). Engineering design is a cyclical and iterative process that aims at enhancing creativity (NRC, 2012).

According to STEM education research, students' attitudes toward STEM activities were generally positive, and STEM education addressed students' 21st century skills (Daymaz, 2019; Goonatilake & Bachnak, 2012; Lamb et al., 2015; Nugent et al., 2010; Pekbay, 2017; Şahin et al., 2014). Furthermore, STEM education was shown to improve students' willingness to learn (Aydın, 2019; Daymaz, 2019; Elam et al., 2012; Master et al., 2017), problem-solving capabilities (Aydın, 2019; Bal, 2018; Pekbay, 2017), mathematical thinking (Singh et al., 2018), and originality (Aydın, 2019; Çiftçi, 2018). Based on the findings of the studies, STEM classroom activities should be adjusted to the curriculum's learning outcomes (Akay, 2018). Furthermore, in a study involving mathematics and science teachers and students, Güder and Gürbüz (2018) discovered that STEM activities promoted multidisciplinary interaction. In contrast to these findings, Erçetin (2021) indicated that STEM applications had no effect on students' attitudes toward the lesson. In this setting, it appears that careful planning and implementation of STEM activities is crucial.

Considering the mathematics curriculum in Turkey, students are expected to be able to use mathematical literacy skills effectively, adapt mathematical concepts to daily life, realize their proportional thinking and reasoning while solving problems, see and discuss the deficiencies in their mathematical reasoning in group work, use terminology while expressing themselves mathematically, and associate mathematics with objects and events (MNE, 2018). Beyond calculation of numeric values, mathematics education aims to transform students' abilities such as thinking skills, seeing relationships between situations, problem solving, and comparison, and turning them into life skills (Umay, 2003). One of the real-world abilities is proportional reasoning (Al-Wattban, 2001; Dooley, 2006; MNE, 2018). According to Lamon (2007) proportional reasoning is "detecting, expressing, analyzing, explaining, and providing evidence in support of assertions about proportional relationships" (p. 647). One of the most important steps of proportional reasoning is to be able to express proportional situations in problems mathematically by noticing them (Cramer & Post, 1993). The ability to understand and apply proportionality rules is the most general definition of proportional reasoning (Flowers, 1998). Proportional reasoning skills are seen as one of the basic building blocks of primary and secondary school mathematics curricula (Lesh et al., 1988). Rather than focusing on what proportional reasoning was, studies focused on how it worked. When we examined the areas where it was employed, we could see that it spread to a wide range of topics, including ratio and proportion, speed, moment, power, pressure, density, systems, and genetics (Lamon, 2007; Mitchell & Lawson, 1988). In particular, individuals use proportional reasoning when solving daily life problems. Proportional reasoning is a bridge that connects disciplines by bringing them together (Akkuş-Çıkla & Duatepe, 2002). Research studies argued that students' problem solving and reflective thinking skills could not be separated from proportional reasoning (Aladağ & Dinç-Artut, 2012; Çelik, 2010; Öztürk, 2020). As in the teaching of every mathematical concept, the idea of 'mathematics is a mass of formulas' should be removed in the teaching of ratio and proportion, and students should be enabled to learn by making use of their reasoning and experiences (Küçük & Demir, 2009). Students should be encouraged to solve problems by combining STEM disciplines so that they learn that mathematics is not hard to grasp and is more than just a collection of operations (Çorlu, 2012). Thus, it is important to investigate the seventh-grade middle school students' views about STEM activities used in teaching ratio and proportion concepts in a mathematics classroom. The research question of the study was: "What is the seventh-grade middle school students' views about STEM activities used in teaching ratio and proportion concepts?"

2 | METHOD

RESEARCH DESIGN

This study designed based on qualitative research techniques which provided an in-depth explanation and rich description of the phenomenon. Creswell (2007) defined the phenomenology in qualitative research as an approach which "describes the meaning for several individuals of their lived experiences of a concept or a phenomenon" (p.57). Considering this definition and the phenomenon of this study as views about STEM activities used in teaching ratio and proportion concepts, a phenomenological design was employed for the study. The views of the students about STEM activities were investigated through their perspectives and lived experiences.

PARTICIPANTS

Participants of the study were eight seventh-grade students enrolled in the Mathematics Applications course in a public middle school. The course was an elective course with the goal of integrating mathematics into everyday life issues through the creation of mathematical models and the development of unique problem-solving strategies (MNE, 2018). Since generalization in statistical concern was not the goal of qualitative research, purposeful sampling was the method of choice (Patton, 2002). Patton (2002) stated that the power of purposive sampling lies in selecting information-rich cases to get in depth information. In this research study, it was important for the authors to investigate students' views about the STEM activities in teaching mathematics. Thus, to get deep insight about the students' views about STEM education, the authors decided to concentrate on the students who experienced learning ratio and proportion concepts with STEM activities in the Mathematics Applications course conducted by the second author. Since maximum variation sampling aims at capturing and describing the central

themes that cut across a great deal of participant variation, maximum variation sampling was used (Patton, 2002). Participants were selected among 20 students who took the course according to their different proportional reasoning skills. Before the STEM activities a "Proportional Reasoning Test" was administered to the students who were enrolled in the course. The test aimed to measure students' proportional reasoning skills by analyzing the solution strategies used by students for different types of problems and their ability to distinguish non-proportional relationships from proportional ones. There were eight missing value problems, two numerical comparison problems, four qualitative reasoning problems and three non-proportional problems. The researchers chose and/or adapted some of the problems in the test from the literature (Akkuş-Çıkla & Duatepe-Paksu, 2006; Cramer et al., 1993; Hillen, 2005; Noelting, 1980) and wrote some of them. The test was conducted only to identify the students who participated in the semi-structured interviews. The genders of the participants and the scores they obtained from the "Proportional Reasoning Test" are given in Table 1.

Table 1. Gender and Test Scores of the Participants

Participants	Gender	Test Scores
S1	Male	34
S2	Female	47
S3	Female	60
S4	Female	57
S5	Male	16
S6	Female	34
S7	Male	20
S8	Female	11

As seen in the Table 1, S1, S3, and S4 were chosen from the highest test scores, S8, S5, and S7 were chosen from the lowest test scores, and S2 and S6 were chosen from the medium test scores.

DATA COLLECTION

Data were collected through semi-structured interviews. In the mathematics classroom where the participants of the study were selected, the subject of ratio and proportion was taught to the students with the help of STEM activities. By this way, students had the chance to experience how the mathematics lesson was taught with STEM activities. After all the STEM activities were completed, semi-structured interviews were held with each participant. For each interview, first, the aim of the interview was explained. Then, the students were asked to answer the questions that were prepared previously. After their explanation, general inquiries were made, such as, "explain", "clarify", or "give details". In other words, although there was an interview protocol, there was also flexibility in the interviews. The questions in the interview protocol were: "What do you think about the STEM activities we use in the lessons?", "What makes STEM activities different for you? Can you explain?", "What do you think these activities contributed to you? Can you explain?" and "Do you want application of STEM activities in teaching other mathematics concepts? What is the reason for this?". Each interview was conducted in a quite area of the school to enable students to express themselves comfortably. To make the data collected from interviews more reliable, short notes were taken and interviews were recorded. The interviews lasted between 20 and 25 minutes.

Following the formation of the interview protocol, it was provided to two field experts for their feedback. Simultaneously, the form was forwarded to a language expert, who verified that the questions contained clear and understandable expressions. With the interview protocol prepared by planning in line with the expert opinions received, first a pilot interview was made with a student who was enrolled in the Mathematics Applications course. The interview protocol was completed in accordance with the feedback from the pilot interview, and the research data collection started. During each application of the STEM activities, the researcher, who applied the activities, took brief field notes. To get a detailed and precise description of the students' views, the interview data were supported by the field notes.

STEM-related activities were planned by considering The Engineering Design Process (Bender, 2017; Massachusetts DoE, 2016). The Engineering Design Process helps to compare scientific and mathematical data in a variety of ways. The engineering design process also involves the stages of defining the problem and solving the problem (NRC, 2010). The first stage in solving the problem is to generate possibilities and choose the most appropriate one. Instead of following the steps presented to them sequentially, engineers must cyclically return to some stages and revise what they have done while solving their difficulties (NRC, 2012). The 5E model was chosen for the lesson plans because it is compatible with the Engineering Design Process phases. The following is the relationship between the MTS process and the 5E Model: problem definition, introduction, development of possible solutions, discovery, determination of the most appropriate solution, explanation, prototype creation, deepening, testing the solution, evaluating, and sharing the evaluation part. When weaknesses in the solution are discovered, the method is changed, and a reversible system is built into the loop. Seven separate STEM activities about ratio and proportion concepts were conducted in a two-hour Mathematics Applications course with a class of 20 students. The activities were finalized with the collaboration of three STEM-trained teachers: a mathematics teacher, a science teacher, and a technology design teacher. Special attention was devoted to bringing the disciplines together when designing the activities. The first activity was about preparing mixtures. First, students used search engines to research how the mixtures we wanted them to prepare were made. Then, they prepared mixtures: Oobleck dough mix, lemonade, and mud. They examined how the ratio of ingredients in the mixtures affected the attributes of the mixtures as the ratio changed. The second activity was about organizing running Olympics using the SCRATCH program. Students were able to see how proportional and disproportionate circumstances might emerge in settings with the same or different speeds by incorporating designs such as items, people, and animals moving at varying speeds or with different step lengths into the software. The third activity was about the clock's mechanism and the wheels that are utilized in it. The students used the wheels to create their own unique designs to learn the proportional relationships between wheels with different tooth counts. In the fourth activity, students created designs employing the advantages and disadvantages of vehicles with varied wheels based on the interaction between thick and thin rolling pins. The fifth activity involved creating mBlock structures, utilizing the Arduino set to determine the interval at which the red, yellow, and green lights should turn on, and adjusting the traffic flow. In the sixth activity, students designed models of their ideal home that were scaled down to a 1/20 ratio. The students understood that they would proportionally increase or decrease the quantities in this way. In the last activity, to assist a stranded fisherman, the students created designs that calculated the time it would take him to reach the beach. The students used wooden sticks at the opposite ends of a basin to measure the distance between the points. One recorded the time while the other threw a stone from the starting location. Students looked at the relationship between the time and distance of the stone's waves. A sample activity lesson plan is presented in Appendix 1 to clarify how STEM activities were organized in the lesson.

DATA ANALYSIS

For the analysis of data, the interviews were transcribed. In data analysis, content analysis method was used to organize and interpret data into meaningful themes or categories (Patton, 2002). Content analysis is a method that needs in-depth data analysis and allows previously unidentified themes and dimensions to be revealed (Yıldırım & Şimşek, 2018). Initially, interview audio recordings were transcribed into written documents. The information gathered from field notes and semi-structured interviews were then read and categorized several times, and themes and codes were obtained. The themes of the study were affective domain, cognitive domain, psychomotor domain, and making relationships. First, the codes under the affective domain theme were enjoyable, interesting, and collaborative. STEM activities, according to students, were enjoyable, fun, fantastic, entertaining, delightful, and enabled students to have a good time in the class. All these statements were coded under the enjoyable code. Moreover, some students stated that the activities were interesting, different, and attractive when they compared with regular mathematics lessons. These statements were coded under the interesting code. An example quotation of this code was "I suppose in the regular lesson I don't want to tackle math problems, but for example, the activity with traffic lights was challenging, but I was curious how to solve it, so I tried to do it." Furthermore, according to some students, in STEM activities there were cooperation, collaboration and interaction. These statements were coded under collaborative code. These statements were grouped together under the theme of the affective domain since they were related to the students' affective gains and emotions. Second, the codes under the cognitive domain

theme were active participation, permanent learning, and creative thinking. Some of the students stated that STEM activities allowed to learn by exploring, doing, and experiencing. Additionally, the activities provided active participation, active engagement, permanent learning, better understanding, and creative thinking. Since these statements were related to the cognitive gains of the students, they were gathered under the theme of the cognitive domain. Third, the code under the psychomotor domain theme was hand skills. Some of the students expressed that their hand skills and manual dexterity were used and developed in STEM activities. These statements were grouped under the theme of the psychomotor domain because they were related to the students' psychomotor gains. Finally, the codes under the making relationships theme were interdisciplinary, technology related, and related to everyday life. According to some students, STEM activities were related to other disciplines technology, and everyday life. Therefore, the statements about the relationships of the activities were classified under the theme of making relationships.

Researchers critically questioned themselves and the research process and checked whether the findings and results they obtained reflect the truth (Yıldırım & Şimşek, 2018). It was aimed to compare, check, and confirm the findings obtained using multiple data collection tools (field notes and semi-structured interviews). In addition, some of the data obtained from the research were analyzed by a mathematics teacher as the second coder. The reliability of the data analysis was calculated using Miles and Huberman's (1994) percentage formula "Percent Consensus = [Agreement / (Agreement + Disagreement)] x 100". In the study, the percentage of agreement between the two coders was found to be 93% and it was considered reliable for the study (Miles & Huberman, 1994). Rich and detailed definitions made to increase the level of transferability of research findings to different situations (Merriam, 2015). In addition, the research group and data collection process were explained in detail. In addition, the research findings were expressed in a clear and detailed way, supported by direct statements.

RESEARCH ETHICS

Participants were informed about the purpose of the research and their rights in the research. Afterwards, parental consent forms were obtained from the parents of the students that they participated in the research voluntarily. They were informed that they could freely withdraw from the research without any risk or bias. In order to protect the anonymity and privacy of the participants, middle school students were coded as S1, S2. In addition, during the writing process of the study, ethical and citation rules were followed by the researchers and the collected data were analyzed without making any changes. In addition, within the scope of legislative ethics, approval was obtained for this study from the Human Research Ethics Committee (29/03/2019-547) of the university to which the authors belong.

3 | FINDINGS

According to the analysis of data, views of the middle school students regarding the STEM activities applied in the teaching ratio and proportion concepts were classified under themes and codes. The themes, codes and frequencies are summarized in the Table 2.

Table 2. Student Views Related to STEM Activities

Themes	Codes	Frequency	Students
Affective Domain	Enjoyable	8	S1, S2, S3, S4, S5, S6, S7, S8
	Interesting	4	S1, S4, S5, S8
	Collaborative	3	S1, S7, S8
Cognitive Domain	Active participation	8	S1, S2, S3, S4, S5, S6, S7, S8
	Permanent learning	7	S1, S2, S3, S4, S5, S6, S7
	Creative thinking	4	S4, S5, S7, S8
Psychomotor Domain	Hand skills	3	S1, S6, S7
Making Relationships	Interdisciplinary	5	S1, S2, S3, S4, S6
	Technology related	5	S2, S4, S5, S6, S7
	Related to everyday life	4	S4, S5, S6, S7

As seen in Table 2, students focused on the positive aspects of STEM activities. In a similar way, field notes revealed that the students had positive opinions about STEM activities. The themes obtained from data analysis were students' views about the affective, cognitive, and psychomotor domains and making relationships in STEM education.

The first theme was students' views about the affective domain. In the affective domain, students stated that STEM activities were enjoyable, interesting, and collaborative. All the students stated that STEM activities were enjoyable. S1, for example, said, "We put it into practice, and it was more enjoyable." S2: "It was fantastic because we performed it live, and we had a lot of fun." S3: "I think everyone participated because it was entertaining, and I think we understood better." S4: "We learned by seeing, and it was more enjoyable." S5: "I reinforced the subject; it was a lot of fun." S6: "It was very entertaining and memorable for me." S7: "First and foremost, it was delightful and enjoyable." S8: "Mathematics lesson was fun, but then it became even more enjoyable; everyone had a good time." Similarly, in class, the students stated that STEM activities were fun because of their own participation and production. While applying STEM activities, it was seen that the structures created using the engineering discipline were especially liked by the students. Moreover, the students appeared to be having a good time as they worked together to tackle the difficulties using their own experiences and concrete models. Some of the students expressed that STEM activities were interesting and attracted their attention. To illustrate S1 said: "I will never forget the activity we prepared Oobleck dough mix because it was so different and interesting to me. We've never done anything like this before." Correspondingly, S4 stated that STEM activities were interesting, and she explained such as: "I suppose in the regular lesson I don't want to tackle math problems, but for example, the activity with traffic lights was challenging, but I was curious how to solve it, so I tried to do it." As can be seen in the above quotes students thought that STEM activities were different, interesting, and attractive when they compared with regular mathematics lessons. Some of the students underlined the importance of collaboration in STEM activities. For example, S8 said: "We completed the STEM activities as a group by assisting each other, but we also thought of ourselves individually. I asked my friends for help by asking their ideas." The student mentioned that there was cooperation and interaction in the group. Students' cooperation and teamwork enhanced because of being in groups during STEM activities. All students in the group were required to come up with their own solutions to problems and share and develop them with the rest of the group. It was observed that the students were in cooperation at every stage, from the point of entrance to the evaluation, while the STEM activities were being carried out.

The second theme was students' views about the cognitive domain. In the cognitive domain, students stated that STEM activities provided active participation, permanent learning, and creative thinking. Because of their nature, STEM activities allow children to learn by exploring, doing, and experiencing. Since the student is at the center of the STEM activities, active engagement of the student is required. In a similar way, according to all the students, STEM activities aided their active participation in the class. To illustrate, S4 said: "For example, I was solving the ratio and proportion questions in the test book, but now I learned it better with our participation in the activities, and I figured it out". Students highlighted in-class student participation while applying STEM activities, as can be seen from the quote, and stressed that they grasped the subject better by this way. Similarly, S1 used the following expressions: "I have always had trouble with the wheel questions, but now I realize what we accomplished in the wheel activity, and I do not forget it since I discovered it myself." The necessity of active engagement in the design process was stressed by the students. Throughout the STEM activities, it was noticed that all students, even those who had difficulties in mathematics, actively participated in all activities, indicating that they learned through comprehension. Most of the students thought that STEM activities provide permanent learning. For instance, S7 expressed as follows: "In the activity concerning waves, for example, we found the relationship between time and distance, it was not given as a rule. While solving problems, the memories we have come to my mind, so I remember more." Similarly, S1 and S4 used the following expressions, respectively: "I didn't forget the Oobleck activity, when I changed the proportions in the mixture, the softness of the dough changed, we did it and saw it ourselves, I understood it and it was memorable.", "We used proportion in calculating the waves with the distance, but I could never think of it, I will not forget it anymore." Students claimed that they learned more permanently because STEM activities were student-centered and required reasoning rather than rote rules and procedures. Despite the fact that not all of the students spoke directly, the students mentioned that the STEM activities helped them learn better and more permanently because they were able to create models by

themselves and learn by doing, seeing, and touching rather than memorizing rules. According to half of the students, STEM activities helped them to be more creative. S7, for example, said, "I suppose STEM means that we solve problems without following rules by creating structures using our imagination." Furthermore, S8 remarked: "Designing my own house according to my dreams was my favorite activity, it improved my creativity." As understood from the statements of these students, they stated that STEM activities developed their imagination and creativity. Creative thinking, one of the 21st century skills, is a way of thinking that is expected to be developed in students with STEM activities. In STEM activities, problems with multidisciplinary relationships are expected to be handled through creative thinking. Moreover, the creative thinking students were able to come up with innovative solutions by approaching the problem from various perspectives. It was observed that the students also emphasized this aspect of STEM activities. Similarly, S5 said:

"In the traffic light activity, for example, there was not an obvious solution, you had to develop solutions for the problem yourself. It was the same way at the STRACH activity; there was no single solution; everyone came up with their own; it was difficult in this regard, but it was good because it made me think."

The third theme was students' views about the psychomotor domain. Some of the students thought that their hand skills were used and developed while performing the applications in STEM activities. To illustrate S6 expressed: "Apart from mathematics, STEM is accomplishing engineering tasks that demand more hand-eye coordination; in fact, mathematical operations are used later. I like to deal with such handicrafts." As can be understood from the statements of the student, she emphasized the importance of hand skills in the designs she produced. Correspondingly S1 said: "I think STEM activities also improve manual dexterity. There were experiments, for example, there were things that we created designs such as engineers, these also require manual dexterity."

The fourth theme was students' views about making relationships in STEM education. In this theme, students argued that STEM activities were interdisciplinary, technology related, and related to everyday life. More than half of the students stated that STEM activities were interdisciplinary. In other words, the students emphasized that STEM education was formed by the relationship of different disciplines. For example, S2 used the following statements:

"Actually, we did a lot of activities that were like a combination of three or four lessons, so it was not just about mathematics. For example, in the activities about wheels and waves we used science. Additionally, we brought our computer to school, we tried to produce using materials like in technology design class.

Similarly, S1 and S4 used the following statements respectively: "We were not simply solving mathematics; it felt like we were performing science as well.", "While doing these activities, it was as if we had studied other lessons, as far as I know, wheels are a science subject, but thanks to these activities, I understood the working principle of wheels." The students underlined the multidisciplinary integration feature of STEM activities. To illustrate S3 said: "The activity in which we designed the house was very good. I realized how hard architects and engineers work. A wrong calculation might affect everything." and S6 stated: "In the mixture activity, we did experiment as in the chemistry class." In fact, students focused on the relationship of STEM activities with science and engineering disciplines. During the STEM activities, most of the students frequently stated that it was not just about mathematics and that they used other courses as well. Although the students did not fully comprehend the STEM approach, it was discovered that they were aware that STEM activities combined several disciplines. More than half of the students mentioned that STEM activities were related to technology. In other words, students emphasized technology, which is one of the STEM disciplines. For example, S5 stated:

"We designed games using SCRATCH and mBlock in STEM activities, I knew a little bit about designing games, but I never anticipated that I would use them in mathematics as well. For example, I constructed models of football and basketball games; one was going 3 and the other was going 9. The basketball was able to get into the basket faster."

Correspondingly, S3 used the following statements: "I did not believe we would be able to solve a math problem using coding, but it was quite understandable to solve the problem about traffic lights by flashing the traffic lights." For some activities, students brought their own computers (e.g., wheels activity, SCRATCH activity) and there was always a computer for use in the classroom. Most of the students stated that they use the computer

in the classroom at every opportunity. The coding programs used during the implementation of STEM in-class activities attracted the attention of the students, and they related computer use with STEM education during the interviews. It was seen that half of the students associated STEM activities with everyday life. To illustrate, S6 said: "At the traffic lights activity, I imagined my mother and I were waiting in the traffic, which was blended." Similarly, S8 and S2 used the following statements respectively: "While performing the Wheels activity, I was thinking about the pedals on my bicycle." and "I would like to design my own house as we did in the activity, everything would be as I wanted. I actually thought of designing my own house while performing the activity." According to the students' own words, STEM activities were related with events and objects they encountered in their daily lives. During the STEM activities, it was seen that the students who could make connections with everyday life could perform tasks more easily. As a result, it was considered that relating STEM activities with everyday life might help students learn mathematics more effectively.

As a result, when the students' views about the application of STEM activities were analyzed, it was found that they totally focused on the positive aspects. Similarly, field notes revealed that the students had positive opinions about STEM activities. In addition, all the students stated that they preferred STEM activities to be used in the teaching of other mathematics concepts. Furthermore, it could be said that engineering design processes attracted a lot of attention since product creation was always the basis of codes such as hand skills, active participation, relationship with everyday life, and permanent learning.

4 | DISCUSSION & CONCLUSION

The purpose of the study was to investigate middle school students' views about STEM activities used in teaching ratio and proportion concepts in a mathematics classroom. According to the findings, the students focused on the positive contributions of the STEM activities on affective, cognitive and psychomotor domains. Students mentioned that STEM activities were enjoyable, interesting, and collaborative. Moreover, they stated that the activities provided active participation, permanent learning, creative thinking, and developed hand skills. This situation might be since STEM activities were aimed at improving students' 21st century skills such as critical thinking, groupwork, collaboration, problem-solving, creativity, and logical reasoning, by using interdisciplinary relations and technology. Furthermore, the fact that STEM activities were different from traditional ways enabled all of the participants to express positive views of STEM activities, as seen by the similar findings gained in the research conducted (Gökbayrak & Karışan, 2017; Gülhan & Şahin, 2018; Özçakır-Sümen & Çalışıcı, 2016; Pekbay, 2017; Keçeci et al., 2017; Yamak et al., 2014).

Students in this study stated that they had a lot of fun conducting STEM activities and that they were very interested in them. As a result, it was noticed that STEM activities contributed to students' interest and motivation. Many studies found that STEM activities enhanced interest and motivation in students, making courses more enjoyable (Ardıç & İşleyen, 2017; Daymaz, 2019; Pekbay, 2017; Şahin et al., 2014; Şahin & Kabasakal, 2018). On the other hand, Bolat (2020) concluded that some students do not find STEM applications enjoyable. Similar results were gathered, and the importance of student readiness was emphasized (Biçer, 2018). In the interview, students claimed that STEM activities encouraged their creativity. They indicated that originality and imagination were the most critical aspects in solving problems during the application. Similarly, studies found that STEM activities required students to create products by integrating their creativity and dreams (Çiftçi, 2018).

When the students' views on STEM activities were examined, it was discovered that they, although indirectly, discussed STEM disciplines. They mostly focused on the Engineering discipline out of all the disciplines. It can be said that engineering design processes attracted a lot of attention, since product creation was always the basis of codes such as hand skills, active participation, relationship with everyday life, and permanent learning. Much research found parallel findings about this issue (Marulcu & Sungur, 2012; Özçakır-Sümen & Çalışıcı, 2016; Pekbay, 2017; Sungur-Gül & Marulcu, 2014; Şahin & Kabasakal, 2018; Yıldırım & Altun 2015). On the contrary, there were studies indicating that there was little interest in the engineering discipline (Karakaya, 2017). In this study, another STEM discipline that the students focused on was determined as technology. The students emphasized the relationship between coding and mathematics by frequently mentioning the use of computers in the lesson. Similarly, there were studies that emphasized the use of technology in STEM education (Karakaya,

2017). However, Delen and Uzun (2018) stated that teachers and prospective teachers had difficulties in using technology in STEM activities.

According to the findings obtained from the study, STEM activities supported students' active participation and cooperation with each other. Due to the nature of STEM activities, student practices and group work were included in the process. The students also expressed that they were satisfied with this situation while expressing their thoughts. Similarly, there were studies emphasizing the importance of cooperation and active participation in STEM activities (Yasak, 2017). Some studies stated that although cooperation and active participation were important, STEM activities were not used efficiently due to problems such as not being able to provide team spirit (Asghar et al., 2012), not communicating well and wanting to emphasize individuality (Bulut, 2019).

In conclusion, the results of the study showed that the students focused on the positive aspects of STEM activities. Therefore, mathematics teachers could be recommended to use STEM activities in their lessons. Even though the STEM approach has recently received a lot of attention, research concentrating on mathematics are few. For this reason, it may be suggested to researchers to conduct studies investigating how STEM activities will affect different variables in mathematics education. Furthermore, by designing STEM activities at various grade levels and in teaching various subjects, researchers might be recommended to perform new investigations.

STATEMENTS OF PUBLICATION ETHICS

The principles of publication ethics were obeyed in the study. Ethical permission of the research was approved by Zonguldak Bülent Ecevit University Human Research Ethics Committee (29/03/2019-547).

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RESEARCHERS' CONTRIBUTION RATE

Researchers' Contribution Rate

Authors	Literature review	Method	Data Collection	Data Analysis	Results	Conclusion	(Other)
Author 1	☒	☒	☐	☒	☒	☒	☐
Author 2	☒	☐	☒	☒	☒	☒	☐

CONFLICT OF INTEREST

There is no conflict of interest in the study.

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APPENDIX

Appendix 1. A sample STEM activity lesson plan (Wheels in Our Lives)

The activity was about the clock's mechanism and the wheels that are utilized in it. The students used the wheels to create their own unique designs to learn the proportional relationships between wheels with different tooth counts.

Objectives

Mathematics

- Examines real-life situations and decide whether two multiplicities are proportional.
- Expresses the relationship between two inversely proportional quantities.

Science

- Design a mechanism that uses simple machines to make work easier in everyday life.

Technology

- Develops an algorithm for solving a problem.

21ˢᵗ century skills: critical thinking, collaboration, problem-solving, creativity, and logical reasoning

Duration: 40 minutes + 40 minutes

Materials Needed: Gears, toy figures, styrofoam, color cardboard, glue, scissors

Engage

At this phase, the teacher should remind the students of their prior knowledge, draw their attention, and inform them about the aim of the lesson. In this lesson, the teacher tries to attract the attention of the students with the example of a clock. The teacher brings a clock to the class where the students can see the mechanism. The members of the group examine the gear wheels that allow the hour and minute hands to rotate. The teacher tells the students that a boy named Mert is very curious about the workings of time and opens the mechanism by lowering the clock on the wall. The teacher states that Mert noticed that the minute hand is turning faster while the hour hand is turning slower. In addition, Mert saw that when one of these interconnected wheels stops, the other also stops. Then the teacher asks the students the following question: "Then why does one go more laps than the other?"

Explore

During the lesson, the teacher requested the students to investigate the structure of the wheels, where they are used, and what the gears do (all groups have computers). In this process, she also asked them to research what other materials could be made of what the gears did. Moreover, answers to the following questions are sought: "What are the advantages of designs with wheels?", "What are the advantages or disadvantages of rotating gears with a big number of gears and gears with a limited number of gears?", "Can you give some instances of gear-related items?"

Explain

First and foremost, the teacher tells the students to present the information gathered from their investigation. Students share their findings with their friends.

Elaboration

The teacher brings up the topic of proportion at this phase. Following that, engineering integration is provided. As a result of the research, the students obtained information such as: "The gears work in inverse proportion, the number of teeth and the number of rotations is inversely proportional. One revolution with 20 teeth rotates and two turns with 10. Simple machines made with impellers make people less tired..." The teacher asks the students to create designs that will make work easier at this phase utilizing the knowledge they have gathered. Through student examples, draws attention to designs with wheels, such as correction fluid.

Problem statement: You want to design a dancing present box for your friend, and you don't want your friend to get tired spinning this dancer. You'll make the gift with your own hands to make it more personal, and you don't want your friend to get tired spinning this dancer. How do you make a design utilizing the wheel's working system?

Group work: Students develop solutions together with their groupmates regarding the problem situation they have identified. And they write their proposed solutions on worksheets.

Research: Students combine the wheels and choose the gear on which the figure they want to spin will be placed. The important question is: "How to create the ideal gift with a figure that turns more with less work?" Brainstorm with your team to come up with a plan for what needs to be done to solve the problem given above. Then fill in your design and plan in the space given to you. What steps did you follow to find a solution to the problem statement given to you? Explain these. Write down your questions and curiosities about the problem statement. Draw the gift design you want to make.

Construct a prototype

The purpose of this phase is for students to create designs that are suitable for the working principle of the wheels. What students need to know: Gear wheels are basic cylindrical machines that rotate around an axis and have regularly spaced teeth. The teeth make it possible for the wheels to engage with one another. With the help of teeth, the force imparted to one of the gears is communicated to the other. The concept of operation of the gears is like that of a spinning wheel. The concentric gears revolve in the same direction and have the same number of revolutions because they are riveted together. They rotate in opposite directions and the number of rotations is inversely proportional to the radii for gears in contact with each other, each gear related to the previous one. Write on the "Wheels in Our Lives Activity Report Paper", explaining how you did your design step by step with reasons.

Evaluation

Sharing the Solution

The students present how the inverse ratio helps them work more efficiently with the designs they have created. The teacher assesses the students using the rubric that has been prepared. Students can also provide each other feedback.

Finalizing the Design

Students revise and finalize their designs, taking into account the teacher's and other friends' ideas.

An Analysis of Graduate Theses on Students' Academic Procrastination Published in Türkiye Between 2003 and 2021

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ABSTRACT

The purpose of this study is to analyze the graduate theses on students' academic procrastination published in Türkiye to identify emerging research trends and provide suggestions for future studies. For this purpose, a case study design as a type of qualitative research was employed. A list of the theses was obtained as a result of a search in the National Thesis Center using the keywords "academic procrastination" in both Turkish and English languages. From the list, all the open-access theses with the samples of student were included in the study. In line with the determined criteria, a total of 101 graduate theses (87 master's and 14 doctoral) published between 2003 and 2021 were analyzed through document analysis based on the descriptive content analysis method. The distribution of the theses was examined based on variables including the program type, year of publication, the university, institute, and department where the study was conducted, language, gender of the researcher, research design, sampling method, sample size, region of the data collection, level of education, the data collection tool used to measure academic procrastination, the research topics studied along with academic procrastination, and examined independent variables. The study revealed that the theses were mostly written in the master's program (86.14%), in 2019 (15.84%), at Gazi University (5.94%), in the Institute of Educational Sciences (56.44%), in the Department of Educational Sciences (53.47%), in the Turkish language (92.08%), by female researchers (59.41%), based on survey design (94.06%), using random sampling (59.41%), with a sample size of 400-499 (22.77%), with data collected from Central Anatolia (28.71%) from undergraduate students (53.46%) using the Academic Procrastination Scale (56.43%) together with the research topic academic performance (45.54%) and the independent variable gender (76.24%).

Keywords: Academic procrastination, document analysis, graduate theses.

Türkiye'de Öğrencilerin Akademik Ertelemeleri Üzerine 2003-2021 Yılları Arasında Yapılan Lisansüstü Tezlerin Analizi

ÖZ

Bu çalışmanın amacı öğrencilerin akademik ertelemeleri üzerine Türkiye'de yayımlanmış lisansüstü tezleri analiz ederek ortaya çıkan araştırma eğilimlerini belirlemek ve gelecek çalışmalar için öneriler sunmaktır. Bu amaç doğrultusunda nitel araştırmanın bir türü olan durum çalışması deseni kullanılmıştır. Ulusal Tez Merkezi'nde "akademik erteleme" ve İngilizcesi olan "academic procrastination" anahtar kelimeleri kullanılarak yapılan tarama sonucunda bulunan lisansüstü tezlerinin bir listesi çıkarılmıştır. Bu tezler arasından çalışma grubunu öğrencilerin oluşturduğu ve erişim izni bulunan tüm lisansüstü tezler araştırmaya dahil edilmiştir. Belirlenen ölçütler doğrultusunda 2003-2021 yılları arasında yayımlanan toplam 101 lisansüstü tez (87 yüksek lisans, 14 doktora), betimsel içerik analizi yöntemine dayalı doküman analizi yapılarak incelenmiştir. Çalışmada incelenen tezler program türü, basıldığı yıl, araştırmanın yapıldığı üniversite, enstitü ve anabilim dalı, yazıldığı dil, araştırmacının cinsiyeti, araştırma deseni, örneklem belirleme yöntemi, örneklem büyüklüğü, veri toplanan bölge, öğrenim kademesi, akademik ertelemeyi ölçmek için kullanan veri toplama aracı, akademik erteleme ile birlikte çalışılan diğer araştırma konuları ve ele alınan bağımsız değişkenlere göre dağılımı incelenmiştir. Çalışma sonucunda incelenen tezlerin ağırlıklı olarak yüksek lisans programında (%86.14), 2019 yılında (%15.84), Gazi Üniversitesinde (%5.94), Eğitim Bilimleri Enstitüsünde (%56.44), Eğitim Bilimleri Anabilim Dalında (%53.47), Türkçe dilinde (%92.08), kadın araştırmacılar tarafından (%59.41), tarama desenine dayalı (%94.06), seçkisiz örnekleme kullanılarak (% 59,41), 400-499 arasında örneklem büyüklüğü ile (%22.77), İç Anadolu Bölgesinde (28.71%), lisans öğrencileri ile (%53,46), Akademik Erteleme Ölçeği (%56.43) kullanılarak, çoğunlukla akademik performans (%45.54) araştırma konusu ve cinsiyet (%76.24) bağımsız değişkeni ile birlikte yapıldığı tespit edilmiştir.

Anahtar kelimeler: Akademik erteleme, doküman analizi, lisansüstü tezler.

1 | INTRODUCTION

Individuals undertake many tasks and responsibilities throughout their lives. However, some prefer to postpone these tasks and responsibilities to a later time by making different excuses, rather than fulfilling them on time. Why individuals postpone which tasks in which situations is explained with the concept of procrastination. Procrastination, which originates from the Latin word "procnastinore", refers to the act of postponing a task until later without any reason (Teyfur et al., 2017). In English, procrastination is a combination of two words "pro", which implies forward motion, and "crastinus", which means belonging to tomorrow (Bayrak, 2018). In Turkish, procrastination is expressed with concepts such as "işleri son ana bırakma" (leaving things to the last moment), "son dakikacılık" (last-minuteness), "erteleme" (postponing) and "gecikme" (delaying) (Balkıs, 2007; Bayrak, 2018; Şirin & Duman, 2018). The Turkish Language Institution (TDK, 2022) describes the verb "ertelemek" (to postpone) as "sonraya bırakmak, tehir etmek, tecil etmek, talik etmek" (to put off until later, to defer). There is no agreed definition for procrastination in the literature (Aydoğan & Özbay, 2012; Balkıs, 2007; Şirin & Duman, 2018). Within the scope of this study, the concept of procrastination, based on different definitions in the literature, is described not doing tasks that are assigned or that need to be done, and postponing/delaying goals intentionally without a reasonable excuse by taking responsibility for the behavior and knowing that the delay will result in harm, and thus feeling uncomfortable with the situation (Aydoğan & Özbay, 2012; Balkıs & Duru, 2010; Balkıs et al., 2006; Çam, 2013; Çelikkaleli & Akbay, 2013; Erdoğan, 2019; Korkmaz, 2018; Naktiyok & Kızıl, 2018; Odacı & Çelik, 2012; Satıcı, 2020; Solomon & Rothblum, 1984; Steel, 2007; Şeker & Saygı, 2013; Yakut & Kuru, 2020; Yücel & Şen, 2019). On the other hand, Engin and Genç (2020) describe procrastination as spending time with other activities instead of performing the task that needs to be done. In addition, according to Naktiyok and Kızıl (2018), the concept can also be described as a personality trait, a behavioral tendency, or an irrational delay. There is also a consensus in the literature that procrastination is described as a form of self-regulatory failure (Steel, 2007; Wolters, 2003). Self-regulated learners are motivationally, behaviorally, and metacognitively active in their learning process to reach their goals (Zimmerman, 1986). Accordingly, the characteristics of self-regulated learners (employing adaptive motivational strategies, possessing and employing a repertoire of cognitive strategies accurately, and monitoring and controlling their learning) contrast with those of procrastinating students (Steel, 2007; Wolters, 2003).

In the literature, procrastination behavior is examined in two parts "personality trait or chronic procrastination" and "situational procrastination" (Balkıs et al., 2006). While chronic procrastination is categorized into three groups "neurotic procrastination", "compulsive procrastination (obsessive and dysfunctional)" and "decisional procrastination"; situational procrastination is divided into two "general procrastination" and "academic procrastination". According to Balkıs (2007), the first three are related to avoiding a decision, whereas the last two are related to avoiding a task. Çam (2013) refers to personal or chronic procrastination as delaying the tasks that individuals perform to manage in every moment of life, which causes the individual to feel inadequate and helpless, and that is required to achieve a goal. Şirin and Duman (2018) define situational procrastination as the act of postponement at certain times, in certain situations and conditions.

In the field of education, the most frequently encountered concept is "academic procrastination". Ay et al. (2019) define academic procrastination as not doing academic tasks such as doing homework and studying for an exam, in other words, school activities, continuously or intermittently because of anxiety and stress, delaying or postponing these until the last moment or finally giving them up. Çelik and Odacı (2015) explain the characteristics of students who experience academic procrastination as follows: forgetting the due dates of assignments, leaving homework to the last minute, postponing study for exams, delaying study, putting off administrative tasks (such as not delivering books to the library, not registering for an exam, etc.). Academic procrastination yields undesirable results such as poor academic achievement, fear of failure, lack of a plan, making excuses, boredom, and depression (Balkıs et al., 2006; Solomon & Rothblum, 1984). Academic procrastination should not be perceived as a negative situation all the time but should be considered as a strategy used to take a break and make a better start in extraordinary situations such as the current pandemic. Similarly, Özer and Altun (2011) state that people with academic procrastination use this as a strategy to protect their self-esteem by leaving a priority task to a later time and performing another task of lower priority.

Engin and Genç (2020) explain academic procrastination in three dimensions behavioral, affective (emotional), and cognitive. The behavioral dimension refers to wasting the time allocated for a task to be done or a decision to be taken. The cognitive dimension covers the inconsistency between one's goals and behaviors. Finally, the affective dimension refers to the feelings such as guilt, sadness, hatred, and disappointment felt when assignments and duties are not performed. For example, knowing that there is a certain deadline for a performance assignment that is due within one and a half months but not being able to use this time well and wasting it on other stuff even though the deadline is approaching explains the behavioral aspect; knowing what needs to be done for the performance assignment but not being able to make progress towards achieving goals explains the cognitive dimension; and as a result of these, the feelings such as rage and anger for oneself, and fear and guilt towards teacher because of not doing anything even though there is little time left for the assignment explains the affective dimension.

It is observed in the literature that the causes of academic procrastination are frequently studied. The reasons for academic procrastination includes: difficulty in concentrating on a task, low sense of responsibility, low locus of control, low motivation, low self-confidence, anxiety, poor time management, indifference towards the task, hopelessness, low capacity, poor academic performance, little effort for success, perceiving the task as difficult, self-esteem, general mood, fear of failure, cognitive misattributions, difficulty in decision-making, dependency and support, qualities of the given task, low resistance for frustration, learned helplessness, laziness, avoiding class (duties), being unpretentious, external locus of control, peer influence, social media addiction, perfectionism, risk aversion, poor self-regulation, lack of motivation, irrational beliefs, depression, test anxiety, personality traits (introverted, extroverted), shyness, low self-efficacy, fear of negative criticism and study habits (Balkıs, 2007; Balkıs & Duru, 2010; Özer & Altun, 2011; Aydoğan & Özbay, 2012; Berber Çelik & Odacı, 2012; Çam, 2013; Çelikkaleli & Akbay, 2013; Ataş & Kumcağız, 2017; Korkmaz, 2018; Solomon & Rothblum, 1984; Steel, 2007; Wolters, 2003).

It is identified that individuals with academic procrastination may show behavior patterns such as absenteeism and dropping out of school, avoiding responsibilities (work and tasks), delegating work to others, failing the required success, being alienated from school, lessons, and teachers, weariness, and experiencing problems in private life (Ay et al., 2019), sense of guilt, hopelessness, feeling nervous, avoiding opportunities, retarding academic studies (Şeker & Saygı, 2013), feeling inadequate, self-humiliation, embarrassment, dishonesty, panic and anxiety (Erdoğan, 2019).

Ocak and Karataş (2019) specify that academic procrastination is more common in high school and university students. Çelik and Odacı (2015) also state that 70% of university students experience procrastination in academic life. In addition, Uzun Özer (2005) identified that 54% of the students exhibited procrastination in a similar study conducted in Türkiye.

Moreover, studies examining the effects of variables, including gender, culture, age, level of education, and type of school, on academic procrastination are also quite common. In particular, the variable of gender is frequently studied. For example, in his study conducted with teacher candidates, Balkıs (2007) found out that male teacher candidates were more prone to academic procrastination. In the studies conducted with university students, Şirin and Duman (2018) identified that males experienced general and academic procrastination more compared to females, whereas the study by Şeker and Saygı (2013) revealed that the behavior was encountered more in female students. Likewise, in studies conducted with high school students, Aydoğan and Özbay (2012) discovered that males were more engaged in academic procrastination, while Ay et al. (2019) identified that females were more likely to exhibit the behavior. On the other hand, there are also studies indicating that academic procrastination does not differ depending on variables such as gender, department, and course load, and the study by Cumaoğlu et al. (2012) conducted with a group of 115 teachers can be given as a relevant example. It is observed that current studies present different results regarding gender. According to Yakut and Kuru (2020), since each study is unique, it is of great importance to conduct new studies on academic procrastination with different student groups, departments, variables, and demographic characteristics, and to compare their results. Furthermore, the topic needs to be examined longitudinally and experimentally.

Significance of the Study

Academic procrastination is a widely encountered topic in educational research since it involves basic academic tasks that students need to perform in their education life from kindergarten to university, such as studying for an exam, writing a term paper/an assignment, dealing with administrative procedures related to school, and ensuring participation. It is acknowledged that individuals experience high levels of stress and a decrease in motivation as a result of not performing academic tasks on time, and accordingly, their performance is negatively affected. The behavior of procrastination in academic subjects is the most significant obstacle for individuals in achieving their goals. Particularly during the pandemic, which broke out in 2020 and affected the whole world, a new era began, and educational activities were compulsorily carried out in online environments. As a result, there was a decrease in motivation and thus an increase in academic procrastination. Studies on distance education have become more important during the pandemic period, so it is believed that the importance of academic procrastination as a research area will also increase. Saltürk and Güngör (2020) also state that the needs, motivations, and performances of students are affected in distance education and that the relevant factors regarding this effect should be investigated. In addition, Rakes and Dunn (2010) note that it is difficult for graduate students to maintain their motivation in online environments, and it increases their academic procrastination behavior and that the subject needs to be studied.

Accordingly, studies on procrastination and its types, which are among the variables that affect academic performance, are frequently investigated in the field of education. If the reasons for academic procrastination are known, it will pave the way for studies to be conducted for the behavior to decrease, and necessary measures will be taken to prevent student failures. Since each individual is unique, there are different reasons behind their procrastination and many related variables, and therefore, academic procrastination appears as a research subject that continues to be relevant and even increasingly important (Erdoğdu, 2019). Consequently, the purpose of this study is to examine the doctoral and master's theses on "academic procrastination", which were published in Türkiye between the years 2003-2021 and accessed in the National Thesis Center, to evaluate them in terms of various variables. It is expected that this study will provide researchers, who will study academic procrastination, with collective data on previous research and be a guide for future studies. In addition, it is believed that this study will shed light on the studies carried out before the pandemic period. The importance of academic procrastination will increase even more in new learning environments such as distance education, hybrid learning, and blended learning, which were introduced into our lives with the pandemic. For this reason, this study will be recommendatory for future studies as it reveals the current situation in master's and doctoral theses, guides those who will study "academic procrastination" with students, gives an idea for their studies, and points out the deficiencies in the field and what needs to be done.

Research Questions

Over time, several meta-analyses on procrastination have been accomplished in which findings coming from different studies were combined and reviewed to provide information about the relationship between procrastination and a wide range of variables (Kim & Seo, 2015; Steel, 2007; van Eerde & Klingsieck, 2018; Zhou et al., 2022). In his study Steel (2007) reviewed 216 publications (book chapters, conference proceedings, journal articles, etc.) between 1982 and 2005 to explore the causes and correlates of procrastination. He addressed that studies on procrastination covered various situations and variables and summarized the results in four categories: task characteristics (possible environmental causes), individual differences (relevant personality traits), outcomes (proximal effects), and participant demographics (possible physical and cohort moderators). In another meta-analysis, Kim and Seo (2015) explored the articles published between 1984 and 2014 to identify the relationship between procrastination and academic performance. They found that procrastination was negatively correlated with academic performance, and it was affected by the choice of procrastination measure, nature of performance indicator, use of self-report data or external observations, and demographic profile of participants. They also emphasized that inconsistent results on this relationship observed in earlier studies might occur due to the divergence in these factors. In another meta-analysis, van Eerde and Klingsieck (2018) explored the effects of 24 intervention studies published between 1979–2017 to overcome procrastination. They found out that procrastination decreased after getting intervention and its effect remained constant. In a recent meta-analysis, Zhou et al. (2022) examined 59 studies published between 2003 and February 2021 to identify the association

between two forms of academic procrastination (passive procrastination or negative form versus active procrastination or positive form) and three types of metacognition (i.e., metacognitive awareness, beliefs, and regulation). They found that metacognitive belief and regulation were significantly and negatively related to passive procrastination; nevertheless, regardless of its types, metacognition was not significantly associated with active procrastination. This suggested that metacognition played an important role in reducing passive procrastination but did not affect the tendency of active procrastination. Despite increased attention to academic procrastination, researchers did not encounter any systematic review of studies on either general or academic procrastination capturing Turkish literature. Accordingly, the graduate theses conducted on students' academic procrastination so far were examined to give an idea to the graduate students and researchers for their future studies.

In this study, which aims to analyze the graduate theses on academic procrastination published in Türkiye, regarding various variables, answers are sought to the following research questions.

How is the distribution of graduate theses on academic procrastination by;

1. the program type

2. year of publication

3. the university where the study was conducted

4. the institute of the study where the study was conducted

5. the department of the study where the study was conducted

6. language

7. gender of the researcher

8. research design

9. sampling method

10. sample size

11. region of the data collection

12. level of education and

13. the data collection tool

14. the research topics studied along with academic procrastination

15. examined independent variables?

2 | METHOD

Within the scope of this study, the graduate theses on students' academic procrastination in the National Thesis Center were examined using the case study design, one of the qualitative research methods. Case study design as a practice of inquiry focuses on an in-depth understanding of a single participant, a single document repository, or a specific event (Patton, 2002). In an attempt to define the research trends that occurred in the literature on academic procrastination the sources of Turkish graduate theses were examined as a case in detail. The case was explored using a document analysis approach that looks for meaning in the pre-existing documents (Patton, 2002). This study is qualitative in the manner that the data is not given but constructed by the researchers in line with their experiences with the phenomena studied.

The Documents

The documents –the graduate theses in this case– to be analyzed were selected cautiously. A detailed search in the National Thesis Center using the keywords "procrastination, general procrastination, academic

procrastination" both in Turkish and English was conducted. The first time a graduate thesis on the topic was published in 2003 in the National Thesis Center. Totally 135 open-access theses (both masters' and doctoral studies) were obtained. The theses to be analyzed within the scope of the study were determined Using the following criteria:

1. The studies open to access were included.
2. Both masters' and doctoral studies were involved.
3. The studies focusing on academic procrastination were selected; while the studies investigating general procrastination behavior were eliminated.
4. The studies with the sample of students were included. On the other hand, studies in the fields of "psychiatry, business, psychology" or with a sample involving patients, bank-white-collar-telecommunication employees, academicians, administrators (managers-deputy managers), and teachers were eliminated.
5. The studies were carried out in Türkiye.
6. All the theses published between 2003 and 2021 were taken into the scope of the present research.

Consequently, a total of 101 theses (87 master's and 14 doctoral) which were published between the years 2003-2021, conducted in the field of education with students in Türkiye, and offered as open-access in the National Thesis Center, were included in the study.

Data Analysis

In the analysis of the documents, the descriptive content analysis method was performed. Descriptive content analysis is an approach in which the trends and results of both qualitative and quantitative studies conducted in a specific subject area are described and organized (Çalık & Sözbilir, 2014). With content analysis, it is aimed to identify the data and reveal the facts that may be hidden therein. Therefore, the data brought together with certain concepts and themes are organized and interpreted in a way that can be understood by the reader (Yıldırım & Şimşek, 2018). The main purpose of content analysis is to gather the obtained data under certain topics and to bring them to a level that is understandable for the reader (Yıldırım & Şimşek, 2018, p.242).

Since this study focused on identifying research patterns and providing suggestions for future studies, the themes were determined by the researchers considering the basics of educational research such as sampling, measurement, and associated variables. Additionally, the general features of the theses were analyzed such as the year of publication and the information about the institution where the thesis was conducted etc. Accordingly, the 101 theses included in the study were coded using Microsoft Excel software, under the themes of the program type, year of publication, the university, institute, and department where the study was conducted, language, gender of the researcher, research design, sampling method, sample size, region of the data collection, level of education, the data collection tool used to measure academic procrastination, other research topics investigated with academic procrastination, and considered independent variables. While reporting the findings, the frequencies and percentages of the theses were calculated and presented in tables. The use of numbers in a qualitative study is helpful to facilitate pattern recognition or to extract meaning during the document's analytic moves (Maxwell, 2010; Sandelowski et al., 2009).

3 | FINDINGS

The findings obtained from the document analysis regarding the graduate theses are presented in tables including frequencies and percentages of their distribution based on the program type, year of publication, the university, institute, and department where the study was conducted, language, gender of the researcher, research design, sampling method, sample size, region of the data collection, level of education and the data collection tool used to measure academic procrastination. Within the scope of the first research question, the distribution of the graduate theses according to the program type is reported. While answering other research questions, the distribution of the theses is reported both in total and within masters and doctoral theses in terms of the relevant variables.

Distribution of Graduate Theses by the Program Type

The distribution of 101 graduate theses, which are included in the study in line with the determined criteria, in master's and doctoral programs is presented in Table 1.

Table 1. Distribution of Graduate Theses by the Program Type

Program Type	Frequency (*f*)	Percentage (%)
Master's thesis	87	86.14
Doctoral thesis	14	13.86
Total	101	100.00

When Table 1 is examined, it is observed that the published theses were comprised of 87 master's theses (86.14%) and 14 doctoral theses (13.86%). Accordingly, the vast majority of the graduate theses on academic procrastination had been written at the master's level.

Distribution of Graduate Theses by Year of Publication

Within the scope of this study, graduate theses published between 2003 and 2021 were analyzed. The distribution of the theses by year of publication is presented in Table 2.

Table 2. Distribution of Graduate Theses by Year of Publication

Year of Publication	Frequency (*f*) Master's	Frequency (*f*) Doctorate	Frequency (*f*) Total	Percentage (%) Total
2021	13	2	15	14.85
2020	12	2	14	13.86
2019	16	-	16	15.84
2018	11	1	12	11.88
2017	5	2	7	6.93
2016	10	2	12	11.88
2015	4	1	5	4.95
2014	5	1	6	5.94
2013	4	-	4	3.96
2012	1	-	1	.99
2011	2	-	2	1.98
2010	-	2	2	1.98
2009	1	-	1	.99
2007	1	-	1	.99
2006	-	1	1	.99
2005	1	-	1	.99
2003	1	-	1	.99
Total	87	14	101	100.00

According to Table 2, only one or two studies were published every year until 2013, and there was even no thesis published in 2004 and 2008. It was observed that, after 2013, the interest in academic procrastination had increased over time, and after 2016, this increase had become more significant. Considering the distribution of the theses by year, the highest number of studies were published in 2019 (*f*=16, 22.22%), and it was followed by 2020 (*f*=14, 13.86%) and 2021 (*f*=15, 14.85%). In addition, when the distribution of the theses by year based on the program type was examined, it was observed that there was an increase in master's theses over time, whereas doctoral theses were limited in number, but they had become more popular after 2014.

Distribution of Graduate Theses by the University Where the Study was Conducted

The distribution of the theses regarding the universities where they were studied is presented in Table 3.

Table 3. Distribution of Graduate Theses by the University Where the Study was Conducted

University	Frequency (*f*) Master's	Frequency (*f*) Doctorate	Frequency (*f*) Total	Percentage (%) Total
Gazi University	3	3	6	5.94
Necmettin Erbakan University	5	-	5	4.95
Marmara University	5	-	5	4.95
Middle East Technical University	4	1	5	4.95
Anadolu University	3	2	5	4.95
Üsküdar University	4	-	4	3.96
Gaziantep University	4	-	4	3.96
Ankara University	3	1	4	3.96
Karadeniz Technical University	3	1	4	3.96
Dokuz Eylül University	2	2	4	3.96
Tokat Gaziosmanpaşa University	3	-	3	2.97
Mersin University	3	-	3	2.97
Sakarya University	1	2	3	2.97
Sivas Cumhuriyet University	3	-	3	2.97
İstanbul University	3	-	3	2.97
Muğla Sıtkı Koçman University	2	-	2	1.98
Ufuk University	2	-	2	1.98
Yıldız Technical University	2	-	2	1.98
Afyon Kocatepe University	2	-	2	1.98
Beykent University	2	-	2	1.98
Çağ University	2	-	2	1.98
Balıkesir University	2	-	2	1.98
Kilis 7 Aralık University	2	-	2	1.98
İnönü University	-	2	2	1.98
Amasya University	1	-	1	.99
Atatürk University	1	-	1	.99
Bursa Uludağ University	1	-	1	.99
Çukurova University	1	-	1	.99
Fatih University	1	-	1	.99
Fatih Sultan Mehmet Vakıf University	1	-	1	.99
Fırat University	1	-	1	.99
Hacettepe University	1	-	1	.99
Haliç University	1	-	1	.99
İstanbul Aydın University	1	-	1	.99
Nevşehir Hacı Bektaş Veli University	1	-	1	.99
Başkent University	1	-	1	.99
Ondokuz Mayıs University	1	-	1	.99

Sakarya University of Applied Sciences	1	-	1	.99
İstanbul Arel University	1	-	1	.99
İstanbul Şehir University	1	-	1	.99
İstanbul Kent University	1	-	1	.99
İstanbul Sabahattin Zaim University	1	-	1	.99
Eskişehir Osmangazi University	1	-	1	.99
Toros University	1	-	1	.99
Yeditepe University	1	-	1	.99
Yüzüncü Yıl University	1	-	1	.99
Total	87	14	101	100

In Table 3, it was observed that graduate studies on academic procrastination had been carried out at universities in every region of the country. When the universities with the highest frequency were examined, Gazi University with a frequency of six (5.94%) ranked first, and it was followed by Necmettin Erbakan University, Middle East Technical University, Marmara University, and Anadolu University with a frequency of five (4.95%). Considering the distribution of the theses by the program type, master's theses were studied at all universities in the list, whereas doctoral theses were limited to a few universities in metropolitan cities.

Distribution of Graduate Theses by the Institute Where the Study was Conducted

The distribution of the graduate theses based on the institute where the thesis study was conducted is presented in Table 4.

Tablo 4. Distribution of Graduate Theses by the Institute Where the Study was Conducted

Institute	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
Institute of Graduate Studies in Educational Sciences	45	12	57	56.44
Institute of Graduate Studies in Social Sciences	33	1	34	33.66
Institute of Graduate Studies	6	-	6	5.94
Institute of Graduate Studies in Health Sciences	2	1	3	2.97
Institute of Graduate Studies in Natural and Applied Sciences	1	-	1	.99
Total	87	14	101	100.00

Table 4 indicated that 56.44% (f=57) of the studies had been carried out in the Institute of Graduate Studies in Educational Sciences, and it is followed by the Institute of Graduate Studies in Social Sciences (f=34, 33.66%). This situation might arise from the fact that a graduate program in the field of education used to be offered under the roof of different institutes due to different organizations of institutional structures in universities. For instance, the Department of Educational Sciences is organized under the Institute of Graduate Studies in Educational Sciences in some universities, whereas it is under the Institute of Graduate Studies in Social Sciences in universities where there is no Institute of Graduate Studies in Social Sciences. Besides, after 2018, graduate institutes were merged, and all the graduate programs were gathered under the Institute of Graduate Studies in many universities. A similar situation is observed in the distribution of the theses by the institute regarding the program type.

Distribution of Graduate Theses by the Department Where the Study was Conducted

The distribution of the graduate theses according to the department of the study is presented in Table 5.

Table 5. Distribution of Graduate Theses by the Department Where the Study was Conducted

Department	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
Educational Sciences	47	7	54	53.47
Psychology	12	-	12	11.88
Physical Education and Sports Teaching	4	3	7	6.93
Clinical Psychology	5	-	5	4.95
Computer Education and Instructional Technologies	4	1	5	4.95
Guidance and Psychological Counselling	3	-	3	2.97
Psychological Services in Education	2	1	3	2.97
Primary Education	1	2	3	2.97
English Language Teaching	2	-	2	1.98
Education of Fine Arts	1	-	1	.99
Mathematics and Science Education	1	-	1	.99
Turkish Language and Literature	1	-	1	.99
Basic Education	1	-	1	.99
Nursing	1	-	1	.99
Turkish and Social Sciences	1	-	1	.99
Higher Education Administration and Policy	1	-	1	.99
Total	87	14	101	100.00

It was observed in Table 5 that half of the analyzed theses (f=54, 53.47%) had been written in the Department of Educational Sciences, followed by the Department of Psychology (f=12, 11.88%). Considering the distribution of the theses in terms of the program type, it was identified that about half of both master's and doctoral theses had been written in the Department of Educational Sciences.

Distribution of Graduate Theses by the Language

The distribution of the theses based on the language in which they were written is presented in Table 6.

Table 6. Distribution of Graduate Theses by the Language

Language	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
Turkish	80	13	93	92.08
English	7	1	8	7.92
Total	87	14	101	100.00

As observed in Table 6, the great majority of the theses (f=93, 92.08%) had been written in Turkish. Out of 93 theses written in Turkish, only 13 theses were in the doctoral program. Moreover, out of eight graduate theses published in English, only one was a doctoral thesis, while the remaining seven were master's theses.

Distribution of Graduate Theses by Gender of the Researcher

The distribution of the theses regarding the gender of the researcher conducting the graduate study is presented in Table 7.

Table 7. Distribution of Graduate Theses by Gender of the Researcher

Gender	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
Female	55	5	60	59.41
Male	32	9	41	40.59

Total	87	14	101	100.00

Table 7 indicated that 60 of the theses (59.41%) had been written by female researchers. When these theses were examined in themselves, it was identified that they consisted of 55 master's theses and 5 doctoral theses. Even though the ratio of female researchers was higher in total, the number of male researchers was higher in doctoral theses.

Distribution of Graduate Theses by Research Design

The distribution of the analyzed theses according to research design is presented in Table 8.

Table 8. Distribution of Graduate Theses by Research Design

Research Design	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
Survey	85	10	95	94.06
Experimental	1	3	4	3.96
Mixed-Method	1	1	2	1.98
Total	87	14	101	100.00

When Table 8 was examined, it was observed that the vast majority of both master's and doctoral theses (f=95, 94.06%) had been carried out based on survey design. On the other hand, a limited number of studies based on experimental (f=4, 3.96%) or mixed methods (f=2, 1.98%) research designs were also encountered in the analysis.

Distribution of Graduate Theses by Sampling Method

The distribution of the graduate theses according to the sampling method used in the study is presented in Table 9.

Table 9. Distribution of Graduate Theses by Sampling Method

Sampling Method	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
Random sampling	53	7	60	59.41
Non-random sampling	34	7	41	40.59
Total	87	14	101	100.00

As seen in Table 9, the random sampling method (f=60, 59.41%) had been used more frequently in the graduate theses. Considering the distribution of the theses regarding the program type, the random sampling method is dominant in the master's theses, and both random and non-random sampling methods were used equally in the doctoral theses.

Distribution of Graduate Theses by Sample Size

The distribution of the analyzed theses based on the sample size of the study is presented in Table 10.

Table 10. Distribution of Graduate Theses by Sample Size

Sample Size Between	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
1 – 99	1	3	4	3.96
100 – 199	3	1	4	3.96
200 – 299	11	-	11	10.89
300 – 399	10	-	10	9.90
400 – 499	23	-	23	22.77
500 – 599	19	1	20	19.80
600 – 699	6	2	8	7.92

700 – 799	4	-	4	3.96
800 – 899	4	1	5	4.95
900 – 999	2	1	3	2.97
1000 – 1099	1	1	2	1.98
1100 – 1199	-	1	1	.99
1200 – 1299	2	-	2	1.98
1600 – 1699	1	-	1	.99
1700 – 1799	-	1	1	.99
2000 – 2099	-	1	1	.99
4500 – 4599	-	1	1	.99
Total	87	14	101	100.00

It was observed in Table 10 that the sample size in the theses was mostly between 400 and 499 (f=23, 22.77%), followed by the sample size between 500 and 599 (f=20, 19.80%). Considering the distribution of the theses in terms of the program type, it was identified that master's theses reflected the aforementioned situation, while doctoral theses mostly included a sample between 1 and 99 (f=3).

Distribution of Graduate Theses by Region of Data Collection

The distribution of the theses regarding the region where the data were collected is presented in Table 11.

Table 11. Distribution of Graduate Theses by Region of Data Collection

Region	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
Central Anatolia* (Ankara, Konya, Sivas, Karaman, Eskişehir, Aksaray, Kayseri)	24	5	29	28.71
Marmara** (İstanbul, Kocaeli, Sakarya, Balıkesir, Bursa…)	21	2	24	23.76
Mixed	15	2	17	16.83
Mediterranean (Mersin, Adana, Kilis, Antalya, Kahramanmaraş)	8	1	9	8.91
Black Sea (Trabzon, Karabük, Amasya, Samsun, Sinop, Ordu)	8	-	8	7.92
Southeastern Anatolia (Gaziantep, Adıyaman)	6	-	6	5.94
Eastern Anatolia (Elazığ, Malatya, Van)	2	2	4	3.96
Aegean (İzmir, Denizli, Muğla, Afyon)	3	1	4	3.96
Total	87	14	101	100.00

*Ankara; Master's f=10, Doctorate f=3, Total f=13, Total 12,87%
**Istanbul; Master's f=18, Doctorate f=0, Total f=18, Total 17,82%

When Table 11 was examined, it was observed that most of the studies had been conducted with participants from Central Anatolia (f=29, 28.71%) and Marmara (f=24, 23.76%) regions, and they were followed by mixed samples consisting of participants from different regions (f=17, 16.83%). Regarding the distribution of the theses in terms of the program type, it was found that nearly half of both master's and doctoral theses had been carried out with the participants from Central Anatolia and Marmara Regions.

Distribution of Graduate Theses by Level of Education

The distribution of the theses based on the level of education of the study sample is presented in Table 12.

Table 12. Distribution of Graduate Theses by Level of Education

Level of Education	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
Undergraduate	47	7	54	53.46

High School	23	3	26	25.74
Elementary School	10	3	13	12.87
Mixed (associate degree-undergraduate-master's-doctorate)	5	1	6	5.94
Mixed (high school-undergraduate)	2	-	2	1.98
Total	87	14	101	100.00

As seen in Table 12, little more than half of the analyzed theses (f=54, 53.46%) had investigated the academic procrastination behaviors of undergraduate students, followed by high school students (f=26, 25.74%). Considering the relevant distribution in terms of the program type, little more than half of the master's theses (f=47) and half of the doctoral theses (f=7) had been carried out with undergraduate students.

Distribution of Graduate Theses by the Data Collection Tool

The distribution of the theses based on the data collection tool used to measure academic procrastination is presented in Table 13.

Table 13. Distribution of Graduate Theses by the Data Collection Tool

Academic Procrastination Scale	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
Academic Procrastination Scale (Çakıcı, 2003)	51	6	57	56.43
Aitken Procrastination Inventory – Turkish Adaptation (Balkıs, 2006; 2007)	16	3	19	18.81
Tuckman Procrastination Scale (Uzun Özer, Saçkes & Tuckman, 2013)	6	3	9	8.91
Procrastination Assessment Scale (Uzun Özer, 2005)	9	-	9	8.91
The Scale of Academic Procrastination (Ocak & Bulut, 2015)	5	2	7	6.93
Total	87	14	101	100.00

When the values in Table 13 were examined, it was observed that the most preferred measurement tool to measure academic procrastination was the 19-item "Academic Procrastination Scale" (f=57, 56.43%) developed by Çakıcı (2003). This measurement tool had been used in nearly half of both doctoral and master's theses.

Distribution of Graduate Theses by Research Topics

The distribution of the graduate thesis according to the research topics studied along with academic procrastination is given in Table 14.

Table 14. Distribution of Graduate Theses by Research Topics

Research Topics*	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
Academic Performance	40	6	46	45.54
Anxiety/Stress	18	1	19	18.81
Social Media Usage	12	1	13	12.87
Perfectionism	13	-	13	12.87
Time Management	8	5	13	12.87
Self-Efficacy	9	3	12	11.88
Academic Motivation	8	5	12	11.88
Parental Attitudes	11	-	11	10.89
Psychological Disorders	10	-	10	9.90

Self-Esteem	8	2	10	9.90
General Procrastination	9	-	9	8.91
Students' Evaluation of Their Success	7	-	7	6.93
Internet Addiction (Digital Game, Smartphone, etc.)	5	1	6	5.94
Decision-Making Style	3	2	5	4.95
Locus of Control	5	-	5	4.95
Satisfaction	4	1	5	4.95
Negative School Behaviors (Cheating, Absenteeism, etc.)	5	-	5	4.95
Irrational Belief	3	1	4	3.96
Distance Learning	3	1	4	3.96
Self-Regulation	3	1	4	3.96
Attitude towards School	3	-	3	2.97
Emotional Intelligence Trait	1	1	2	1.98
Duration of Exercise	1	1	2	1.98
Well-Being	1	1	2	1.98
Effects of the Covid-19 Pandemic	2	-	2	1.98
Defense Mechanism	2	-	2	1.98
Students' Perceptions of Their Teachers' Effectiveness	2	-	2	1.98
Learning Disability	2	-	2	1.98
Perception of Making Mistakes	2	-	2	1.98
Perception of Being Precious	2	-	2	1.98
Academic Attribution Styles	2	-	2	1.98
Cognitive Distortion	1	1	2	1.98
Taking Responsibility Skill	1	1	2	1.98
Perception of Perfectionist Familial Criticism	1	1	2	1.98
The Big-Five Personality Traits	1	1	2	1.98
Learned Helplessness	1	-	1	.99
Social Belonging	1	-	1	.99
Epistemological Beliefs	-	1	1	.99
Parents' Evaluation of Their Child's Success	-	1	1	.99
Learned Resourcefulness	1	-	1	.99
Problem Solving Skills	1	-	1	.99
Hopelessness	1	-	1	.99
Defined Academic Duties (Term Paper, Weekly Readings, Homeworks, etc.)	1	-	1	.99
Psychological Resilience	-	1	1	.99
Action Identification	1	-	1	.99
Cognitive Flexibility	1	-	1	.99
Impulsivity	1	-	1	.99
Submissive Behavior	1	-	1	.99
Metacognition	1	-	1	.99
Intolerance of Uncertainty	-	1	1	.99
Computational Thinking Skills	1	-	1	.99

Wisdom	1	-	1	.99
Self-Acceptance	1	-	1	.99
Imagination	1	-	1	.99
Lifestyle	1	-	1	.99
Thinking Styles	-	1	1	.99
Self-Perception	-	1	1	.99
Social Problem Solving	1	-	1	.99
Indecisiveness	1	-	1	.99
Self-Critical Rumination	1	-	1	.99
Mindfulness	1	-	1	.99

*Because some of the theses involved more than one research topic, the line indicating the total values exceeds the total number of theses. Therefore, total numbers are not given in this table.

According to Table 14, it was apparent to say that several subjects had been studied accompanied by academic procrastination. Until now, academic procrastination was commonly studied together with academic performance (f=46, 45,54%) approximately in half of the graduate theses. It was followed by anxiety/stress (f=19, 18.81%). Social media usage, perfectionism, and time management were investigated in 13 (12.87%), self-efficacy and academic motivation in 12 (11.88%), and parental attitudes in 11 (10.89%) studies along with students' academic procrastination. This arrangement was almost the same for masters' theses. As for dissertations, time management and academic motivation came after academic performance.

Distribution of Graduate Theses by Examined Independent Variables

The distribution of the graduate thesis by examined independent variables is given in Table 15.

Tablo 15. Distribution of Graduate Theses by Examined Independent Variables

Independent Variables*	Frequency (f) Master's	Frequency (f) Doctorate	Frequency (f) Total	Percentage (%) Total
Gender	71	6	77	76.24
Grade Level	42	5	47	46.53
Parents' Education Level	28	2	30	29.70
Field of Study (Faculty at University, Major Discipline at High School, etc.)	23	5	28	27.72
Age	26	2	28	27.72
Socio-Economic Status	20	1	21	20.79
Number of Siblings	12	1	13	12.87
Intervention Studies to Overcome Academic Procrastination	2	9	11	10.89
School Type	11	-	11	10.89
Whether Parents Living Together	7	-	7	6.93
Personal Choice of Field of Study	6	1	7	6.93
Type of Accommodation	6	-	6	5.94
Perceiving Teaching as a Respected Profession	6	-	6	5.94
Participation in Sports Activities	4	2	6	5.94
Birth Order	4	1	5	4.95
Preferred Study Time	3	1	4	3.96
Working Status	4	-	4	3.96

Taking Psychological Treatment	4	-	4	3.96
Participation in Extracurricular School Activities	4	-	4	3.96
Being Satisfied with the Field of Study	2	1	3	2.97
Educational Club Membership	3	-	3	2.97
Education Level	3	-	3	2.97
Having Personal Room	3	-	2	1.98
Number of Friends	3	-	2	1.98
Mostly Lived Place	1	-	1	.99
Father's Employment Status	1	-	1	.99
Parents Being Alive	1	-	1	.99
Year at University	1	-	1	.99
Marital Status	1	-	1	.99
Status of School Extension	1	-	1	.99
Enrolling in Double Major or Minor Program	1	-	1	.99
Being Gifted Student or not	1	-	1	.99
Change of Teacher	1	-	1	.99
Attendance of Training Center	1	-	1	.99
Age of Parents	1	-	1	.99
Profession of Parents	1	-	1	.99
Type of Individual Instrument	1	-	1	.99
Taking a course from lower grades	1	-	1	.99
Taking a course in upper grades	1	-	1	.99
Finishing School on Time	1	-	1	.99
Branch of Sport	-	1	1	.99
Study Style	-	1	1	.99
Geographic Region	1	-	1	.99
Status of Romantic Relationship	1	-	1	.99
Total	87	14	101	100.00

*Because some of the theses involved more than one independent variable, the line indicating the total values exceeds the total number of theses. Therefore, total numbers are not given in this table.

As seen in Table 15, researchers investigated several independent variables that might explain the variation in academic procrastination. Among those, gender (f=77, 76,24%) and grade level (f=47, 46,53%) were the most frequently considered ones while examining students' academic procrastination. This was followed by parents' education level (29.70%), the field of study (27.72%), age (27.72%), and socio-economic status (20.79%). The situation was comparable for masters' theses. However, as for the doctoral program, the intervention studies to overcome academic procrastination were the most studied. Although intervention studies consisted of 10.89% of total graduate theses, they comprised 64.29% (9 out of 14) of doctoral theses.

4 | DISCUSSION & CONCLUSION

As a result of this study, which has been carried out to reveal the current situation in master's and doctoral theses on academic procrastination and to guide future studies, it is observed that the examined graduate theses are mostly at the master's level. Nonetheless, it is notable that the number of doctoral theses on this subject has increased, albeit partially, in recent years. This situation may arise that more students are admitted to master's programs or that some universities lack doctoral programs. For example, even though there has been a master's program in the field of science education at Tokat Gaziosmanpaşa University for many years, the doctoral program has just been opened in 2021. Likewise, in the study where Köseoğlu and Eroğlu Doğan (2020) analyzed graduate

theses, 265 out of 334 theses in the field of science education in Türkiye between 2010 and 2017 were at the master's level whereas 69 were at the doctorate level.

When the graduate theses are reviewed by year of publication, it is observed that the first thesis on academic procrastination was a master's thesis published in 2003, the number of theses published on the relevant subject was highest in 2019, and there was a significant increase in the number of both master's and doctoral theses after 2016. These results indicate an increasing interest in academic procrastination. Even though the studies are mostly at the master's level, a significant increase has also been observed in doctoral studies over time. Besides, this study is limited to the open-access theses in the National Thesis Center, and the number of studies in recent years will be even more when non-accessible theses are also included. In addition, it is believed that the number of studies on academic procrastination will increase in the coming years due to the ongoing effect of the pandemic on education since March 2020. With the distance education activities initiated as a new practice during the pandemic period, students were left alone with their self-regulation (Saltürk & Güngör, 2020). It is considered that this situation will lead to academic procrastination in students who lack self-regulation skills (Yurtseven & Doğan, 2019). For students to avoid the adverse effects of these processes, academic procrastination will be addressed from a different perspective in new learning environments during the upcoming period.

Considering the distribution of the graduate theses according to their universities, it is observed that Gazi University ranks first, and that master's theses are written at all universities in the list, yet doctoral theses are limited to the universities in metropolitan cities. Moreover, regarding the distribution of the graduate theses based on the regions of the data collection, it is identified that the data were collected from every region of the country; however, nearly half of both master's and doctoral theses were carried out with participants from Central Anatolia and Marmara Regions. This situation can be explained by the fact that universities in each geographical region offer graduate programs. Furthermore, it is expectable that the studies are mostly centered in these regions since the student potential of the universities in metropolitan cities is high, it is easy to reach the sample due to location, and doctoral programs have been offered in well-established universities for many years.

The relevant studies have been carried out mostly in the Department of Educational Sciences within the Institute of Graduate Studies in Educational Sciences. The great majority of these studies consist of master's theses. It is an expected result considering that graduate programs for teaching are structured under the umbrella of graduate schools of educational sciences. On the other hand, the fact that most of the studies are conducted in the Department of Educational Sciences indicates that the subject is addressed with a general pedagogical approach, but field-specific studies including those in science education or social studies education are inadequate.

When the languages of the theses are reviewed, it is observed that the great majority of both master's and doctoral theses are in the Turkish language, which is an expected result since the language of instruction at many universities in Türkiye is Turkish. However, considering that most of the studies are at the master's level and researchers have limited foreign language proficiency, to what extent these theses written in Turkish can cover the international literature needs questioning.

As for the gender of the researchers, little more than half of the graduate theses have been written by female researchers. This finding also coincides with that of the study by Köseoğlu and Eroğlu Doğan (2020). Considering the social perception that teaching is most appropriate for women, this situation is not very noticeable. It may result that the number of female students is higher than that of males in education faculties, and that females have a more positive attitude towards graduate education. On the other hand, although the ratio of female researchers is higher in total, the number of male researchers is higher in doctoral theses. It can be associated with the fact that Türkiye is a patriarchal society and females attend doctoral programs less since they are assigned more meanings and duties in daily life.

The review of the graduate theses according to research design has revealed that the great majority of the theses are based on "Survey Design", one of the quantitative research methods, and a limited number of studies on experimental or mixed research design. Survey designs are aimed at revealing the unique characteristics of a population or identifying the relationship between these characteristics and other variables. The reason why the quantitative research method is mostly preferred, as in the study by Köseoğlu and Eroğlu Doğan (2020), maybe

due to its advantages including easy and rapid access to samples and the ability to collect and interpret data in a shorter time. It is also understandable since the duration of a master's education is limited. On the other hand, researchers may not have preferred other methods because they are not competent enough in qualitative or mixed research methods. In qualitative research, why and how the subject in question happens is investigated in more detail; therefore, conducting this kind of research requires more effort and time.

It is observed in the theses that the random sampling method has been preferred more often to determine the sample to be studied. On the other hand, the number of theses using the non-random sampling method is considerable. Nevertheless, it was identified during the analysis that the sampling method was not clearly stated in most of the theses examined. Similarly, Köseoğlu and Eroğlu Doğan (2020) state that the most preferred method was random sampling, and the sample was not specified in the theses included in their analysis.

In terms of sample size, it is observed that the master's theses mostly include samples between 400 and 499 and the doctoral theses between 1 and 99. It is considered that this situation is mostly because the "survey design" as a quantitative research method is preferred in the studies, the sample consists of undergraduate students, all students in a department or students from different faculties are included in the research.

Considering the level of education in the theses, nearly half of both master's and doctoral theses have been carried out by undergraduate students followed by high school students. It may be because academic procrastination is a common behavior among undergraduate students (Berber Çelik & Odacı, 2015; Ocak & Karataş, 2019). It may also result that undergraduate students are easily accessible. Considering that the participants need to be at a certain level to answer the questionnaires and scales conducted in the studies, researchers may have preferred to work with high school and undergraduate students instead of younger age groups in order not to experience loss of both data and time.

Regarding how academic procrastination is measured in the theses, it is revealed that the 19-item Academic Procrastination Scale developed by Çakıcı (2003) has been utilized in almost half of both doctoral and master's theses. It can be explained by the fact that the scale is a valid and reliable measurement tool, its recognition is high since it is the first scale developed, and it is easy to administer and score due to the small number of items.

This study reveals that a wide range of research topics are studied along with academic procrastination among which academic performance and anxiety/stress are found to be the most frequently studied ones. In the same vein, Kim and Seo (2015) exhibit that academic procrastination is commonly related to a deficiency in academic performance and motivation. On the other hand, it is observed that self-regulation and metacognition have not drawn Turkish researchers' attention despite their recognition of self-regulatory failure (Steel, 2007; Zhou et al., 2022).

Finally, several independent variables are assessed in association with academic procrastination. Likewise, Steel (2007) presents many factors affecting procrastination and classifies them under the categories of task characteristics, individual differences, outcomes, and participant demographics. Kim and Seo (2015) also explain the role of the demographic profile of participants in procrastination. Gender and grade level is found to be the most studied variables among Turkish researchers. Similarly, earlier meta-analyses show that gender is one of the most frequently studied demographic characteristics; yet, studies conducted in different cultures reveal somewhat inconsistent results (Kim & Seo, 2015; Steel, 2007). For example, Solomon and Rothblum (1984) find that females are more procrastinators; while, Uzun Özer et al. (2009) state that males are at more risk. Uzun Özer et al. (2009) also show that male and female students procrastinate for different reasons and suggest that gender differences should be explored with other cultural factors.

In conclusion, the graduate thesis on students' academic procrastination has been published since 2003 in the National Thesis Center of Türkiye and there is a noticeable increase in the number of theses after 2016. Most of them are conducted at the master's level using survey design. Researchers explore academic procrastination concerning several research topics mostly with academic performance and anxiety/stress. Additionally, the effect of gender and grade level are assessed. Nearly in half of the theses, the Academic Procrastination Scale developed by Çakıcı (2003 is used. Considering the findings of the present study, the following suggestions are listed for future researchers.

Suggestions for Further Research

It is observed that the majority of the research on academic procrastination behavior includes quantitative studies based on survey design and that there is a need for qualitative studies to reveal in detail the reasons for academic procrastination and how it affects student performance. It is also identified that the number of experimental studies is quite limited. An intervention program aiming at preventing academic procrastination can be developed and evaluated through implementation with experimental studies. In addition, longitudinal studies can be carried out to investigate the change in academic procrastination behavior over time.

The fact that most of the studies reviewed are in the Department of Educational Sciences indicates that the subject is addressed with a general pedagogical approach. Academic procrastination behavior can be studied in a specific context such as science education or social studies education, leading to field-specific evaluations.

Moreover, the sample group in the relevant theses mostly consists of university and high school students. Accordingly, it is identified that there is a need for studies to be conducted with primary school or graduate students.

It is also observed that the research design and sampling method applied in the theses are not clearly expressed. Regarding the nature of thesis writing, these points need elaborating.

Furthermore, it is revealed that mostly scales are preferred for data collection in the great majority of the studies. Along with the scales applied, different data collection techniques such as interview, observation, and document analysis can be used.

Most of the time students' academic procrastination is studied together with academic performance. Researchers are suggested to consider two other highly related but less frequently studied topics: self-regulation and metacognition.

Considering the assumption that cultural factors influence academic procrastination, cross-cultural studies might be conducted.

Limitations of the Study

This study is limited to the graduate theses that investigate the procrastination behavior of students in the context of academic settings at different educational levels in Türkiye.

The graduate theses reviewed within the study are limited to the open-access theses in the National Thesis Center published between 2003 and 2021.

The analysis of the theses is limited to the program type, year of publication, the university, institute, and department where the study was conducted, language, gender of the researcher, research design, sampling method, sample size, region of the data collection, level of education and the data collection tool used to measure academic procrastination.

Statements of Publication Ethics

The authors declare that they obey the principles of publication ethics. Since this study involves open-access theses in the National Thesis Center, Ethics Committee approval is not required.

Researchers' Contribution Rate

The first author carried out the following processes under the supervision of the second author: conceptualization of the theoretical framework, determining the research design, searching for the theses in the National Thesis Center, determining the variables to be analyzed, analyzing the data, and discussing the results. The first author wrote a Turkish draft of the manuscript on which both authors worked in collaboration. Finally, the second author edited the English version, applied the article template before submission, and submitted the manuscript to the journal.

Conflict of Interest

The authors declare that they have no conflicts of interest.

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Unzipping The Educational Strategic Plans in Türkiye:
Threats and Opportunities in Disadvantaged Cities

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ABSTRACT

Strategic plans are administrative tools that help implement policies in an effective fashion in educational organizations. Through these, elements of threatening sort can be eliminated, and making a maximum use of educational advantages becomes possible. Strategic plans constitute a map particularly for disadvantaged cities. As a country with plentiful disadvantages, Turkiye has been benefiting from strategic plans in the field of education for a long time. Howbeit, the limited nature of the studies examining opportunities and threats in educational strategic plans in the literature is striking. Thereupon, in the present research, an outlook was adopted at the intersection of these components. Document analysis, one of the qualitative research designs, was employed in the research. Educational strategic plans of disadvantaged cities in Turkiye are examined using MAXQDA 2020. Results show that a fair number of strategic plans contain similar statements, which is considered a hindrance to authenticity. Moreover, factors regarding principal hiring-development process, stakeholder support, attitudes of families-parents, and socio-cultural activities come to the fore as a threat for education in the disadvantaged cities. However, the importance attached to the professional development of teachers, utilizing an equity-based approach, and educational investments are amongst the remarkable opportunities for those cities. The research contains several implications about the strategic plans as well.

Keywords: Strategic plan, opportunity, threat, Turkiye, disadvantaged cities.

Türkiye'deki Eğitimsel Stratejik Planların İncelenmesi:
Dezavantajlı Şehirlerdeki Tehditler ve Fırsatlar

Öz

Stratejik planlar, eğitim örgütlerinde politikaların etkin bir şekilde uygulanmasına yardımcı olan yönetsel araçlardır. Bu araçlar sayesinde tehdit oluşturan unsurlar ortadan kaldırılabilmekte ve eğitimsel avantajlardan maksimum düzeyde yararlanılabilmektedir. Stratejik planlar özellikle dezavantajlı şehirler için birer yol haritası özelliği taşımaktadır. Bünyesinde pek çok dezavantajlı şehir bulunan bir ülke olarak Turkiye de uzun süredir eğitim alanında stratejik planlardan yararlanmaktadır. Ancak literatürde eğitim alanındaki stratejik planlarındaki tehditleri ve fırsatları inceleyen çalışmaların sınırlılığı dikkat çekicidir. Bu nedenle mevcut araştırmanın bu bileşenlerin kesişim noktasında yürütülmesi benimsenmiştir. Çalışmada nitel araştırma desenlerinden doküman incelemesi kullanılmıştır. Turkiye'deki dezavantajlı şehirlerin eğitim alanındaki stratejik planları MAXQDA 2020 kullanılarak incelenmiştir. Sonuçlar birçok stratejik planın özgünlükten uzak olup benzer ifadeler içerdiğini göstermektedir. Ayrıca yöneticilerin işe alımı-mesleki gelişim süreci, paydaş desteği, ailelerin-ebeveynlerin tutumları ve sosyo-kültürel faaliyetleri Turkiye'deki dezavantajlı şehirlerde eğitimi tehdit eden faktörler olarak öne çıkmaktadır. Buna karşın öğretmenlerin mesleki gelişimlerine verilen önem, hakkaniyete dayalı bir yaklaşımın benimsenmesi ve eğitim yatırımları bu şehirler için dikkat çeken fırsatlar arasında yer almaktadır. Araştırma stratejik planlar hakkında belli başlı çıkarımlar da içermektedir.

Anahtar kelimeler: Stratejik plan, fırsat, tehdit, Turkiye, dezavantajlı şehirler.

1 | INTRODUCTION

Schools are non-profit organizations directing development, and providing unique services. They assume priorities like exploiting their resources efficiently and producing high quality outputs. However, schools have recently been criticized for being ineffective in fulfilling the priorities mentioned. Further supporting such criticism is the ever-growing number of studies on the reasons why education systems are in their current state. One issue that both national and international authorities concentrate upon is the inadequacies of the strategic plans in education, and the problems encountered in their implementation.

Strategic plans are managerial tools deployed by various organizations, including educational institutions (Cooper, 1985). These are prepared resorting to policy documents, development programs, and academic studies (Chang, 2006). Countries use strategic plans to discuss issues like accountability (Gleeson & Donnabhain, 2009), effectiveness (Lane et al., 2005), productivity (Sara et al., 2021), and sustainability (Bieler & McKenzie, 2017). In Turkiye it is intended to improve the key indicators, namely, enrolment, and academic success, and to enhance administrative effectiveness through strategic plans (Ministry of National Education [MoNE], 2019, p. 11), which is supported by legal regulations. A significant policy document, the 2023 Education Vision underpins that educational organizations will be strengthened, and their policies will be made more applicable via planning (MoNE, 2018). This imposes critical roles on strategic plans i.e., foresight, developing alternatives, and decision-making. Thereby, educational conditions are analyzed with the help of strategic plans, and policies are developed (Organisation for Economic Co-operation and Development [OECD], 2020b, p. 14). Nevertheless, researchers exist who defend that these roles are not carried out sufficiently. Studies have also shown that educators may perceive strategic plans as dysfunctional (Arabaci et al., 2015), and as tools that generate responsibility (Coskun & Pank Yildirim, 2018), and workload rather superficially (Cetin, 2014). Strategic plans are oftentimes (and need to be) based on comprehensive analysis though. They deal with weaknesses and opportunities that concern educational organizations e.g., in the form of threats (OECD, 2020a, p. 18).

For strategic planning, *opportunities* are external factors providing *advantages*, whilst *threats* are those that cause *disadvantages* (Pickton & Wright, 1998; United Nations Educational, Scientific and Cultural Organization [UNESCO], 2010a). To exemplify, the same strategic plan could consider developed transportation services as an opportunity, and insufficient technological facilities as a threat. Through opportunities and threats, scenarios are produced. Educational organizations gain foresight, and make projections relying on such scenarios. Particularly, disadvantaged cities that try to come up with solutions to their problems with limited resources carry out their activities using strategic plans.

Disadvantaged cities are settlements that are poorly developed, with various demographic, economic, and sociocultural issues (Cheshire & Zappia, 2015). In parallel with the context of plans, these cities in Turkiye, are referred to as *Regions with Priority in Development* or *Centers of Attraction*. Indices such as education, employment, quality of life, and innovation capacity developed by national authorities and international organizations such as the World Bank, OECD, United Nations are not at the desired level (Ministry of Development [MoD], 2013). Often located in the east and southeast of Turkey (p. 72), these cities are said to be in dozens (Ministry of Industry and Technology [MoIT], 2020; Resmi Gazete, 2006). Through plans, researchers examine each risk, and advantage that pertain to disadvantaged cities to prepare budgets (Goldstein, 2012), and develop projects (Aypay, 2015; Karakutuk, 2020). In developing countries, strategic plans are referred to with a view to developing national (MoNE, 2019; Ministry of Treasury and Finance [MoTF], 2020), and international (Pickton & Wright, 1998; OECD, 2020b; Schleicher, 2018) indices that are pertaining to disadvantaged cities too. Whence, necessary actions are taken against threats, and efforts are made for social inclusion (Acar et al., 2019). Considering the educational benefits of strategic plans (Lane et al., 2005; McCune, 1986; Raffaele & Knoff, 1999), threats and opportunities in these can gain particular importance for disadvantaged cities.

Through this research, it is attempted to analyze the threats and opportunities in strategic plans prepared by the educational authorities of the disadvantaged cities in Turkey. In the relevant line of research, the functioning (Bayram, 2021; Egitim Reformu Girisimi [ERG], 2020, 2021; Ozgan & Yalcin, 2011), development (Babaoglan, 2015; Cekic & Dilber, 2020; Isik & Aypay, 2004; Ozmantar, 2011; UNESCO, 2010b), and significance (Cornut

et al., 2012; Kaufman & Jacobs, 2007) of strategic plans have been focused on. Addedly, some studies make philosophical (Hargis, 2014; Tiwari & Winters, 2016) as well as conceptual-methodological analyses (Chang, 2008; Ozdemir & Toz, 2021). Yet, the literature in Turkiye still possesses a striking lack of studies on the threats and opportunities in strategic plans for disadvantaged cities. Thusly, it is believed that the present research, conducted at the intersection of the components aforementioned, is deemed essential. It is also expected that the current study will raise more awareness of researchers, educators, and public authorities respecting strategic planning.

CONCEPTUAL FRAMEWORK

Plan is the organization of certain activities to achieve the desired results. They are made use of to be able to coordinate organizational activities (Robbins et al., 2016, pp. 8-9). Besides, the future of organizations is shaped by plans (Fayol, 1918/2016, p. 78). Schools are amongst such organizations shaping the(ir) future with plans (Bryson, 2004). The plans used in schools are divided into specific types depending on their purpose, content, and duration. One of the said plans is strategic plans (Karakutuk, 2020, pp. 17-19).

Strategic plans are administrative tools through which organizational functioning and predictions can be analyzed (UNESCO, 2010a, p. 8). In fact, decisions are put into practice by virtue of strategic plans (Steiner, 1979, pp. 12-15). Additionally, these are acknowledged to make capacity, productivity, and efficiency more competitive-innovative. In Turkiye, efforts toward strategic planning were initiated in 2003 by the MoNE, and by its affiliated educational organizations. Doing so, it is endeavoured to control the negativities affecting schools, and to seek any opportunities. Hence, schools around the country implement their own strategic plans, considering the one by the relevant provincial directorate of national education. Thereupon, it is strived to manage every element of education by dint of strategic plans (ERG, 2020; McCune, 1986). Strategic plans are then designed as unique topics thanks to detailed analysis. Threats and opportunities are among the topics in question.

Threats are harmful or undesirable conditions, whereas opportunities are attributed to suitable times and desired conditions. Regarding strategic planning, *threats, and opportunities* are external factors achieved through a *Strengths, Weaknesses, Opportunities,* and *Threats* (*SWOT*) *Analysis* (UNSECO, 2010c). Threats identified through *SWOT Analysis* point to disadvantages, and opportunities indicate organizational benefits (Leigh, 2009). To illustrate, for a school, to have a fair number of refugee students can become a threat, having experienced teaching staff, an opportunity.

In strategic plans, threats and opportunities are scrutinized to direct educational policies (Chang, 2008). Schools where strategic plans are implemented in this way (Bryson, 2004) catering to the cities they belong to (Maier, 2021) attain their goals easily. Disadvantaged cities try to respond to expectations through strategic plans (pp. 231-232; Muijis et al., 2004). Therefore, the threats and opportunities within strategic plans hold a special meaning for those cities.

Disadvantaged cities are settlements with lower indicator values than desired in areas like economy, health, and employment (Cheshire & Zappia, 2015; Lupton, 2004). In tandem with the context of the relevant programs in Turkey, these cities are often entitled *Regions with Development Priority* or *Centers of Attraction*. Excessive in number, disadvantaged cities are behind national and international averages in their education indices (MoD, 2013) since the schools there face a good deal of physical, administrative, and fiscal problems (Gore & Smith, 2001). Strategic plans help eliminate such problems (Mintzberg, 1994) maximizing the use of organizational capacity (Liedtka, 2000). Thence, strategic plans are revolved around in disadvantaged cities.

Numerous studies (e.g., Acar et al., 2019; Leigh, 2010; MoNE, 2019; Schleicher, 2018) demonstrate that strategic plans help eliminate threats, and assist in making use of the opportunities. Bearing in mind their magnitude (Lane et al., 2005; McCune, 1986), and the existence of schools (Chang, 2008; Carvalho et al., 2021; Gleeson & Donnabhain, 2009; UNESCO, 2010a) as to strategic plans, the correlations between the variables become clearer. Nevertheless, literature reviews suggest that the threats and opportunities in strategic plans for disadvantaged cities are not investigated adequately. Verily, when the research is dwelled upon, no such study is detected. The lack of analysis on strategic plans on the basis of educational institutions (Chang, 2006; Ozdemir & Toz, 2021), threats, and opportunities (Bryson, 2004; UNESCO, 2010c), and disadvantaged cities (Lane et al.,

2005; Maier, 2021; MoNE, 2019) catches attention. Accordingly, in this research the threats and opportunities in strategic plans in regard to disadvantaged cities are studied.

This research intends to analyze the threats and opportunities in the strategic plans of the disadvantaged cities in Turkiye. Previous studies emerge as the ones on preparation processes (Arabaci et al., 2015; Cetin, 2014; Ozmantar, 2011), human resources management (Sara et al., 2021), strategic change (Liedtka, 2000), and sustainability (Bieler & McKenzie, 2017). Studies on threats and opportunities are centered on job performance (Di Pietro et al., 2014), manager attitudes (Jackson & Dutton, 1988), and principal perceptions (Polat et al., 2019). Research on disadvantaged cities (and regions) are rooted in the framework of leadership behaviours of principals (Ozcan et al., 2018), school engagement (Karabag Kose, 2019), and school conditions (Lupton, 2004). That said, no study is encountered investigating the threats and opportunities in strategic plans, grounded in disadvantaged cities. This implies there is a gap in the literature. To this end, we aim to fill this very gap. In this way, the threats and opportunities in the strategic plans of disadvantaged cities can be evaluated with a more holistic approach. Our research also addresses ways to raise the awareness of researchers, educators, and policy makers. For this purpose, answers are sought to the following:

1. Which themes do the educational threats and opportunities in the strategic plans of disadvantaged cities cluster in?

2. Do these educational threats and opportunities significantly bear any resemblance to each other?

2 | METHOD

In this research, document analysis, one of the qualitative research designs, was preferred. In this way, it is made possible to examine the materials within the scope of the research (Yildirim & Simsek, 2016, p. 190). As strategic plans are documented/digital materials, this has been decisive to perform the relevant process. Various researchers (e.g., Merriam, 2018, pp. 132-133; Patton, 2015, p. 312) have pinpointed document analysis is indeed suitable to examine documents like strategic plans.

DATA COLLECTION

This study pursued to analyze the strategic plans developed and implemented by the provincial national education directorates of the disadvantaged cities in Turkiye. Nonetheless, it was witnessed that the (number of) cities included in each document varied. Table 1 gives information in this direction.

Table 1. Information About The Universe of The Research

No.	Cities	Regions with Development Priority [*]	Socioeconomic Development Ranking [**]	Centers of Attraction Program [***]
1	Adiyaman		•	•
2	Agri	•	•	•
3	Ardahan	•	•	•
4	Batman	•	•	•
5	Bayburt			•
6	Bingol	•	•	•
7	Bitlis	•	•	•
8	Diyarbakir	•	•	•
9	Elazig			•
10	Erzincan			•
11	Erzurum			•
12	Gumushane			•
13	Hakkari	•	•	•
14	Igdir	•	•	•
15	Kars	•	•	•
16	Kilis			•
17	Malatya			•
18	Mardin	•	•	•
19	Mus	•	•	•
20	Siirt	•	•	•

21	Sanliurfa	•	•	•
22	Sirnak	•	•	•
23	Tunceli			•
24	Van	•	•	•
	Total	16	17	24

Source: *Official Gazette, 2006; **Acar et al., 2019; ***MoIT, 2020.

As seen in Table 1, these documents report different numbers of disadvantaged cities, i.e., 16, 17, and 24, making it difficult to clarify the actual number. Be that as it may, the cities included in the *Centers of Attraction Program* seem to cover all. Furthermore, it is known that the above-mentioned categorization is prepared in light of the latest data. On this account, it would be appropriate to take those cities as disadvantaged.

For sampling, the homogeneous sampling method was selected. *Homogeneous sampling* is a purposive sampling method examining similarities/differences between documents/participants' views with common characteristics (Patton, 2015, pp. 607-608). All the cities in the aforementioned program are considered disadvantaged. In that case, their strategic plans are chosen for the research. The strategic plans were accessed from the website of each relevant provincial directorate of national education with the exception of three viz. Bayburt, Sirnak, and Van.

The research was conducted using the qualitative research stages proposed by Miles & Huberman (1994/2019, pp. 10-11). These consist of (*i*) data reduction, (*ii*) data displaying, (*iii*) drawing conclusions and verification. *Data reduction* means the simplification, organization, and thematization of the obtained information. At this stage, the threats and opportunities in the strategic plans of the disadvantaged cities were identified, and isolated from a number of distinctive components. *Data displaying* can be defined as the compression and consolidation of sizable and dispersed information. This stage was executed using tables in the research. For the *visualization,* tables were prepared. *Drawing conclusions and verification* is defined as explaining what the information means, and as justifying the correlations. In our research, this stage was for making comparisons (p. 154). The Findings section presents the results, and the Discussion & Conclusion section comprises of in-depth analyses of the findings.

For the thematic process of the research, the concept coding and subcoding techniques were exercised. Concept coding was embraced for its structure as it helps facilitate categorization, and allows for an examination of the documents (Saldana, 2019, p. 119). Subcoding, on the other hand, was applied with concept coding, as threats and opportunities in strategic plans encompass a good number of subcategories (p. 69). In this way, a detailed classification was targeted (pp. 91-92).

TRUSTWORTHINESS

The present research casts light on the current strategic plans, all of which are accessible. In doing so, it is hoped to use reliable and valid sources. For the data analysis, MAXQDA 2020 was exerted. In this way, it was aimed to avoid any potential bias (Merriam, 2018, p. 152). The compatibility between the coders was checked all throughout. To ensure this, new themes were created when necessary or the emergent themes were combined with others. Therefrom, it is meant to fortify the consistency of the thematic structure. Withal, the data obtained were examined by the authors who had previously been engaged in qualitative studies. The themes on which consensus could not be achieved formerly were then clarified (Guest et al., 2012).

RESEARCH ETHICS

In our research, the researchers as the authors obey the principles of publication ethics. Participant views are not consulted in the present research. Instead, the strategic plans of public institutions were analyzed by accessing their web pages. Ergo, the stable data, obtained from primary sources, were delved into. Moreover, ethical permission of the research also was approved by Social, and Human Sciences Ethics Committee of Samsun Ondokuz Mayis University decision dated 31/12/2021, and issued 2021/1077.

3 | RESULTS

THEMATIC FINDINGS

Code matrix to answer the first research question, that is, which themes do the educational threats and opportunities in the strategic plans of disadvantaged cities cluster in, was studied, and 1375 codes in 21 strategic plans were accessed. Themes were formed from these codes. The theme with the highest number of codes (n: 133) was stakeholder-based opportunities, and the theme with the lowest number (n: 7) was opportunities related to security. Table 2 gives details in this regard.

Table 2. *Threats and Opportunities*

	Themes	Subthemes	
Threats	Infrastructural	Physical	-Housing, sociocultural, sportive, classroom, workshop, or laboratory inadequacy.
		Housing	-Rapid, and unplanned urbanization, inadequacy/unsuitability of school areas.
		Technology	-Inadequacies of data, information, and document archiving, non-renewable equipment.
	Individual	Families-Parents	-Low education level, insensitivity, lack of communication, having too many children.
		Teachers and Principals	-Reassignment/relocation, paid/contracted teachers, professional reputation.
		Other Staff	-Reassignment/relocation, lack of experienced staff, out-of-field employment.
	Economic	Budget	-Lack of funding, lack of school budget, high costs.
		Employment	-Unemployment, migration, low-paid Syrians, cheap labor demand.
		Investments	-Increasing costs, insufficient private sector investments, infrastructure problems.
	Awareness and Interest-Based	Families-Parents	-Perception of vocational education, role of media, lack of guidance, and direction.
		Students	-Insufficient level of perception, knowledge, and equipment related to school types.
		Teachers and Principals	-Low awareness of special education, perceptions of school types.
		Society	-Focus on success, cultural codes, ignoring interests, and abilities.
	Immigration-Based	Migration	-Agricultural/educational migration, rural migration, school dropouts, and absenteeism.
		Emigration	-Increasing number of Syrians, urbanization problems, cultural differences.
	Security-Based		-Abandoned buildings, violence against teachers, substance abuse/addiction.
	Equity-Based	Awareness, and Interest	-Low awareness of special education, family indifference, absenteeism, sensitivity.
		Socioeconomic	-Economic inequalities, problems in income distribution, inequality of opportunity.
		Sociocultural	-Inequality of opportunity, rural-urban differences, literacy culture.
		Legal	-Policy inadequacies, access issues, regulatory deficiencies.
	Media-Based		-Information pollution, biased news, violent content, bad examples.
	Stakeholder-Based	Local-Regional	-Low support, budget indifference, feudal pressures, lack of funding.
		National	-Excessive number of stakeholders, limited stakeholder support, external interventions.
	Political	Reassignment and Relocation	-Timing issues, workforce turnover, paid/contracted teachers.
		Budget	-Lack of school funding, cost increases, budget shortfalls.
		Vocational Education	-Problems in student counselling, estimation difficulties.
		Legislation	-Highly frequent regulations/changes.
		Curriculum	-Very frequent regulations/changes.
		Test system	-So often changes of test systems, focalizing on educational/academic achievement.
		Mobile Teaching	-Inspection problems, physical-psychological effects, lack of qualified personnel.
		Approach-Philosophy	-Political interventions, changes in education policies, vocational education approach, transition to higher education approach, prioritizing academic success.
	Social	Socioeconomic	-Low income, income distribution problems, socioeconomic inequalities.
		Sociocultural	-Focus on success, perceptions/interests of parents, limited cultural opportunities.
	Harmful Habit-Based	Internet Addiction	-Unconscious use of social networks, and technological tools, online war games.
		Substance Abuse	-Substance abuse, escalated use of tobacco, and tobacco products.
Opportunities	Infrastructural	Physical	-Facility investments, individual training studies, repair works.
		Technological	-New technologies, and social networks, hosts, and applications.
	Individual	Families-Parents	-Demand for higher quality education, importance given to vocational education.
		Teachers and Principals	-Boosted number of teachers, young, and dynamic staff.
		Other Staff	-Personnel support from government, increased supply of general, and technical staff.
	Financial	Budget	-Increased budget for education, allocation of new resources.
		Grants-Projects	-Agencies, European Union (EU) studies/grants.
		Investments	-Projects, allowances, contributions of stakeholders, physical, and structural innovations.
	Awareness, and Interest-Based	Families-Parents	-Enhanced awareness of quality, parent involvement, and interest in education.
		Students	-Increased interest in education, increased demand for high quality education.
		Teachers and Principals	-Elevated demand for high quality education.
		Society	-Change in interest in vocational education, increased social awareness.
	Security-Based		-Work of security units, school security practices.
	Equity-Based	Access	-Development of access opportunities, legal regulations.
		Investment	-Public grants/incentives, legal regulations.
		Approach	-Education policies, transportation-access regulations, consideration of differences.
	Human and Geography-Based	Population	-Young population, low class attendance.
		Transportation	-Ease of transportation, ease of physical access.
	Media-Based		-Support by local, and national media, widespread use of social media.
	Professional Development	In-service	-In-service training institutes, and studies.
		Postgraduate	-Presence of universities, and academics, research in education.
	Stakeholder-Based	Local-Regional	-Private/public sector, local government, professional organizations, and philanthropists.
		National	-Largely stakeholder based, public institutions, agencies.
		International	-EU programs.
	Political	Qualification	-Promotion of higher quality, occupational standards, certificate-based programs.

	Legislation-Legal Regulations	-Legal facilities/regulations, *2023 Education Vision* goals.
	Curriculum	-Updates within the scope of *2023 Education Vision*.
	Schooling	-Primary education's being compulsory, inclusive education studies.
	Incentives and Projects	-Grants/supports, *Regions with Development Priority* approach, EU funds.
	Approach-Philosophy	-Equity, and inclusive education studies, education-oriented policies, EU harmonization studies,
Social	Families-Parents	-Encouragement being of family members, moral-cultural values that prioritize education.
	Cultural	-Presence of libraries, sports facilities, theatres, museums; touristic activities.

As is seen in Table 2, the educational threats in the strategic plans of the disadvantaged cities consist of 12 themes, and 33 subthemes. Of these themes, *security-based,* and *media-based threats* contain no subthemes. Likewise, the theme *awareness and interest* are composed of subthemes concerning stakeholders. Similarly, the theme *political threats* arises with its subdimensions, legal bases and policy elements. Educational opportunities combine 12 subthemes, and 30 subthemes appertained to these themes. Of these, solely the *media-based threats* theme has no subtheme. The *awareness and interest-based opportunities*, and *stakeholder-based opportunities* themes present quite comprehensive subthemes. The themes *security-based opportunities,* and *professional development-based opportunities* are the simplest ones.

The codes in the subthemes to give an answer to the second research question ("Do the educational threats and opportunities in the strategic plans of disadvantaged cities significantly bear any resemblance to each other?") were compared, and the findings of threats and opportunities were analyzed, and later demonstrated.

FINDINGS ON THREATS

When the *physical* subtheme of *infrastructural threats* is explored, the inadequacy of sociocultural activities and sportive facilities is evident in Bitlis, Sanliurfa, Hakkari, Kars, and Mus. Another similarity was diagnosed between Diyarbakir and Tunceli, which is the lack of workshops and classrooms. For the subtheme of *housing*, Batman, Diyarbakir, and Kars have limited and unsuitable areas for building schools. For the *technology* subtheme there is a consensus on high hardware costs.

The *families-parents* subtheme of *individual threats* signifies the lack of knowledge of families about education. For all that, it is affirmed that broken families in Ardahan, and Elazig, and crowded families in Mus are considered as threats. In Sanliurfa, families have certain attitudes that appear to harm girls. The strategic plans of Erzincan, Igdir, Kilis, Malatya, Mardin, and Sanliurfa criticize the awareness of teachers, principals, and families with respect to special education. This is also present in the subtheme *teachers, and principals*. The subtheme *teachers, and principals* are on reassignment and relocation of teachers. Almost all the strategic plans have negative statements about contracted or paid teachers. Unlike other cities, the relocation of principals is highlighted in the plans of Hakkari and Kilis. The subtheme *other staff* involves qualified staff issue.

For the subtheme *budget* within *economic threats*, the strategic plans of Agri report a lack of school budgets. The plans of Erzurum, Batman, Elazig, Erzincan, Erzurum, Kilis, Malatya, and Sanliurfa declare inadequacy for school budgets with congruent statements. But unlike other cities, Mus underlines bureaucratic problems. For the subtheme of *employment*, problems caused by migration emerge as a threat in Adiyaman. Low wages of Syrian refugees in Adiyaman appear to have negative effects on education. For Erzurum, Gumushane, and Sanliurfa there exist problems apropos of a nonconformity between education and employment. In the *investments* subtheme, for all the cities except Erzurum and Siirt, the inadequacy of private sector investments as a threat to education is stressed. This, accommodating public investments in Hakkari's strategic plan, impacts a high number of issues from cultural activities to archiving studies.

The *families-parents* subtheme of *awareness and interest-based threats* theme points low interest of parents in their children's education is truly expressed in almost all the strategic plans. In *students* subtheme Adiyaman, Batman, Bingol, Erzincan, Igdir, Malatya, and Sanliurfa state that the knowledge about business life is not adequate. The *teachers, and principals* subtheme is along similar lines in all the strategic plans to the height of employee turnover. Critical determinations, such as *families-parents* subtheme, are at the forefront in the reviews of the *society* subtheme.

For the *migration* subtheme of *immigration-based threats*, agricultural migration to Adiyaman, Agri, Batman, Bingol, Elazig, and Sanliurfa seems to influence education negatively. In Diyarbakir, immigration to the city centre

impacts education in a negative manner. For the subtheme of *emigration*, the case of Syrian refugees is raised as a threat.

Considering the *security-based threats*, internet cafes are perceived as a crucial problem in Bitlis, Erzurum, Mardin, and Mus. Again, In Mus, violence against teachers is considered a threat. Substance abuse/addiction is another threat for Bitlis, Elazig, Erzincan, Erzurum, Malatya, and Mardin.

The *local-regional* subtheme of the theme *stakeholder-based threats* exhibits restricted and low-level support by philanthropists as an eminent threat in Adiyaman, Elazig, and Igdir. Only Sanliurfa perceives pressures by feudal elements as a pivotal threat. The commonality is the limited support by local governments and professional organizations for education. For the *national* subtheme, the plans of Erzincan constitute expressions that reflect the lack of stakeholder support. In Elazig's, the effects of external interventions on education were reported.

The details of the *reassignment and relocation* subtheme of *political threats* theme have found a place in the plans. Batman, Erzurum, and Mardin differ from the others in that they highlight timing-scheduling problems. For the *budget* subtheme, Adiyaman and Agri consider the lack of school funding as a fundamental threat. In a similar vein, Adiyaman, Agri, Batman, and Igdir express problems in *vocational education* orientation. For the subthemes of *legislation, curriculum,* and *test system*, all agree that regulations in legislation are very frequent. Adiyaman, Agri, Batman, Bingol, Erzincan, Kilis, and Sanliurfa mention challenges vis-à-vis resting on success with parallel phrases. For *mobile teaching*, for Erzurum, the lack of inspection, and for Hakkari the scarcity of experienced staff are serious threats. For *approach-philosophy*, Kilis announces frequent changes in education policies. Erzurum and Hakkari have a critique of special education policies in their strategic plans.

In connection with the *socio-economic* subtheme in *social threats* theme, all conceptualize low income as a threat. Bingol and Erzurum enclose statements about inequalities. The *sociocultural* subtheme puts forth parents' attitudes. Consistently, the deficit of cultural facilities is seen as a threat in all.

It is regarded the themes *harmful habits-based* and *security* have a close correlation. For the subtheme *internet addiction*, the unconscious use of social networks is underlined in Erzurum and Siirt. The strategic plan of Mardin differs by asserting cyberbullying. For the subtheme of *substance abuse*, Tunceli stands out by bringing out tobacco/tobacco products, and Sanliurfa, drug use.

FINDINGS ON OPPORTUNITIES

For the *physical* subtheme of *infrastructural opportunities*, satisfaction with public support manifests itself. This subtheme shares an evident importance given to the construction of classrooms, and facilities. For the *technological* subtheme, all perceive internet-based applications as an advantage. What is more, increased social media literacy, the works of hosts, and networks are accepted as opportunities.

For the *families-parents* subtheme of *individual opportunities*, the common finding is the escalated demand for higher quality education by parents. Ardahan, Batman, and Mus are different from others by clearly italicizing an interest in pre-school education. For the *Teachers, and principals* subtheme, Batman alludes to higher policy documents in relation to teacher, and principal competencies, unlike the others. The plans of the others similarly integrate the improving situation of teacher supply. For *other staff*, Diyarbakir, Elazig, Kilis, Mus, and Sanliurfa accentuate the support for staff by dissimilar public institutions.

For the *budget* subtheme of *financial opportunities*, all perceive the raised financial resources allocated to education as an opportunity. With reference to this subtheme, Batman differs via punctuating the budget provided by different institutions. For the *budget* subtheme, Siirt spotlights an enhanced share of family budget spared for education. The subtheme of *grants-projects* portrays a similar picture. All reports detailed satisfaction with the opportunities that the grants, and projects the Ministry of Youth and Sports, and EU create. All announce their being prioritized in development, and the legal regulations that support this are effective opportunities. For the *investments* subtheme, all assert the presence of constructions like school buildings, and other facilities.

The theme of *awareness, and interest-based opportunities* incorporates the subthemes *families-parents*, *students, teachers, and principals,* and *society*. In all, interest in education is counted as an opportunity. Demand

for a quality education is uttered in the plans too. Especially in the *society* subtheme, the increase in education is divulged together with development, and workforce.

The *security-based opportunities* theme embodies the argument that Adiyaman, Bitlis, and Mus are safe. In the plans of the relevant cities, this becomes an opportunity. Specifically, for Mus, the school safety connected to education is commented on.

For the *access* subtheme of *equity-based opportunities*, Hakkari, and Mus focus attention on harsh geographical conditions. In Siirt's plan, the weight on educational regulations differs from the others. For the *investments* subtheme, Bitlis, and Mus foreground the physical investments catering to the disabled. Uniformly, the *approach* subtheme carries opportunities provided by inclusive policies, attending to the handicapped, and to their special education needs in Bingol, Bitlis, Gumushane, and Mus.

The subtheme of *population* in *human, and geography-based opportunities* brings in the learning age population as an opportunity. Differently, the strategic plan of Ardahan accents the presence of young teachers. For the *transportation* subtheme, the contributions of public investments are noteworthy.

For *media-based opportunities*, all recognize in their strategic plans that social media is an opportunity. With that being said, Adiyaman, Ardahan, Batman, and Elazig underscore more the local press, while Bitlis, and Kars, the national press.

In the *in-service* subtheme of *professional development opportunities*, merely the strategic plans of Gumushane, and Mus sound like they find the in-service trainings offered by the MoNE quantitatively adequate. For the *postgraduate* subtheme, a significant portion of the cities see universities' allowing the academic development of the educational staff as an opportunity.

For the *local-regional* subtheme of *stakeholder opportunities*, all unfold they receive extensive support from their regions. All the plans disclose local support as an opportunity. In the *national* subtheme, this is summarized as support from philanthropists, non-profit organizations, agencies, universities, and the public. For the *international* subtheme, the educational opportunities that are offered by the EU are visible.

For the *qualification* subtheme of *political opportunities*, the approach prioritizing higher quality education is welcome as an opportunity. The strategic plan of Gumushane brings attention to the alterations to the understanding of rearing principals, unlike the others. The plan of Kars recognizes legal regulations with the EU harmonization program studies as an exceptional opportunity. The subtheme of *legislation-legal regulations* subsumes limited data arguing an exceedingly flexible bureaucracy could become an opportunity. For the subtheme of *curriculum*, Adiyaman, and Bitlis touch on the advantages of curriculum updates. For the *schooling* subtheme, efforts to support student attendance are appreciated. For the *incentives, and projects* subtheme, the support for the cities improves education in every sense acting as an opportunity. Another subtheme is *approach-philosophy* where inclusive education services, legal regulations, and individual education studies are opportunities. A great many cities communicate through commensuration account the shifting philosophies of their policies are an opportunity.

For the *families-parents* subtheme of *social opportunities*, Bitlis, Mardin, Mus, and Sanliurfa take strong family ties as an opportunity, unlike the others. For the *cultural* subtheme, Elazig limelights the number of individuals registered to postgraduate education with Elazig as their place of registry. In this subtheme, Erzurum, Kilis, and Mus count the city libraries, and Diyarbakir the state theater as an opportunity.

4 | DISCUSSION & CONCLUSION

This research was designed to analyze the threats, and opportunities within the educational strategic plans of the disadvantaged cities in Turkiye. First, the themes of threats, and opportunities were detected. Afterwards, if the threats, and opportunities differed imposingly was investigated.

The educational *threats* affecting disadvantaged cities in Turkey come off in 12 themes, and 33 subthemes, whilst the *opportunities* in 12 themes, and 30 subthemes. This distinguishes the research from others in Turkiye (e.g., Arslan & Kucuker, 2016; Cekic & Dilber, 2020; Ozdemir & Toz, 2021) in view of the context, and approach.

Though they do not drew on strategic plans purely, the studies on educational threats, and opportunities have often concentrated on schools (Ozmantar, 2011), teachers (Akbaba & Yildizbas, 2016; Carvalho et al., 2021), or principals (Polat et al., 2019). This research is exclusive for it inspects stakeholders, official authorities, families, and educational policies.

The literature review has painted a scattered picture on the relevant subjects, be it educational opportunities, and threats, or disadvantaged cities. This research can be conducive to improving this view with its attention to disadvantaged cities. The plans handled are local-scaled ones, though they have the concern of being both national, and international. Notwithstanding, no statement respecting the COVID-19 pandemic is observed in the plans. Both national, and international studies give credence to strategic plans with their compelling role in the functioning of the Turkish education system (ERG, 2021; OECD, 2020). This leads to doubts about the quality of the strategic plans, which are obviously not revised, even during/after extraordinary times like the COVID-19 pandemic period.

For the second research question, the first issue standing above is problems about the authenticity of the plans. Most plans by the authorities of the disadvantaged cities have almost the same expressions. This hints at the designs-applications based on these plans are far from being innovative/situational bringing the research closer to others in the field that are sceptical about the contribution of plans to the development of disadvantaged cities (Wyne et al., 2020).

The paucity of socio-cultural activities, and sportive facilities in some cities catches sight too, and is consistent with the literature (MoNE, 2019; TEDMEM, 2021). Issues on threats that are found in the literature are high hardware costs (ERG, 2020), indifference of parents (Kara, 2020; Sulak & Ergun Kaplan, 2017), migration, and immigration (Han et al., 2019; Topaloglu, 2020), school budgets (Altunay, 2017; Karakutuk et al., 2019), violence against teachers (Neyisci et al., 2020; Sungu, 2015), contracted, and paid teachers (Cinkir & Kurum, 2017; Guzelyurt & Gonul, 2019), constantly changing legislation, and policies (Aypay, 2015; Kara, 2020), limited local government support (Uzun, 2015), principal reassignments, and relocations (Recepoglu & Kilinc, 2014; Celik et al., 2018). The presence of feudal elements, inequalities in special education needs, and extremism in stakeholder interventions are threats.

The advancement in the construction of classrooms, and facilities are conspicuous, unlike the assertions about threats. Educational opportunities raised are proportional to what the literature stresses: increased teacher supply, and improved budgets (MoNE, 2020), policies that prioritize higher quality (Lupton, 2004; Toran & Sahin, 2020; MoNE, 2018), school security studies (Yildiz Akyol, 2015), national, and international grants, and projects (Colakoglu, 2018; Yilmaz 2018). The topic of investments, software-based, and system-based, both contradicts the literature (e.g., with the research of Akin, 2009), and overlaps with it (e.g., with Mart & Kartal's, 2021). The inclusiveness of education policies, and the existence of legal regulations realized towards flexibility of education bureaucracy are opportunities. Whereas in some cities it was an opportunity, the temporary support personnel provided by public institutions may signal a threat. The issues about professional development may be an opportunity through universities, but doubts about the quantitative, and qualitative status of in-service education provided by the MoNE can be voiced.

IMPLICATIONS AND LIMITATIONS

This research has certain implications for education, strategic planning, and disadvantaged cities. First off, the research offers original information about the strategic plans of the disadvantaged cities hence at the same time increasing the awareness of wider audience. Results suggest that educational authorities should rely on strategic plans to improve the educational conditions of disadvantaged cities. In particular, the main duty of local education authorities should be to make the strategic plans operative, and practical for educational opportunities to be given attention. The similarity of many threats in different cities, and regions imply that common mechanisms to be formed for the preparation, and praxis of strategic plans would be suitable to overcome the educational challenges inherent in these cities. Our findings may also assist educators who are engaged in the work of demanding practicum related to *political* issues such as *budget, vocational education, curriculum, qualification, schooling* in the context of threats, and opportunities. Accordingly, educators who have experiences with the salient issues of

the disadvantaged cities could participate in studies on the suggested mechanisms. Education authorities, from school administrators to members of the Ministry can engage the educators in meaningful, and purposeful activities like professional development, and training so that the motivation necessary to move forward gaining novel insights in education becomes achievable. According to specific studies the positive impact of educators in the cities thay are employed with disadvantaged students is very much notable (Goldhaber et al., 2015; Konstantopoulos & Chung, 2011). This can also be linked to the potential power of strategic plans. In addition to these, the results of our research provide perceptions into backgrounds of strategic plans, and the factors that interfere with the disadvantaged individuals' statuses (Du et al., 2020). More specifically, warranting the realization of realistic, and customized educational strategic plans can be effective in welcoming local or regional opportunities while minimizing threats in disadvantaged cities for developing countries such as Turkiye where there are pivotal regional inequalities.

Despite the fact that it offers implications for the area, this research is limited to the threats, and opportunities sections of educational strategic plans of solely the disadvantaged cities in Turkiye. Since different sections may affect educational institutions in these cities (Lumby, 1999), future studies may inquire into the ways through which the other sections of educational strategic plans intervene in the development of these regions or the status of the individuals there by assuring larger samples. Another obvious limitation of this research may be that it has the sample consisting of the disadvantaged cities in a non-western country. To this end, the results can be generalized only in a limited manner. In this direction, the findings should be further fortified to fulfil the demands of researchers, educators, or policy makers in other countries. In the future, these studies should provide quantitative or qualitative evidence to clarify the relations among educational threats opportunities, and disadvantaged cities in terms of strategic planning. As a matter of fact, comparative studies can provide better understandings as to how strategic planning affects disadvantaged cities, and societies through multiple sourcing or carrying out research at multiple time periods. Finally, the data of the current research was obtained from the strategic plans formulated prior to the COVID-19 pandemic. A great many threats, and opportunities in the field of education are known to be reconceived after March 2020. Within this frame of reference, it is advisable for researchers to explore the coming plans after the COVID-19 pandemic.

STATEMENTS OF PUBLICATION ETHICS

We herein state that we obey the principles of publication ethics. Ethical permission of the research was approved by Samsun Ondokuz Mayis University Social, and Human Sciences Ethics Committee decision dated 31/12/2021, and numbered 2021/1077.

RESEARCHERS' CONTRIBUTION RATE

Contribution rate of each author specified table in the below.

Researchers' Contribution Rate

Authors	Literature review	Method	Data Collection	Data Analysis	Results	Conclusion	(Other)
Author 1	☒	☒	☒	☒	☒	☒	☒
Author 2	☒	☐	☒	☐	☒	☒	☒
Author 3	☐	☒	☐	☒	☒	☒	☐

CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

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Understanding Teacher Professional Identity: Voices from Pre-Service English Language Teachers

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ABSTRACT

The present qualitative case study aimed to explore Turkish pre-service English language teachers' perspectives on the elements of teacher professional identity and their understandings of their own professional identity development during practice teaching. The data was collected through reflective response journals, pre-practice teaching and post-practice teaching focus group interviews with thirty-one pre-service teachers enrolled in practice teaching course at a public university in Turkey. An in-depth analysis of interviews and journal entries showed that it was a continuous process for pre-service teachers to consolidate language-related, personal, and pedagogical elements of their teacher professional identities. The findings revealed that pre-service teachers' identities are grounded on language proficiency, disciplinary and context-relative skills, and awareness of themselves and their students. For pre-service teachers, being an English language teacher meant encompassing language-focused, teacher-focused, and learner-focused skills and characteristics. It was further found that there was a transition from individual to institutional perspectives for pre-service teachers in understanding their professional identity development. Their initial comments on their own teacher identities at the beginning of practice teaching mostly elaborated on their characteristics and role models, whereas their final remarks at the end of practice teaching were on the teacher authority and responsibilities. This study suggests that understanding pre-service teacher identities would guide necessary actions in initial teacher education.

Keywords: teacher professional identity, English language teachers, pre-service teachers

Öğretmen Mesleki Kimliğini Anlamak: İngilizce Öğretmen Adaylarının Görüşleri

Öz

Bu nitel vaka çalışması, Türk İngilizce öğretmen adaylarının öğretmen mesleki kimliğinin bileşenlerine ilişkin bakış açılarını ve öğretmenlik uygulaması sırasında kendi mesleki kimlik gelişimine ilişkin anlayışlarını araştırmayı amaçlamıştır. Veriler yansıtıcı yanıt günceleri, öğretmenlik uygulaması başında ve sonunda yapılan odak grup görüşmeleri ile Türkiye'de bir devlet üniversitesinde öğretmenlik uygulaması dersini alan otuz-bir öğretmen adayının katılımıyla toplanmıştır. Sözlü görüşmelerin ve tutulan güncelerin analizi, öğretmen adaylarının öğretmen mesleki kimliklerinin dille ilgili, kişisel ve pedagojik bileşenleri pekiştirmelerinin sürekli bir süreç olduğunu göstermiştir. Bulgular, öğretmen adaylarının kimliklerinin dil yeterliliğine, mesleki ve bağlamla ilgili becerilere ve kendileri ve öğrencilerle ilgili farkındalıklarına dayandığını ortaya koymuştur. Öğretmen adayları için İngilizce öğretmeni olmak, dil odaklı, öğretmen odaklı ve öğrenci odaklı beceri ve özellikleri kapsamak anlamına gelmektedir. Ayrıca öğretmen adaylarının mesleki kimlik gelişimlerini anlamada bireysel bakış açısından kurumsal bakış açısına geçiş olduğu bulunmuştur. Öğretmen kimlikleri ile ilgili öğretmenlik uygulaması başlangıcında yorumlar çoğunlukla kendi özellikleri ve rol modelleri üzerinde dururken, öğretmenlik uygulaması sonunda yorumlar öğretmen yetki ve sorumlulukları üzerine olmuştur. Bu çalışma, hizmet öncesi öğretmen kimliklerinin anlaşılmasının, başlangıç öğretmen eğitiminde gerekli eylemlere rehberlik edeceğini ileri sürmektedir.

Anahtar kelimeler: Öğretmen mesleki kimliği, İngilizce öğretmenleri, öğretmen adayları

1 | INTRODUCTION

Language teacher identity has been a well-established field of research in the literature (Barkhuizen, 2017; De Costa & Norton, 2017; Yazan & Lindahl, 2020) with various views and discussions on the nature and the extent of it. The relevant research aims to explore the sociocultural contexts of education, pedagogy, issues of agency and power. There has been a shift from traditional, cognitive to critical and sociocultural accounts in understanding language teacher identity such as neo-Vygotskian sociocultural theory, language socialization, post-structuralism, critical applied linguistics (Miller, 2009) or Foucauldian discourse and Bordieuan capital (Morgan & Clarke, 2011). Initial teacher education, in all these, is an active process that pre-service English language teachers construct their professional identities.

Pre-service teacher education, practice teaching in particular is a milestone for prospective language teachers to engage in broader social, cultural, and historical macro structures impacting the second/foreign language teaching profession, and to grasp how their identities are shaped in response to such factors. The professional identity that pre-service English language teachers develop during teacher education programs is continuously constructed due to the ongoing interaction between one's self and identity, cultural context, and professional environment. The extent to which previous learning experiences of prospective teachers affect their identity formation before the actual profession is contentious (Chong et al., 2011). That is to say, they have a set of former conceptions and opinions regarding teaching (Lee, 2008), which means the construction of professional identity begins even earlier than teacher education and continues all through professional life (Lopes & Tormenta, 2010). However, pre-service English language teachers may experience remarkable professional development during teacher education as they engage with different elements and actors in teacher education programs to shape their professional identities. Thus, teacher education programs make a valid starting point, both for developing and sustaining the development of teacher professional identity (Beauchamp & Thomas, 2009).

It is crucial to research the ways to support language teacher identity development in initial teacher education (Riyanti, 2017). Teacher identity affects the quality of education, teacher preferences (Olsen, 2016) and teacher behavior management (Dugas, 2016); informs a teacher's decisions on instruction, content and their relationships with students (Beijaard et al., 2004) and mediates a teacher's actions (Chong et al., 2011). Additionally, providing opportunities for reflection might promote prospective language teachers' critical attitudes toward curriculum and language teaching strategies and their agency (Banegas et al., 2022). Although the literature focuses mostly on pre-service teachers (Henry, 2016; Varghese & Snyder, 2018), language teacher identity in non-Western contexts such as Turkey remains under-researched with scarce qualitative designs (Taşdemir, 2021).

THEORETICAL FRAMEWORK

In the social theory of learning, identity is defined as "not just an accumulation of skills and information, but a process of becoming—to become a certain person or, conversely, to avoid becoming a certain person" (Wenger, 1998, p. 215). The sociocultural view also emphasizes the dynamic nature of identity as both individually and socially constructed with the main concern around the groups of individuals in communities. From a sociocultural view, Wenger (1998) defines identity that it "is not an object, but a constant becoming ... always going on" (p. 153-154). This theory of identity emphasizes "a profound connection between identity and practice" (Wenger, 1998, p. 149). The "experience of identity in practice is a way of being in the world", involving constant negotiation of membership of communities, and "the interplay of participation and reification" of experience (ibid., p. 151). Furthermore, Wenger (1998) discusses five dimensions of identity: as negotiated experiences where one defines who she/he is by interaction with others, as a community membership where an identity is based upon familiarity and belonging to a group, as a learning trajectory with future concern in mind, as a nexus of multi membership through various forms of our identities, and as a relation between local and global with the negotiation of broader discourses. According to him learning happens as experiencing, doing, belonging, and as becoming someone, respectively consisting of meaning, practice, community and identity. Learning, likewise, in this case learning how to teach, is active social participation in communities and forming identities regarding them. Belonging in communities of practice operates in three modes consisting of engagement, imagination and alignment. Engagement occurs during the process an individual gains actual experience by interacting with other

people. Imagination occurs when an individual creates a broader image of his/her community across time and space, and alignment is linked to internalizing the identity of the larger community to the identity of its participants (Wenger, 1998).

From such a theoretical understanding, practice teaching was relevant since "identification takes place in the doing" (Wenger, 1998, p.193) via legitimate participation in a community of practice. Practice teaching is a main component in teacher education programs, and it is when pre-service teachers get the chance to observe real classroom settings. It involves "supervised teaching, experience with systematic observation, and gaining familiarity with a particular teaching context" (Gebhard, 2009, p. 250). Reflection (Dewey, 1933; Schön, 1983), as a means of delving into professional identities of pre-service teachers was further a crucial part of the practice teaching process. Reflection is described by Dewey (1933) as "an active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and further conclusions to which it tends" (p.9). It is classified in various ways, such as, reflection in action and reflection on action by Schön (1983). Reflection in action refers to making decisions through the action whereas reflection on action refers to reflection after the action. Both forms of reflection form a vital part of teachers' professional growth and identity development. Teacher professional identity is realized by experiencing as foreseen by Wenger (1998) and as learning-in-practice where practice is the main aim when pre-service teachers aim at achieving goals in class and when they also reflect on the process of being a teacher. Under the light of such theoretical understandings, pre-service English language teachers were asked for their reflections via response journals and focus group interviews in this study.

LANGUAGE TEACHER PROFESSIONAL IDENTITY

The seminal work of Norton (1995) initiated the early discussions on identity in language education. She (2000) describes identity as "how a person understands his or her relationship to the world, how that relationship is constructed across time and space, and how the person understands possibilities for the future" (p.5). In order to specify fundamental characteristics of identity, Rodgers and Scott (2008) note:

(1) that identity is dependent upon and formed within multiple contexts which bring social, cultural, political, and historical forces to bear upon that formation, (2) that identity is formed in relationship with other and involves emotions, (3) that identity is shifting, unstable and multiple and (4) that identity involves the construction and reconstruction of meaning through stories over time. (p. 733)

Although teacher professional identity has not been precisely described, its significance is agreed upon. It informs how one mediates her/his teaching to present her/his professional self in specific ways and understands "complex, situated, and fluid attributes that individuals bring with them to the study and practice of teaching" (Sexton, 2008, p.75). It is an ongoing process rather than an endpoint for teachers to construct their self-images and their professional identity of "beliefs, values, and emotions about many aspects of teaching and being a teacher" (Farrell, 2011, p.54) as well as an interactive process to interpret values and experiences (Flores & Day, 2006).

In relation to the nature and features of teacher identity, there have been several classifications. According to Day and Kington (2008), identity is composed of three sub-identities: (i) professional identity: educational ideals of the teacher; (ii) situated or socially located identity: in a certain educational context; (iii) personal identity: social roles outside the school, which all influence teacher professional resource kits and classroom practices. In line with Wenger (1998), Xu (2012, 2013) classifies a professional identity as rule, cue-, exemplar-, and schema-based ones consecutively grounding on concrete rules, characteristics of social entities, representative examples, and responses to dynamic contexts. Another classification for identity is made between identity-in-practice and identity-in-discourse (Varghese et al, 2005, p.39). On the one hand, identity-in-practice demands an action-oriented point of view and sees identity formation as a social process of tasks and on the other, identity-in-discourse proposes that identity is formed, sustained and reshaped through language and engaging in different discourses (Danielewicz, 2001; Zembylas, 2003). Likewise, Beijaard, Verloop, and Vermont (2000) discuss teacher identity under three headings: (i) teacher as a subject matter expert grounding on subject matter knowledge, (ii) teacher as a didactical expert based on skills necessary for teaching and learning, and (iii) teacher as a pedagogical expert relying on students' needs and development. Pennington and Richard (2016) conceptualize language teacher identity consisting of foundational and advanced competences. The first group covers language-related,

disciplinary, context-related, student-related identities, and self- knowledge and awareness. The latter group encompasses applying knowledge into practice, theorizing from practice, and membership in communities of practice. Every teacher combines these (funds of) identities uniquely; influenced by work context, experience, and learning history.

In second language teacher education, there has been a shift from looking for better ways to educate teachers to focus on how teachers learn to teach through reflection and self-awareness (Richards, 2008). In line with this, Izadinia (2013) states that research on student teachers' professional identity investigated the contribution of reflective activities, learning communities, context, and prior experiences. Overall, there are several issues under focus regarding teacher identity research such as: teacher selves through qualities of a (good) teacher (Korthagen, 2004), teacher roles (Farrell, 2011), teacher identity construction and factors affecting it (Trent, 2014), identity metaphors (Thomas & Beauchamp, 2011), agency (Varghese & Snyder, 2018), narrative construction of LTI (Ruohotie-Lyhty, 2013), the native-nonnative dichotomy and nonnative speaker teachers (Aneja, 2016) and emotions (Song, 2016).

It is widely argued that teacher identity development is not smooth, and full of "self-doubt and questioning" (Thomas & Beauchamp, 2011, p.767). Teachers are found to have difficulty in internalizing their teacher identity, and it takes time and effort to improve their understanding of what it means to be a language teacher and to identify them with that understanding (Kanno & Stuart, 2011). Clearly, identification with teaching as a profession is an important first step for prospective teachers to grasp the complicated set of professional, cultural, political and individual identities teachers enact (Varghese et al., 2005). Hence, this study adopts the view that pre-service English language teachers need to understand their professional identities to enhance their sense of belonging to teaching as a profession and reflect on their teacher identity development.

RESEARCH QUESTIONS

In line with these aims, we explore the following research questions:

1. What constitutes teacher professional identity according to pre-service English language teachers?

2. How do pre-service English language teachers understand their teacher professional identity development in practice teaching?

2 | METHOD

To provide an in-depth description of the participants' construction of teacher professional identity, this study employed a qualitative case study method (Creswell, 2013). As such, qualitative research necessitates a naturalistic and an interpretive perspective examining the multiplicity of reality (Denzin & Lincoln, 2008), multiple data collection tools were used for a thorough bottom-up analysis of the case of Turkish pre-service English language teachers. To this end, the data were collected during practice teaching when pre-service teachers get the chance to observe real classroom settings and are familiarized with the authentic nature of classrooms. As this study aims to explore pre-service teachers' professional identity, a case study method- an established research design in social sciences- is employed since it is used to generate an in-depth understanding of an issue in its real-life context (Crowe et al., 2011).

CONTEXT AND PARTICIPANTS

The study was conducted with voluntary participation of thirty-one pre-service English language teachers enrolled in the practice teaching course at a public university in Turkey. Following purposeful sampling strategies; typical sampling strategy has been adopted because the participants represented what is normal or average of their group to understand the issue being examined (Creswell, 2013). The participants formerly took courses in the English language, methodology of language teaching, linguistics, English literature, and educational sciences before practice teaching in their last semester in the initial teacher education program. They were familiar with reflection tasks and had observed classes at public and private schools in the preceding school experience course. At the beginning of the term, the course instructor arranged practice teaching schools and assigned pre-service

teachers to three different schools (13 student teachers, henceforth STs): public middle school, 12 STs: private middle school, 6 STs: private high school) for their practice teaching. They also attended a 3-hour seminar at the university held by the course instructor every week. In these sessions, they discussed assigned articles, commented on their relation to their teaching experience and what they observed in their mentor's classes. The articles and reflection tasks varied in their specific foci. The course seminar functioned as a platform for pre-service teachers to develop their own arguments regarding education and teaching English.

DATA COLLECTION AND ANALYSIS

The data were collected through two reflective response journals and pre- and post-practice teaching focus group interviews. Journal writing was a means to organize thoughts and to analyze more consciously than usual with the growing ability to adjust to the unexpectedness of the classroom (Farrell, 2013; Larrivee, 2000) during practice teaching. Reflective journals were used as a means of altering one's existing beliefs, assumptions and practices through a critical lens as teaching is not just a solid accumulation of teaching skills and strategies (Larrivee, 2000). In this regard, the participants wrote reflections as a response to the articles, in-class discussions, and observations at schools. Both journals and interviews allowed for reflection which influences the shaping of identity (Beauchamp & Thomas, 2009) since teachers are bound to unchallenged beliefs and practices in class, if unable to reflect critically on their teaching. For the article reflection response journals, the participants were given general and article-specific guiding questions. General questions asked whether they felt the article seemed central to the field or were a part of the target audience, and about the influences on their understanding of teaching. Article-specific questions were either built on the quotes from the articles or in the form of analysis or synthesis conceptual questions. Although guiding questions were provided, these reflective entries were semi-structured: the participants could add any further ideas, and choose which questions to ponder on. The main goal was to get the participants to demonstrate their understanding of the issue by connecting the articles to their knowledge, experience, recent learning, and possible future practice. Additionally, semi-structured (Brinkmann, 2018) focus-group interviews were conducted. These lasted approximately one and a half hours each, were conducted in groups of 4 or 5 and transcribed verbatim. The focus group interview questions elaborated on the participants' motivations to become teachers, classroom teaching experiences, perspectives and beliefs on teaching and learning, approaches to those, characteristics and responsibilities as prospective teachers, and future aspirations. We used focus group interviews as using an authentic group (as members of already existing practice teaching class) might promote discussion, idea sharing and debate, and they provide a breadth of shared experiences from people with similar characteristics (as pre-service teachers in the practicum stage) (GOV.UK, 2020).
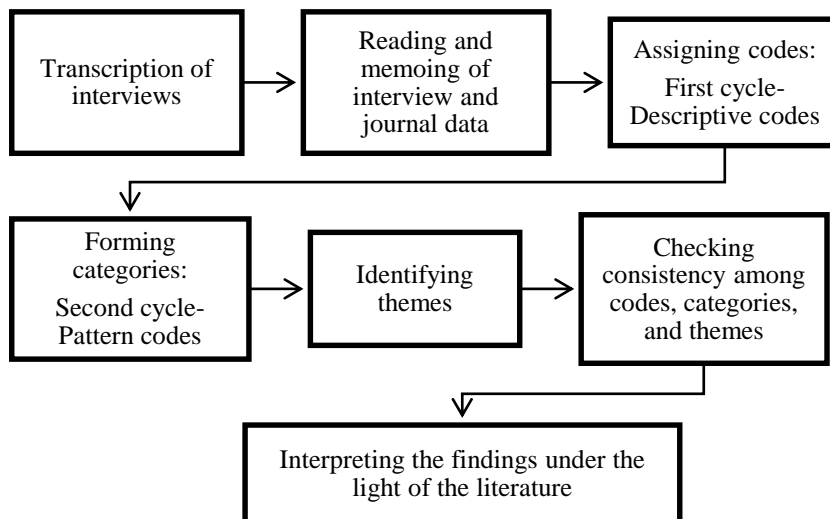
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Figure 1. *Data Analysis*

The data collection process started with the pre-practice teaching focus group interviews, continued with reflective response journals and ended with post-practice teaching focus group interviews. During the analysis of the data, a cyclical - reiterative analysis process was adopted. We utilized an analytical software tool (MaxQDA) to assign codes and understand relations among codes or themes (Kuckartz, 2014). The qualitative data analysis

process was grounded on data condensation techniques and coding types (Miles, Huberman, & Saldana, 2014). Thematic analysis method was utilized in analyzing the data from different tools to identify themes and patterns based on the detailed description of the data (Braun & Clarke, 2013). The data was anonymized before the analysis process started; the participants were assigned numbers such as *ST1*. We utilized data triangulation and peer checking as validation strategies (Lincoln & Guba, 1985). For peer checking - "the stability of responses to multiple coders of data sets" (Creswell, 2013, p. 253)-, we asked an international adjunct professor in an ELT department in Turkey; having expertise in qualitative research to analyze some data. In line with the literature that suggests the second coder analyze at least ten percent of the whole data (Lombard, Snyder-Duch & Bracken, 2003), the external coder analyzed around fifteen percent of the data set. On her feedback, we revised some of the coded segments and categories.

RESEARCH ETHICS

The participants were given the opportunity to consider and discuss the study and their involvement in the study with the researchers. They were also informed that they were free to withdraw from the study at any time, without giving any reason and without any consequences. The data were stored and analyzed strictly confidentially and reported anonymously. The study was carried out in accordance with the codes of ethics along with the approval from the institutional ethical review board.

3 | FINDINGS

After an interpretative data analysis, we found that the pre-service teachers' understandings of teacher professional identity and their own identity construction were shaped around two main themes: constituents of language teacher professional identity and a transition from individual to institutional perspectives in understanding their identity (Table 1).

Table 1. Language Teacher Professional Identity

Language teacher professional identity			Codes (n)
Language-focused	Subject experts: Language-related	English knowledge	38
Teacher-focused	Didactical experts: Disciplinary identity	Skills	46
	Self-knowledge and awareness	Characteristics	142
		Roles	28
Learner-focused	Pedagogical experts: Disciplinary identity	Instructional design	50
	Student-related identity	Learner-centeredness	52
Understanding teacher professional identity			**Codes (n)**
Individual perspectives	Cue-based	Characteristics	22
	Exemplar-based	Role models	24
Institutional perspectives	Rule-based	Teacher authority	19
		Responsibilities	12
	Schema-based	Contextual awareness	11

SUBJECT-FOCUSED ELEMENTS IN LANGUAGE TEACHER PROFESSIONAL IDENTITY

First and foremost, "being an expert in the field" (ST15) and "competent in language use" (ST20) and having "knowledge of the language" (ST13) were stated to be indispensable for a language teacher. ST15 stated: "All

good teachers are knowledgeable and experts in their areas. I also try to be so", like ST18 noting: "teachers have this vast language knowledge, and they should be really good at transmitting that knowledge, I guess I am one of these". However, it was not enough to have subject knowledge as: "a teacher should know how to teach as well as the language. A teacher should be an expert regarding the content, yet this is not enough on its own." (ST6).

For the participants, subject knowledge and lifelong learning complemented each other: "teachers should be open to development, follow new ways of teaching not to repeat themselves and lag behind" (ST4). It was essential to be able to address learners: "to meet learner needs and catch up with their curiosity, we should regenerate ourselves by criticizing our current state and looking for improvement" (ST5). Subject knowledge consisted of several subsets:

The main property of being a good teacher is being an expert in the field. We need to know the language properly to teach it. We should know grammar, vocabulary, and have reading, writing, and listening skills in a foreign language. Of course, knowing everything is impossible, but we can keep learning and be open to learning new things. (ST15)

TEACHER-FOCUSED ELEMENTS IN LANGUAGE TEACHER PROFESSIONAL IDENTITY

It was important "knowing one's ways around technology, being able to integrate it to the lessons to support student learning" (ST18). Several pre-service teachers mentioned various ways of adapting applications and instructional technologies. ST21 saw technology as an aid for teachers' relationship with students: "if teachers cannot integrate technology, then they cannot teach effectively or build a strong relationship with the learners". For ST13, being able to make use of technology was a way to be innovative language teaching:

being innovative by abstaining from traditional teaching methods ... Now we are in the technological era ... I should make use of technology in class; the computer, the mobile phones, PPT Presentation, etc. Teaching to the coursebook would not be enough to appeal to the students.

ST2 evaluated herself in terms of technology skills: "I am not a technology native; I think it will be challenging to follow new games and applications all the time and adapt them to my lessons". Similarly, ST5 felt that "as a prospective English language teacher, I need to work hard and understand my learners' habits in order to bridge the gap and utilize technology for instruction". They planned and projected on future practices:

We adopt technology to learning. ... Tons of activities, applications, games, videos, etc. on the Internet. ... I have already planned some for my classes. Instead of taking technology away from students, we can make it fun and educational. (ST4)

I can use "WhatsApp" to communicate with students and give audio feedback or "Flipped Classes". I can assign videos as homework; we can do different enjoyable activities. This will also address the kinesthetic learners since they can participate actively instead of listening to the teacher. (ST6)

Similarly, material design skills were discussed, ST13 recommended: "a language teacher should prepare extraordinary activities for students. S/he should not use the same activities over the years but change them according to the students' needs and interests". ST11 commented that she was able to create some games or authentic activities so that students learn the language while using it, and further clarified that "teachers need to be creative to draw the attention and make the lesson enjoyable and interesting". ST2 argued: "when students just see drills, they miss the nature of language and see learning as a mechanic process" and remembered one experience: "I had a student who became excited about English when we took lyrics as reading materials because she had musical intelligence".

Affective characteristics such as being enthusiastic, caring and loving the job stood out as the features that the participants attribute to teacher professional identity most. Loving the profession was one of the primary constituents of teacher professional identity for ST18: "I believe all boil into one; loving the profession. If someone loves teaching, with enough practice, s/he can be a good teacher"; it was the starting point to be later combined with practice. On being caring, ST2 stated: "I know that if I can assure my students that I care about them and I am an open-minded teacher who empathizes with them, they will trust me" and similarly ST5 underscored: "We need to be in learners' shoes, care for them and do not forget about our own experiences as learners so that we can provide a better learning environment". The participants emphasized that some of these features are "inborn

abilities and related to the teacher's personality" (ST13). ST18 was also one to state this and related it to instruction as well: "the most important thing is being enthusiastic about the job. If you do not love teaching, it doesn't matter how well you know the subject". Enthusiasm was one of the reasons to choose teaching as a profession:

In my opinion, the most important thing is enthusiasm for teaching. This is the reason why I chose this job. I did not choose to be a teacher because it is easy, well paid or something else. The only reason was my passion for teaching. For me, even if someone carries all the other characteristics of a good teacher but enthusiasm for teaching, I wouldn't call him a good teacher. (ST4)

LEARNER-FOCUSED ELEMENTS IN LANGUAGE TEACHER PROFESSIONAL IDENTITY

In all cases, being student-centered was the driving force. The data revealing teachers as pedagogical experts were built on the requirements of teaching profession such as knowing about students, treating them fair, raising students' awareness, and adding to the intellectual side of them. Knowing about the general profile of the students and their needs was prioritized:

A teacher should know his or her students' profile, hobbies, experiences etc. (...) Crucial for me to draw students' attention to the activities and tasks (...) We used 'Minions' in our warmup activity and students loved that and participated in the lesson willingly. (...) Some magazines that our students follow and subscribe to, and they became very enthusiastic. It is the teacher's task to follow the interests and hobbies of students. (ST17)

Creating a positive classroom environment, being adept at classroom management, and engaging students into the lesson were seen vital to "create a classroom culture and a positive atmosphere" (ST11), or to "foster a friendly and trustful classroom in which students can voice their opinions freely, make mistakes and share their knowledge with their friends" (ST2). In this sense, creating a positive classroom environment was one of teachers' priorities and among the areas that were a part of teacher professional identity; "a teacher should create a healthy learning environment in which students respect each other" (ST6). For ST12, a cozy classroom in line with disciplinary identity was necessary for language learning: "I have always thought any learning environment should be warm and intimate because language learning occurs best when the learners have the lowest anxiety". Aligning with this, ST4 stated:

What comes to mind when we hear classroom management is mostly a class in silence listening to the teacher. The teacher does this sometimes, sets some classroom rules with the class. For me, classroom management also means that the teacher sees and reaches each student whenever s/he wants.

Instructional design competencies informing pedagogy were grouped under disciplinary knowledge and together with student-related identities, as the overarching point was to adapt and adopt instructional paths tailored for students. Adjustment in teaching methods and good planning emerged as the two most frequent categories. Regarding making use of different strategies and methods, ST20 noted: "teaching is not having a fixed plan but being creative and flexible in order to adjust changing situations", and ST11 added: "I believe that I can adapt my teaching strategies according to my students as long as I know their needs". ST5 explained why it is important to adjust teaching methods: "teachers and students need to speak the same language to meet learners' academic needs". Some participants offered ideas for their future teaching:

Teachers may not set up strict rules for homework and activities. If students want to be free in their works, I should provide a basis by letting them apply their personal preferences following general regulations and necessities. (ST15)

I learn a lot when I experience or see what I am supposed to learn, the outcome is much more permanent compared to traditional lectures. Why do I stick to traditions while I can make students learn using visual and kinesthetics methods? (ST19)

INDIVIDUAL PERSPECTIVES ON LANGUAGE TEACHER PROFESSIONAL IDENTITY

At the beginning of practice teaching, the focus was mainly on the admiration pre-service English language teachers had for their teachers: "I have always wanted to be a teacher since elementary school. My teachers' behaviors and attitudes led me to choose this profession. I admired them" (ST3), and this remained the same

throughout years: "When I met my first English teacher, I told myself that I will be an English teacher like him (…) enthusiastic about teaching and could manage to transfer that enthusiasm" (ST20). For ST1, it was a part of her nature as well:

It started with my love of language. I found the language like a secret code, I love to describe it, decode the meaning … When I was a child, I was a successful student. Our neighbors would send their kids to me to study not only language but also Maths or Turkish. I loved these two, language and teaching. I brought them together. (ST1)

The participants mentioned some of their characteristics as teachers at the beginning of practice teaching:

I am a caring, friend-like teacher, but at the same time disciplined. I think students go international by learning languages. And I have no right to take this advantage away from anyone's hand. Teaching a language is shaping someone's life and I want to do that professionally. (ST2)

Being "excited" (ST27), "motivated" (ST3), and friendly were initial feelings that the participants experienced in their practice teaching journey to become teachers. In ST20's words; "I think I'm an enthusiastic teacher because I always prepare a lesson plan in a very detailed way. I always think about everything like if I do this, how do students respond to me". Having control over the class, how students thought of the participant as a teacher, and being organized was mentioned by ST30 along with some other characteristics: "They treat me as if I'm their real teacher. I care for them, and I'm well organized".

Regarding the fun and humor sides of a classroom, ST3 mentioned: "Once students are in my class, they don't get bored. I want to be remembered as such". The reason why teachers should add humor was that: "it lowers the affective filter, creates a positive atmosphere in the classroom" (ST11), ST17 could add "pace and humor to the class to draw the attention, make lessons more enjoyable and lessen the stress level". Evaluating their teaching skills, the participants stated that they needed more experience to make more realistic judgments, and several of them made it clear that they were good in theory (ST3, ST27). However, it was noted that practice teaching would be a process to decide on their "behaviors towards students or improve their communication with them" (ST20). Only ST20 talked about being an authority in class at the beginning of practice teaching and commented: "you may lose your [face]. You can be friendly, but you need to show that you're the teacher, the authority".

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At the end of practice teaching, developing teacher professional identity was seen as a process of transition as an individual too: "I wasn't much patient, or I didn't have much interest in teaching and students until school experience. Now, after seven months, I have become more caring and patient" (ST18). Regarding rule-based identities of the pre-service teachers, the final statements related to teacher authority were heterogeneous. ST22 said: "I am an authoritative person as a teacher, not in real life but in the classroom". A few participants argued that the teacher and students in class should share the power such as ST10: "I think the students and the teacher should share the power in the class" and ST12:

In my classroom, everybody should have the power. There was very strict discipline in classrooms in the past. Students didn't have the right to talk. I don't think this is effective because the classroom is like a small community, and everybody has the right to talk.

ST13 referred to discipline issues: "A teacher must have standards and put a limit. If s/he puts a rule, s/he has to make all students follow the rule every time because consistency is important in effective teaching". ST6 similarly stated: "We should teach them the importance of rules and deadlines. If they understand the underlying reasons and are informed about relevant consequences, they will have to follow them". The participants further argued about some of their responsibilities. These were "to create a relaxed atmosphere for students so that they can feel confident and they can do better" (ST10), to create "a classroom free from anxiety" (ST2), to be "planned and prepared" (ST6), "to create as many chances as possible to practice English in class" (ST27), or "to get prepared before the classroom and to guide the students not just to teach them but learn with them as well" (ST13). Finally, the participants stated that how they would react as teachers depended on the school, students, and contexts as well as seen in the following quotes:

I think it depends on the school. For example, the school that I visited last semester was like a dream school. It was a public school but there were 15 students in class. The classes were for visual learners; there were Smartboards and all. But this semester this state school is different, so how I behave changes. (ST3)

If the teacher cannot manage the students, it does not matter how knowledgeable, understanding, talented s/he is. ... Classroom management is so challenging in one class that the lesson is interrupted. In one class, I tend to be more disciplined. (ST6)

... Asking their opinions ... Communicating with them. I search for games for young learners ... In one classroom students like it, but in the other, of the same age, they don't want to play the game. It's different not only from age to age from class to class. (ST12)

4 | DISCUSSION

The findings confirmed the four basic assumptions of identity that it depends on multiple contexts such as different school and classroom cultures, encompasses emotions, is multiple as triggered by different teacher roles, and transforms over time with necessary shifts (Rodgers & Scott, 2008), from the beginning of practice teaching to the end of it in this study's case. The findings pointed out the importance of assuring the quality of instruction by a good command of subject knowledge and being student-centered. A combination of various skills, roles, and personality traits was essential to teacher professional identity as subject-matter, didactical, and pedagogical experts (Beijaard et al., 2000). Teacher professional identity for the pre-service teachers meant expertise in the subject, which presented their language-related identities (Pennington & Richards, 2016). The participants commented on disciplinary skills, several teacher roles (an actor, a facilitator, an inspirer, a role model, and a leader) and characteristic features that they attribute to themselves, teachers, or language teachers. According to them, didactical expertise covered disciplinary identity and self-knowledge and awareness (Pennington & Richards, 2016). The skills were technology-related, classroom management, communication, and materials design through the ability to engage students to the lesson by building rapport and creating a positive classroom atmosphere. In the self-knowledge and awareness part, affective characteristics and teacher roles were discussed. Specifically, being enthusiastic, caring, humorous, patient, creative, encouraging, passionate, or fun was vital in language teacher identity. Among a variety of skills, technological skills were emphasized most as in the Zare-ee and Ghasedi (2014) study. Pre-service teachers also mentioned several teacher roles under their self-knowledge and awareness. They were actors, facilitators, inspirers, leaders, and role models or "the engine of a class that the motion of the class depends on. (…) or the facilitator, helper, incentive mechanism" (ST23).

In sum, language teacher identity for the pre-service teachers required didactical expertise in relation to their disciplinary identity and self-knowledge and awareness; pedagogical expertise in relation to disciplinary identity and student-related identities (Beijaard et al., 2000; Pennington & Richards, 2016). Additionally, the findings suggested that identity is composed of "beliefs, values, and emotions" (Farrell, 2011, p.54) about teaching with the participants' views on the constituents of teacher identity, such as having a good command of the subject, developing continuously, being student-centered in instruction, combining different skills while teaching, having certain roles and affective characteristics as teachers. In terms of the participants' characteristics as teachers during practice teaching, the findings reported that being caring (O'Connor, 2008) and friendly (Furlong, 2013; Timostsuk & Ugaste, 2012) were the most prevalent attributes. The participant pre-service teachers were aware of utilizing roles within different contexts (Burns & Richards, 2009) with their comments on the need of harmony of various roles of teachers and references to some common roles of teachers as "language expert, friend, joke teller, material developer, and disciplinarian" (Farrell, 2011, p.55).

Building on Xu (2013) on cue-based and exemplar-based identities, the discussion of the participant pre-service teachers' own characteristics and roles as the most frequent topics in the pre-practice teaching phase signaled cue-based identities as these types of identities build on the different characteristics of social entities. The participants associated the characteristics that a teacher should possess with their previous teachers, which supported exemplar-based identities depending on representative examples of social entities or individuals' role models. Building on rule-based and schema-based identities (Xu, 2013), the most frequent topic in post-practice teaching interviews was teacher authority in class and responsibilities designated by the rules. These could be directly linked to rule-

based identities of teachers. Teacher authority was the least frequent topic in pre-practice teaching interviews. However, it turned out to be the most frequent one in post-practice teaching interviews. Likewise, schema-based identities as behaviors in response to dynamic contexts were hinted at through the participants' changing practices in public and private schools, though not abundant in the data. The focus on cue-based and exemplar-based identities to rule-based and schema-based ones could be interpreted as moving from an individual to an institutional perspective in understanding teacher professional identity.

Furthermore, practice teaching was reported crucial that the participants had the chance to observe real classroom settings, learn from their mentors, improved their teaching and language skills, and question their own or common practices in language classrooms. Teacher professional identity consists of experiencing, doing, belonging, and finally becoming someone (Wenger, 1998; Timostsuk & Ugaste, 2010), and practice teaching made these possible for the participants. It was to observe real classrooms of different language proficiency levels and backgrounds (Armutçu & Yaman, 2010), learn from mentoring through building and maintaining strong relationships, receiving support, encouragement and ongoing feedback, reflective activities, a positive environment and raised self-awareness (Izadinia, 2018). Reflection was appreciated that it gave the participants time to digest knowledge and associating it with real classrooms. It was also suggested that reflection was an opportunity to critically evaluate what the participants had experienced:

> I think reflection provides us a framework to combine theory and practice. We observe the classroom and get the sense of the reality of practice. I will also have the practical background so we can explain the behavior, and what works based on theory. It helps us to understand the dynamics of the classroom. (ST18)

In line with Farrell's (2013) arguments on reflection, the participants stated that reflection was a way to understand their classroom practices, gave them new ideas on teaching and possible solutions to problems that they might face in their professional lives. In conclusion, the findings were aligned with Yazan (2015) that pre-service teachers learned "how to navigate in the school context; about the nature of establishing relationships with the other members of the teaching community"; received support of mentors and supervisors; developed understanding of the relationship between theory and practice; and an improved understanding of students (p.181).

5 | CONCLUSION

Language teacher professional identity is argued to be constructing new knowledge and theory through participating in specific social contexts and activities via social interaction rather than the sole translation of theory and knowledge into practice (Burns & Richards, 2009). According to Johnson (2009), teacher identity is socially constructed and built through experiences in multiple contexts as former learners and participants in teacher education programs and different communities of practice. In this vein, we aimed to explore Turkish pre-service EFL teachers' opinions on the elements of teacher professional identity and their own identity construction in practice teaching. The findings revealed that the participant pre-service teachers' identities are grounded on language proficiency, disciplinary and context-relative skills, and awareness about self and students. The findings revealed a transition from individual to institutional perspectives in understanding their own teacher identities. For pre-service teachers, being an English language teacher meant encompassing language-focused, teacher-focused and learner-focused skills and characteristics. First and foremost, a language teacher should have a good command of the language with an open mind to learn continuously, which viewed teachers as subject-matter experts (Beijaard et al., 2000) having language-related identity (Pennington & Richards, 2016). Additionally, being a teacher meant mastering skills in certain areas such as instructional technology, classroom management, materials development, and instructional design. These sets of skills formed disciplinary identities of teachers (Pennington & Richards, 2016). For pre-service teachers, teacher identity also indicated the knowledge of self and students (Pennington & Richards, 2016). Regarding their self-knowledge and awareness, they mentioned several characteristics (e.g., being enthusiastic, caring, humorous, creative) and roles (e.g., an actor, inspirer, a facilitator, role model, leader). In terms of their student-related identities, the focus was on being learner-centered. This necessitated knowledge of students and their needs, inclusive and positive classrooms, and efforts to add to students' growth and awareness.

At the beginning of practice teaching, the focus in the pre-service teachers' comments regarding their own teacher identities was on their characteristics and role models. In line with Xu (2013), these suggested their cue-

based identities since they associated certain features with good teachers and exemplar-based identities since they referred to their former teachers while doing this. Pre-service teachers' initial state demonstrated an individualistic perspective in understanding their teacher identities. However, teacher authority and responsibilities turned out as the most frequent topics in post-practice teaching comments. This was linked to the growth of rule-based identities as teachers since they took responsibilities and management as reference points. Though a bit scarce in the data, pre-service teachers stated the influence of classroom and school contexts on their teaching practices. This was linked to the emergence of schema-based identities implying contextual and institutional knowledge and awareness. There was a clear transition for pre-service teachers from an individualistic to an institutional perspective in their conceptualization of teacher professional identities.

We argue that none of these identities are separate but rather interwoven in complex and complicated ways. By reporting the opinions of the student teachers on what identity is and how they believe the course contributed to their identity construction process, this study adds to the literature on teacher professional identity by a qualitative examination of an international context. It aims to provide implications for foreign language teacher education programs such as providing room for prospective language teachers to contemplate on who they are as teachers in identity-oriented teacher education. As Yazan (2014) suggests, teacher identity development and negotiation need to be set as an explicit goal in teacher education programs. Then, teacher education could also focus on the kind of teacher it is possible to be, in addition to teaching methodology. Mentoring and supervising, specifically in practice teaching, could be shaped in a way to create mediational spaces for pre-service teachers to probe identity tensions, solve possible crises, and designate an action agenda with a critical mindset regarding self, context, and pedagogy. To bring forward the identity construction processes of prospective teachers in different cultural contexts will make a valuable contribution to teacher education research since teacher identity is a vital component and the desired starting point of teacher education. Such studies will bear insights to utilize practice teaching as a meaningful process to construct and maintain positively stable teacher professional identities. Since teachers being able to identify with the profession are argued to have an ineluctable impact on students (Bullough, 2015), studies with a focus on teacher identity might as well improve the understanding of teachers' continuous development to foster student learning.

To conclude, this study is not without limitations. It should be noted that this qualitative study aims to present a case in its natural setting to interpret the meaning ascribed to the specific research phenomenon under focus rather than reach generalizable results. The number of the participants was limited due to the single case of a teaching practicum at a public university in Turkey. Further research with pre-service teachers from other countries and educational environments is needed before reaching any generalizations about the findings of the study. As self-reported data are too prone to social desirability bias; participants' desire to meet expectations (Dörnyei, 2007) and this study relied on reflective journals and interviews, further research utilizing different data collection tools—especially observations—are needed to fully justify research findings. We suggest longitudinal studies with different teachers and in different teacher education contexts as robust attention needs to be directed to the nature of identity, complexity and importance of context, critical reflection, and identity and pedagogy (Miller, 2009). Negotiating challenges about these areas could inform the dynamic development of teacher identities not just in terms of who they are, but instead who they are capable of becoming.

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STATEMENTS OF PUBLICATION ETHICS

The authors declare that this research does not have any ethical conflicts or problems that may limit the publication of the article.

RESEARCHERS' CONTRIBUTION RATE

The authors contributed equally to this article.

CONFLICT OF INTEREST

No potential conflict of interest is reported by the authors.

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Factors Affecting the Quality of a Remote Teaching Practicum from the Perspective of Preservice Preschool Teachers

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ABSTRACT

During the COVID-19 pandemic uncertainties about how to implement and evaluate teaching practicums have been faced by the teacher training institutions. Due to some constraints imposed by the pandemic, teaching practicum courses, transitioned to an online format in the 2020-2021 academic year in Turkey, similarly to many other countries. Within the scope of this research, it is aimed to identify the factors affecting the nature of the education process based on the experiences of preschool preservice teachers in a remote teaching practicum. The participants of this study comprised 11 preservice teachers who were enrolled in preschool teacher training program of a public university, and completed the theoretical and applied parts of the "Teaching Practicum I" and "Teaching Practicum II" courses via distance education in the 2020-2021 academic year due to the COVID-19 pandemic. Basic qualitative research methodology guided this study. Data were collected via a structured interview protocol and analyzed using an inductive approach. As a result of the analysis of the interviews with the participating preservice teachers, it was determined that many factors affected the quality of the teaching practicum process carried out via distance education. Among these factors, "guidance of the mentor teacher and university supervisor," "interactions with mentor teacher and university supervisor," "paired peer placement," "being a trainee teacher in the same class for two semesters," and "access to course/learning materials" were factors that positively affected the quality of the process and were experienced as "facilitating" factors by the preservice teachers. On the other hand, "lack of technological resources," "limitations in relationships with children and assessment," "online classroom management," and "family intervention" were factors that negatively affected the quality of the process and were experienced as "hindering" factors by the preservice teachers.

Keywords: Early childhood education, teaching practicum, distance education, quality, COVID-19

Okul Öncesi Öğretmen Adaylarının Bakış Açısıyla Uzaktan Öğretmenlik Uygulaması Sürecinin Niteliğini Etkileyen Faktörler

Öz

Pandemi sürecinde üniversitelerin öğretmen yetiştiren kurumlarında öğretmenlik uygulamalarının nasıl yürütüleceği konusunda belirsizlikler yaşanmış ve pek çok ülkede olduğu gibi ülkemizde de 2020-2021 akademik yılında bu derslerin teorik ve uygulama boyutları çevrim içi formatta gerçekleştirilmiştir. Bu araştırmada okul öncesi öğretmen adaylarının deneyimlerine dayalı olarak uzaktan öğretmenlik uygulaması sürecinin niteliğini etkileyen faktörlerin ortaya çıkarılması amaçlanmıştır. Araştırmanın katılımcılarını 2020-2021 akademik yılında bir devlet üniversitesinin okul öncesi öğretmenliği programında öğrenim gören ve pandemi nedeniyle öğretmenlik Uygulaması I ve II derslerini uzaktan eğitimle tamamlayan 11 öğretmen adayı oluşturmaktadır. Temel nitel araştırma olarak tasarlanan bu çalışmada veriler yapılandırılmış görüşme formu ile toplanmış ve tümevarımsal yöntem ile analiz edilmiştir. Öğretmen adayları ile yapılan görüşmelerin analizi sonucunda uzaktan eğitim ile gerçekleştiren öğretmenlik uygulaması sürecinin niteliğini pek çok faktörün etkilediği belirlenmiştir. Bu faktörlerden "öğretim elemanı ve uygulama öğretmeni rehberliği", "uygulama öğretim elemanı ve uygulama öğretmeni ile etkileşim", "partnerli çalışma", "iki dönem aynı sınıfta öğretmenlik uygulamasını yürütme", "ders materyallerine erişim" faktörlerinin sürecin niteliğini olumlu yönde etkileyen ve öğretmen adayları tarafından "kolaylaştırıcı" olarak deneyimlenen; "teknolojik yetersizlikler", "çocuklarla ilişkilerde ve değerlendirmede sınırlılık", "çevrimiçi sınıf yönetimi", "aile müdahalesi" faktörlerinin ise sürecin niteliğini olumsuz yönde etkileyen ve öğretmen adayları tarafından "zorlaştırıcı" olarak deneyimlenen faktörler oldukları tespit edilmiştir.

Anahtar kelimeler: Okul öncesi eğitim, öğretmenlik uygulaması, uzaktan eğitim, kalite, COVID-19

1 | INTRODUCTION

COVID-19, which has affected the whole world, was declared a pandemic by the World Health Organization (WHO) on March 11, 2020 (WHO, 2020). Constituting an extraordinary period, the pandemic brought various challenges with it. For example, schools were shut down abruptly in most parts of the world and education processes from preschool to higher education were interrupted. It has been reported that 1.6 billion students around the world have been adversely affected by these events, considered to be the largest disruption of global education seen throughout history (United Nations, 2020). However, in line with the views of many international organizations and education experts that students should somehow continue their education in this time of crisis while being unable to physically attend school (Dayal & Tiko, 2020), various efforts to continue offering education with different educational models have been made.

As has been seen throughout the world, efforts were initialized in Turkey to continue providing education despite the uncertainties that the pandemic created. COVID-19 has disseminated distance education as a formerly unusual practice for formal educational processes in higher education institutions and schools administered by the Turkish Ministry of National Education (MoNE). When COVID-19 was declared a pandemic, it was decided that all schools administered by the MoNE would be suspended for 2 weeks effective Monday, March 16, 2020. In the second week, it was announced that distance education processes would begin (MoNE, 2020a). The transition to distance education started with the decision made to continue education via TRT-EIN TV and the Educational Information Network (EIN). The broadcasts made via TRT-EIN TV constituted the beginning of distance education (MoNE, 2020b). Throughout this process, the EIN has been made available to preschool children during certain time periods and children were granted access to various contents uploaded by their teachers (MoNE, 2020c). With this implementation, the 2019-2020 preschool academic year was completed via the contents accessible through the EIN. In the 2020-2021 academic year, ongoing changes of the pandemic situation in the world and in Turkey accordingly brought further changes to educational processes, and educational models such as face-to-face education, distance education, and hybrid learning were introduced in the educational field (Alan, 2021). In accordance with the plan of the MoNE to oversee a gradual transition back to face-to-face education in the 2020-2021 academic year, preschool education began being provided face-to-face 1 day a week on September 21, 2020, expanding to 2 days a week in the 2 weeks that followed (MoNE, 2020d). After re-evaluation of the conditions, it was decided that face-to-face education would be given 5 days a week in all preschool educational institutions starting from October 12, 2020 (MoNE, 2020e). However, this decision only remained in place until the end of November 2020; in light of the escalation in the spread of the pandemic worldwide, a decision was made to continue preschool educational activities via distance education (MoNE, 2020f, 2020g) and the fall semester of the 2020-2021 academic year was completed in that manner. Similarly, the fluctuations in the course of the pandemic in the spring period of 2020-2021 continued to be reflected in educational processes. With the decision of the MoNE, the spring semester of the 2020-2021 academic year started with face-to-face education on February 15, 2021, and the semester was to be completed face-to-face with the exception of a total shutdown from April 29 to May 17, 2021 for preschools (MoNE, 2021a, 2021b, 2021c). The semester started with distance education for kindergartens incorporated in elementary schools and then transitioned to a reduced schedule that consisted of 2 days of face-to-face education and 3 days of distance education each week as of March 1, 2021 (MoNE, 2021a). Re-evaluation of the pandemic situation led to the cessation of this practice and distance education replaced it from April 15 to June 1, 2021 (MoNE, 2021b). As of June 1, 2021, education in kindergartens incorporated in elementary schools was planned to be provided face-to-face 2 days a week (MoNE, 2021c) and the semester was completed with this schedule.

Similar to the experiences of institutions administered by the MoNE, some changes and transformations occurred for higher education institutions in Turkey. With the announcement made by the Council of Higher Education (CoHE) on March 13, 2020, education in higher education institutions was suspended for 3 weeks effective March 16, 2020 (CoHE, 2020a). Following that, in a public statement issued by CoHE on March 18, 2020, it was announced that universities would transition to distance education via their digital resources or the depository of open course materials prepared by CoHE as of March 23, 2020. While it was stated that theoretical courses were to be conducted via digital resources, applied courses were to be conducted at the most fitting times,

which included the possibility of academic calendars being extended (CoHE, 2020b). However, the difficulties and threats posed by the COVID-19 pandemic prevented the implementation of practice-based courses in teacher training programs conducted in cooperation with MoNE-affiliated institutions from being held in real classroom environments. For the spring semester of the 2019-2020 academic year, it was confirmed that semester evaluations would be made with the combined efforts of mentor teachers and university supervisors through the Ministry of National Education's Information System and, considering the 5-6 weeks of applied practice that preservice teachers had completed before the pandemic in the relevant period to be sufficient, instructors could hold their theoretical courses synchronously or asynchronously through distance education and teaching practicum requirements could be fulfilled with practices like lectures and assignments (CoHE 2020c). Thus, the 2019-2020 academic year was completed for faculties of universities that train teachers through total distance education for theoretical courses, with distance education for theoretical hours and the cancellation of practice hours for theoretical/applied courses like teaching practicums. Compared to the previous semester, marked by the start of the pandemic, the preparations of higher education institutions for the 2020-2021 academic year were more deliberate and systematic in both Turkey and the wider world. Considering the possibility that the pandemic would continue into the 2020-2021 academic year, new regulations were made for higher education as a result of various studies conducted by CoHE and joint institutions, and these regulations were published in 2020 as "The New Normalization Process in the Global Pandemic." Through these guidelines, frameworks were formed for the issues of distance education practices, applied training, measurement and evaluation practices, foreign students, meetings, conferences, and student exchange programs while considering potential scenarios. Authority was granted to universities regarding practices for different programs, taking into consideration that the course of the pandemic could vary between regions and cities. In other words, higher education institutions were granted the freedom to make decisions about the utilization of face-to-face, distance, and hybrid models depending on the course of the pandemic in their specific locations (CoHE, 2020d).

The planning of applied education practices has been one of the most problematic topics in this process. Concerns were raised about students participating in various application-oriented programs graduating without gaining practical proficiency (CoHE, 2020d, 2021). Although the difficulties faced by different educational institutions are similar in many respects given the need to switch to a highly unusual teaching format, teacher training programs have faced some unique difficulties (Donitsa-Schmidt & Ramot, 2020). One of these difficulties has been the implementation of applied classes that require preservice teachers to be physically present in educational settings. In this context, uncertainties about how to implement and evaluate teaching practicums that require schools and universities to work together have been faced by the institutions of universities that train teachers (Moyo, 2020). Along with these uncertainties, the question of how future educators will meet professional standards and licensing criteria has raised great concerns (Jalongo, 2021). The main reason for these concerns has been the important role of teaching practicum courses in teacher training programs. Although all courses included in teacher training programs aim to holistically prepare preservice teachers for professional life by developing their knowledge, abilities, and professional competency (La Paro, 2018), the courses in which preservice teachers experience the occupation of teaching in the field, practice the profession, and enjoy the chance to apply their theoretical knowledge by meeting with students are known as teaching practicum courses and it is widely recognized that these courses are the key components of all teacher training programs (Allen & Wright, 2014; La Paro et al., 2020). They are at the center of properly equipping preservice teachers to enter the teaching profession (Cornu & Ewing, 2008; NAEYC, 2010). Moreover, teaching practicum courses are viewed as important components or elements that help develop the professional identities of preservice teachers in the context of their future employment (Caires et al., 2012; Zhu & Zhu, 2018).

Due to some constraints imposed by the pandemic, teaching practicum courses, which are among the essential components of teacher training programs, transitioned to an online format in the 2020-2021 academic year in Turkey, similarly to many other countries. Suggestions in this context regarding preservice teachers participating in live courses conducted in online education environments by university supervisors for their students and, if possible, performing the applied practices were made by the MoNE and CoHE in official statements. However, this extraordinary process brought with it various challenges, being unknown to all stakeholders of teaching practicum courses, including preservice teachers, mentor teachers, and university supervisors. Although there is growing interest in how distance education processes are implemented, research on the development of distance education practices in the context of the global pandemic remains limited (Sepulveda-Escobar & Morrison, 2020).

Efforts have been made to optimize remote teaching practicums with various regulations, but whether before the process or during the process, distance education was not properly highlighted in teacher training programs for training early childhood educators in Turkey and preservice teachers did not have prior experience in performing exercises with preschool children via synchronous distance education; these shortcomings increased the obscurity of the process. On the other hand, it is known that an accurate and timely understanding of how distance education works is important for informing and improving the educational process (Lau & Lee, 2020), and the analysis of teaching practicum experiences has the potential of providing useful information for the evaluation and improvement of such programs (La Paro & Siskind, 2022; La Paro et al., 2020). From this point of view, it is very important to study distance education practices in detail in order to be prepared for possible crisis situations that make it necessary to maintain the practice of teaching by distance education. Within the scope of this research, which is part of a wider study, it is aimed to identify the factors affecting the nature of the education process based on the experiences of preschool preservice teachers in a remote teaching practicum.
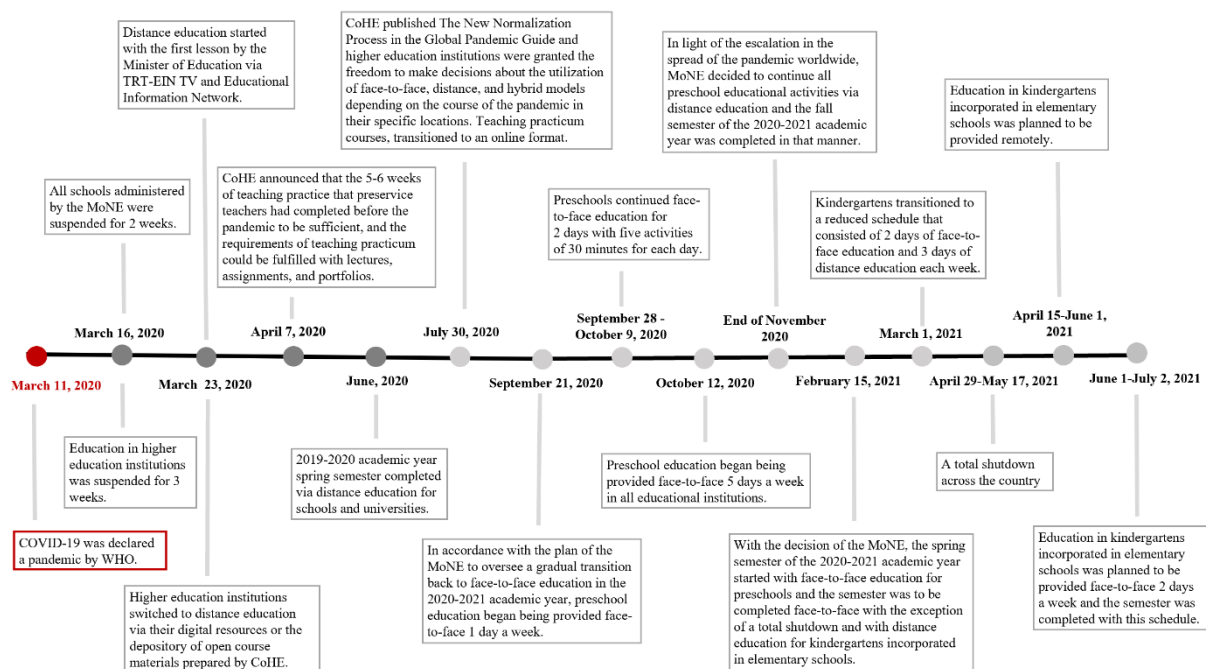

Figure 1. *Timeline for education in Turkey during the COVID-19*

CONTEXT OF THE STUDY

Teaching practicum courses are included in the undergraduate program in preschool education with the names "Teaching Practicum I" and "Teaching Practicum II," which are compulsory courses conducted in the 7th and 8th semesters of the program. Teaching practicum courses with both theoretical and practical aspects are conducted in cooperation by universities and the MoNE. For the theoretical part of these courses, preservice teachers meet with the instructor of the course 2 hours per week and attend theoretical lessons face-to-face, while for the applied part, preservice teachers are placed in kindergartens and preschools administered by the MoNE in groups of two and have opportunities to experience the teaching profession 6 hours per week for 12 weeks under the guidance of mentor teachers and university supervisors. Under normal circumstances, preschool preservice teachers plan activities for a 12-week applied practicum in accordance with the 2013 Preschool Education Program within the scope of teaching practicum classes and carry out face-to-face educational practices with children in accordance with these plans in the schools where they are placed. However, this standard arrangement could not be implemented in the spring semester of the 2019-2020 academic year and the spring and fall semesters of the 2020-2021 academic year due to the COVID-19 pandemic.

The preservice teachers who participated in the present research completed both the theoretical and practical aspects of the "Teaching Practicum I" and "Teaching Practicum II" courses taught by the authors via distance

education in the 2020-2021 academic year. The participating preservice teachers each completed their teaching practicums with a peer in the same classroom in both the fall and spring semesters. Preservice teachers first participated in theoretical courses conducted synchronously online with the instructor of the course every week via the learning management system (LMS) of the university. In these courses, which were recorded, providing the opportunity to watch the recordings again, the instructor gave the students information about activities in the preschool education program and made suggestions about activity planning. The preservice teachers planned activities for preschool children and presented these activities to the mentor teachers via an online platform. Preservice teachers updated their activity plans in accordance with the recommendations of the mentor teachers and then uploaded their plans to the corresponding assignment tab created in the LMS. The instructor of the course examined the activity plans before the online lessons and gave written feedback to the preservice teachers via the LMS. In addition, the preservice teachers presented their opinions about the activity plans to the instructor and other preservice teachers in synchronous online courses. The course instructor and participating preservice teachers gave suggestions on how to make the activities developmentally appropriate and engaging for young children and the activities were shaped into their final forms in line with these suggestions. Preservice teachers participated in the educational process remotely and synchronously, with the mentor teachers meeting with children to apply the activities that had been prepared. The preservice teachers were given the opportunity to carry out activities designed for the distance education of young children; in this way, the teaching practicum course was completed in 12 weeks. During this 12-week applied practical process, the university supervisors also observed the educational practices carried out by the preservice teachers through distance education at least two times and gave them feedback and suggestions regarding the practical process. In addition, mentor teachers supported the progress of the preservice teachers in this process by sharing their opinions and suggestions about their activities.

2 | Method

This study, which aims to identify the factors affecting the quality of a distance-based teaching practicum in terms of preservice preschool teachers' perspectives, was designed qualitatively. Basic qualitative research methodology, which is one of the most commonly used forms of qualitative research in the field of education, guided this study. In basic qualitative studies researchers are primarily interested in "how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences" (Merriam, 2009, p. 23). In the present study, efforts were made to determine the factors affecting the quality of the remote teaching practicum from the perspective of the participating preservice teachers by focusing on how they interpreted their experiences in the practicum.

PARTICIPANTS

The participants of this study comprised 11 preservice teachers who were enrolled in preschool teacher training program of a public university, and completed the theoretical and applied parts of the "Teaching Practicum I" and "Teaching Practicum II" courses via distance education in the 2020-2021 academic year due to the COVID-19 pandemic, including the relevant training practices in the scope of these courses. The convenience sampling method was used to select participants. In convenience sampling, the researcher selects individuals who are within easy reach and who volunteer to participate in the study (Johnson & Christensen, 2016). Accordingly, at the end of the 2020-2021 academic year, preservice preschool teachers who would take the teaching practicum courses offered by the authors of the study were contacted and the purpose, content, and scope of the study were explained to them. In addition, they were informed about the measures to be taken to ensure their rights and confidentiality as participants. The study was conducted with 11 preservice teachers who voluntarily agreed to participate in the research. Nine of the participants were female and 2 were male. Two of these 11 participants were enrolled in the preschool education undergraduate program as a second-degree program.

DATA SOURCE AND COLLECTION

A structured interview protocol developed by the authors was used as a data collection tool in this study. The first version of the interview protocol was presented to an academic working in the field of teacher education and a preschool educator with 16 years of service to obtain their opinions and it was subsequently organized according to the received feedback. A pilot interview was then conducted with a preservice preschool teacher and the

interview protocol was finalized. The data were collected by sending forms about voluntary participation and the interview protocol to the 11 preservice preschool teachers included in the study via email and requesting their replies via email after the completion of the 2020-2021 academic year.

DATA ANALYSIS

In the analysis of the data obtained within the scope of this research, an inductive approach, which is presented as one of the strengths of qualitative research (Maxwell, 2013), was used. Dominant or distinct patterns repeatedly seen in the data were sought without the restrictions of structured methods and it was attempted to find appropriate results in line with the purpose of the research (Merriam, 2009; Patton, 2015). After preparing texts containing the research data and making them suitable for analysis, the data were reviewed several times and possible themes and patterns were sought. The interview texts were then read and coded by both researchers independently in detail and relationships between the codes were examined (Glesne, 2011). The researchers came together and compared the encodings that they had produced; after reaching a consensus on any encodings that differed, themes were formed. In order to determine how consistent the obtained themes were with the data (Merriam, 2009), the dataset and the created themes were sent to an expert in the field of education who was familiar with the research topic and had experience in qualitative research. After the expert independently analyzed the data, the researchers met with the expert and the analyses were compared and finalized.

RESEARCH ETHICS

The study was approved by the Ethics Committee of Education and Human Sciences of Anadolu University. Participants' consent to participate was obtained via an online form sent to their email addresses. Participants were informed about the aim and content of the study, their rights as participants, and the measures to be taken to ensure their confidentiality, and the authors emphasized that no personally identifying information would be used in the study so as to further protect the participants' anonymity. Pseudonyms are used instead of the participants' names.

3 | FINDINGS

As a result of interviews with the participating preservice teachers, it was determined that many factors affected the quality of this teaching practicum process carried out via distance education. Among these factors, "guidance of the mentor teacher and university supervisor," "interactions with mentor teacher and university supervisor," "paired peer placement," "being a trainee teacher in the same class for two semesters," and "access to course/learning materials" were factors that positively affected the quality of the process and were experienced as "facilitating" factors by the preservice teachers. On the other hand, "lack of technological resources," "limitations in relationships with children and assessment," "online classroom management," and "family intervention" were factors that negatively affected the quality of the process and were experienced as "hindering" factors by the preservice teachers.

The themes related to the factors affecting the nature of the remote teaching practicum process found as a result of these analyses are shown in Figure 2. The findings obtained are presented below with examples of the opinions of the participants via excerpts from their responses.
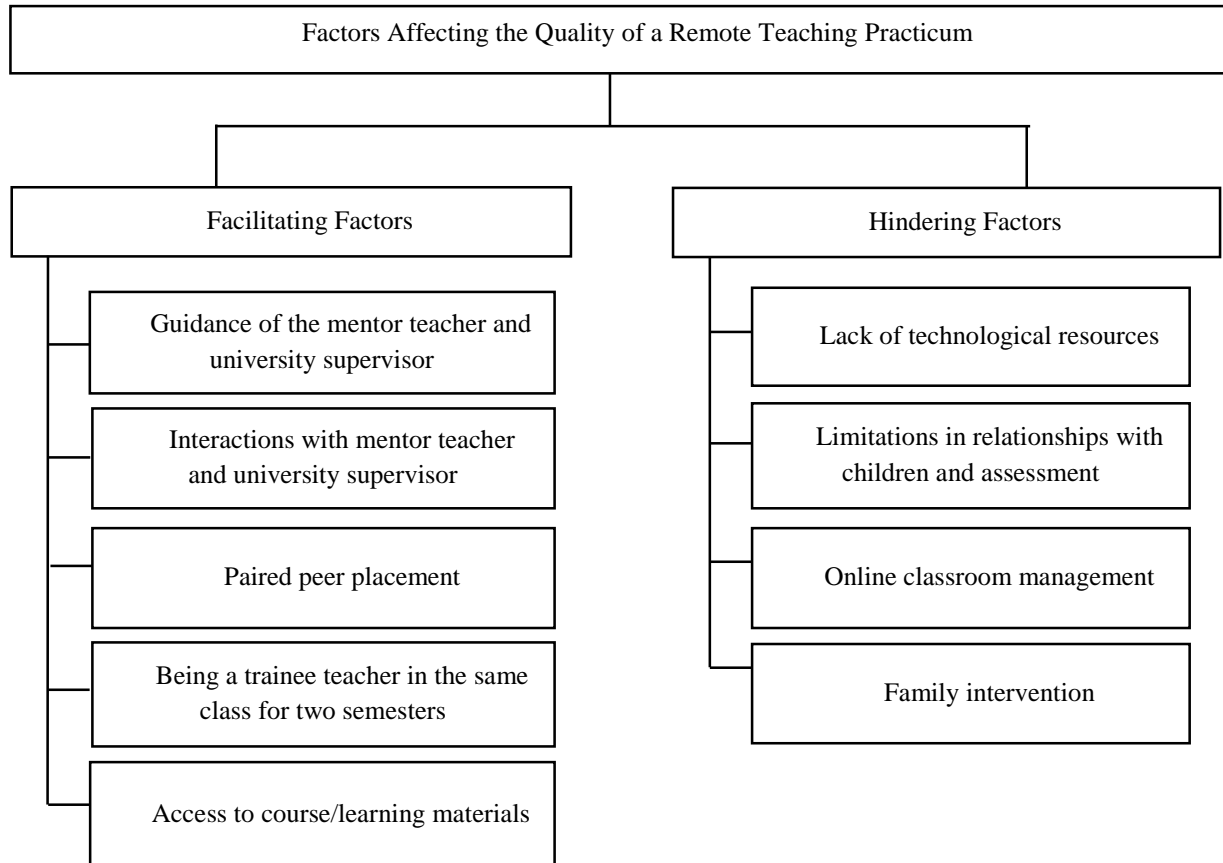
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│              Factors Affecting the Quality of a Remote Teaching Practicum  │
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Facilitating Factors	Hindering Factors

- Guidance of the mentor teacher and university supervisor
- Interactions with mentor teacher and university supervisor
- Paired peer placement
- Being a trainee teacher in the same class for two semesters
- Access to course/learning materials

- Lack of technological resources
- Limitations in relationships with children and assessment
- Online classroom management
- Family intervention

Figure 2. *Themes related to the factors affecting the nature of the remote teaching practicum*

FACILITATING FACTORS

GUIDANCE OF THE MENTOR TEACHER AND UNIVERSITY SUPERVISOR

It was observed in accordance with the views of the participants that guidance provided by mentor teachers and university supervisors to preservice teachers was the foremost among the factors that positively affected the quality of the remote teaching practicum process, being experienced as a "facilitating" factor by the preservice teachers.

All 11 participating preservice teachers stated that guidance from the mentor teachers facilitated the process. Demet, one of the preservice teachers, stated her views about the facilitating role of the guidance provided by mentor teachers, for both planning and implementation processes, as follows: *"We communicated through WhatsApp video chat after every session. Our mentor teacher provided feedback along the lines of 'This was missing here, you can do this in this way,' or 'I liked this activity this week, you can use these materials.' They also helped us a lot with class organization. That's what I can say about the training. Our teacher helped us a lot."* Türkan similarly mentioned the facilitating role of the guidance of the mentor teacher as follows: *"Our mentor teacher was generally interested in us and provided help. By giving suggestions on classroom management, activities, and professional aspects, they helped us learn about what we can put into practice. They listened to us and answered our questions on all the issues we wondered about."* Another preservice teacher, Ilgaz, stated: *"I think that our mentor teacher tried to support us in every way in the process. The prepared activity plans were becoming more realistically applicable and especially suitable for children in accordance with the given advice."* This participant furthermore emphasized that the guidance of the mentor teacher facilitated and increased the quality of the process.

It was determined that, in addition to the mentor teachers, university supervisors also played an important role in offering guidance throughout the processes of the remote teaching practicum. A majority of the participating preservice teachers (n=10) emphasized the facilitative role of the guidance of university supervisors. For example,

Aysu stated her opinions about the facilitating role of university supervisors in this remote teaching practicum course as follows: *"At first, I had difficulty understanding the plans, but with time and the help of our supervisor, I could make sense of the course. The supervisor presented the class in a clear and comprehensible fashion and I got answers to my questions about the parts I couldn't understand. I can say that the practicum course was conducted smoothly and I think it helped me a lot with preparing my plans and implementing them through distance learning. I'm glad we had such a course."* Akif, another preservice teacher, emphasized the role of the instructor as a facilitator of the theoretical parts of the course as follows: *"[The process] was successful, as you may have already noticed. After your feedback, we succeeded in all of the practices that we undertook. I think this process would be just as successful under normal circumstances [i.e., in face-to-face education]. We would be in person and face-to-face, but we would still receive the same feedback about what we were doing. I think that the feedback was useful for us."*

INTERACTION WITH MENTOR TEACHER AND UNIVERSITY SUPERVISOR

The components of these teaching practicum courses included the preservice teachers, mentor teachers, and university supervisors. It was concluded in accordance with the opinions of the preservice teachers that the interactions among these groups of individuals affected the quality of the teaching practicums conducted via distance education and the interactions were experienced as a facilitating factor by the preservice teachers.

Ten of the participating preservice teachers emphasized that the positive interactions that occurred between themselves and the mentor teachers improved the quality of the teaching practicum course and had a facilitating role in the process. One of the preservice teachers, Ilgaz, mentioned the facilitating role of the easy and nurturing interactions that they achieved in the teaching practicum as follows: *"Our teacher formed a group with us via WhatsApp and was giving us feedback via email. Zoom meetings were already being set up at our demand. That's why they were really a facilitator and why we had positive communication with our teacher."* Another preservice teacher, Gözde, also emphasized easy communication with her mentor teacher as follows: *"We have always been able to communicate with our teacher. I think it's important to have good communication and to be able to get along well with the children and the mentor teacher."* Similarly, Hande stated that positive communication with the mentor teacher eased the process of communicating with parents as follows: *"Our teacher Gül was doing her best for us. Our communication was easy. The teacher was guiding us when we needed to do something. For example, when we were to conduct an activity, the teacher was texting us and saying that if we needed help with the materials, she could reach the parents accordingly so we could be prepared."*

Another facilitating factor in the interactions that the preservice teachers emphasized was the interaction established with the university supervisor who conducted the teaching practicum course. Nine of the participants stated that the positive interactions they established with the university supervisor facilitated the process.

One of the preservice teachers, Aykan, stated the following regarding the interactions that were established with the university supervisor conducting the teaching practicum course and the reflections of that interaction on the process: *"Although we couldn't be face-to-face, we interacted with [the supervisor] synchronously. We could chat through chat screens or video chats at times, we could ask our questions and get quick feedback and corrections. This is a very big advantage in terms of theoretical courses… If communication were to be one-sided, I would not say that this process could be so effective. In any case, we were able to reach [the supervisor] instantly by e-mail at worst and we were able to get instant feedback…"* Similarly, preservice teacher Türkan explained the facilitating role of interaction with the university supervisor in the theoretical part of the teaching practicum course in terms of the efficiency of the course as follows: *"My teacher was good to me. I mean, I don't think it's any different from normal, face-to-face [education]. [The process] was productive. We talked in class and were able to ask our questions and got answers. For me, it was no different from a normal, formal lesson; it was productive."* Preservice teacher Şeyda said the following in the same context: *"Our theoretical course was a productive process because it was conducted with as much interaction as possible."*

PAIRED PEER PLACEMENT

The vast majority (n=9) of these preservice teachers, who all carried out their practices in pairs during the teaching practicum process in both the fall and spring semesters, stated that working with partners facilitated the

remote practicum. They reported that paired placement played a facilitating role in professional development, eliminating the technical difficulties that may occur in distance education and classroom management.

One of the preservice teachers, Nur, drew attention to the processes of activity planning and post-activity peer review while emphasizing the contribution of paired placement to their professional development in the process of this remote teaching practicum as follows: *"We were helping each other a lot while we were producing activities. Starting from a small and unsuccessful idea, we were progressing towards much more successful ideas. Şeyda and I were both contributing to the progression of the idea. In this way, we were advancing our activities to a much better point. We were supporting each other with our creativity. And after we conducted the activity, Şeyda and I were critiquing each other. We were just asking each other questions directly. We were criticizing each other about what we did wrong, was it like this, was it like that, at what points did we fall short or do well."* Similarly, Aysu explained that working with a partner gave them the opportunity to learn from their peers and made the process easier while contributing to their professional development as follows: *"My [peer] teacher was an advantage for me. We supported each other. At the points where I got stuck, they told me what we could do. I told them what we should do at the points where they got stuck. [Peer pairing] was better for us. I learned from them, too. I enjoyed the way they explained subjects. I liked the expression style of my peer, and I took them as an example in this context. I liked their creative ideas sometimes. They were able to give me good ideas."*

In addition, some preservice teachers emphasized the role of paired peer placement in terms of eliminating the technical problems that may occur in distance education and classroom management in the process of remote teaching practicums. For example, Şeyda stated her views on this issue based on experiences in the practical process as follows: *"We helped each other technologically. For example, maybe I couldn't get hold of the whole class. The kids came and went [from the online courses] sometimes. We were having such a problem. Some of the kids didn't have a good internet connection. At this point, for example, while giving children the right to speak, I might skip some students. We couldn't exactly control who was in and who was out [of the online lesson]. For example, Nur was managing that process and texting me via WhatsApp. I could see her messages at the top [of the screen]. We could very easily see which child I didn't give a turn to speak or which child I skipped. The screen is constantly changing as students are entering and leaving. We may not really be able to manage the situation alone. Children don't know that; they may think that the teacher ignored them on purpose. We tried to avoid that situation. That's how we coordinated."* Another preservice teacher, Lale, emphasized that working with peers helped to eliminate technical problems and implement classroom management, and that more than one educator should definitely be involved in distance education processes: *"For example, we had a problem like this. When we shared our screen, we couldn't see the preschooler on the right side. It would turn into a tiny box, and after that, we could only see four children. For example, if there were more than four children, someone had to constantly check whether anyone raised their hands, whether anyone wanted to say something to participate in the class, because as you're seeing the same child on the right screen all the time, checking on the children is a very sensitive thing in preschool, because they keep their hands raised there for minutes, and they can be offended when you don't see them. We had the following worry a lot: how will we control them during screen sharing? We tried to complement each other. In this sense, I think that being in a pair is definitely a big help for fixing the problems of the technical infrastructure. At the same time, even if there are no technical difficulties, it helps with classroom management. ...there could maybe even be three teachers."*

BEING A TRAINEE TEACHER IN THE SAME CLASS FOR TWO SEMESTERS

In addition to working with a peer, carrying out the processes of the teaching practicum in the same classroom in both the fall and spring semesters was evaluated as a facilitating factor by most of the preservice teachers (n=7). These preservice teachers stated that working with the same class for two semesters played a facilitating role in getting to know the children and the mentor teacher, and therefore in planning and implementing educational activities.

The views of some of the preservice teachers on the facilitating role of completing the teaching practicum process in the same classroom in both semesters are presented below.

Şeyda, drawing attention to the difficulties that children and teachers faced in getting to know each other in distance education compared to face-to-face education, stated that the fact that they completed the two-semester teaching practicum process in a single classroom made it easier for them to get to know the children and the mentor teacher and therefore facilitated the practice process: *"No matter how much communication we've had, we haven't*

had the opportunity to really get to know the children in distance education. We've been doing observations, anyway, so we had the opportunity to get to know the students a little, but the children didn't have the opportunity to get to know us very much. At this point, when I evaluate the process in relation to the students, I actually see that the situation was positive, because we barely saw each other. We observed them in the first semester. We also went through the process of meeting each other, but despite that, faces are what we and the children got familiar with. We connected online. Whether we like it or not, we don't recognize the children. We can't tell who is missing, who is there, who is not. We don't know their names. This situation is very important for children. [They want to] be addressed by name. When we're saying something or giving turns to speak randomly, not in order, [it's impossible to tell] who we gave the right to participate to and who we didn't. We had a very short period in the first semester in connection to this, but I think we experienced the impact of this greatly. It was the same way with the teacher. We got to know our teacher in the first semester. [We got to know] their point of view, how they view education, their point of view on children, how they manage the process. We got to see this through the observations we made during activities. When I look at it from all angles, the situation was a positive for us." Another preservice teacher, Aykan, had similar views, describing the facilitating role of completing the teaching practicum in the same classroom for two semesters as follows: *"I can say that practicing with the same teacher, being in the same classroom environment with the same children, even if it is a virtual environment, in both the fall and spring semesters and getting to know the students and the teacher helped me with conducting activities in the spring semester. I became more relaxed; I was more active in the process. There were also peers who joined during the spring semester. They thought, 'I wonder how I can do it.' They experienced that [confusion], but I already knew the kids and the teacher."* Akif, emphasizing the importance of getting to know the children in preschool education, expressed this point as follows: *"I think it's good that [the process] continued with the same teacher… And also, the children… The processes of trying to get to know each other, proving our teaching [qualities], and getting to know the children are difficult. We have to provide education while familiarizing ourselves with the children as the system requires. There may also be some children who we should take care of individually. We couldn't [otherwise] get to know the children because of this, and the kids wouldn't get to know us. Because of this, the situation proved advantageous for us."*

ACCESS TO COURSE MATERIALS

The final factor that was considered to facilitate the remote teaching practicum by the preservice teachers was the accessibility of course materials. Some of the preservice teachers (n=4) stated that theoretical lessons being recorded and made accessible to them was useful when they could not attend the course and helped them study and improve their work.

One of the preservice teachers, Aykan, explained the convenience offered by having recordings of the course for the theoretical part of the teaching practicum accessible via the learning management system as follows: *"The teacher of the theoretical lessons conducting the course via the system and recording the lesson for each day during this semester offered a great advantage for students who couldn't participate in the course that day. I think that students being able to ask questions about subjects in the course that they don't understand both during the online lesson and face-to-face makes subjects easier to understand."* Similarly, Gözde explained her views about how accessibility to course materials made the process easier as follows: *"Completing theoretical courses remotely was easier and more beneficial for me. Topics that I missed or didn't take notes on were very hard to compensate for in face-to-face education, but I was able to replay the course recording and be more efficient through remote education… I was able to look into the topics I missed or skipped. I was able to listen to the topics again. It was better."*

HINDERING FACTORS

LACK OF TECHNOLOGICAL RESOURCES

The primary tool for teachers to reach students in distance education is technology. However, it was observed within the scope of this study, in accordance with the opinions of the participating preservice teachers, that a lack of technological resources was the leading factor that negatively affected the remote teaching practicum process, experienced as a "hindering" factor by these preservice teachers. The vast majority of the preservice teachers (n=10) stated that a lack of technological resources complicated the processes of the teaching practicum. In

accordance with their opinions, it was determined that this lack of technological resources was experienced by both preservice teachers and children and it was related to problems with internet connections, hardware, and software.

One of the preservice teachers, Demet, explained the technological problems that they experienced in relation to internet connections as follows: *"When I take the difficulties into consideration, I experienced occasional internet outages and disconnection problems, and that caused me to disconnect from the class, if only for a short time. There were times when we had sound related problems with the children. Sometimes we got disconnected from the system. Although these situations were short-term, sometimes they disrupted the course flow."* Emphasizing that these situations were also experienced by the students, Şeyda stated the following: *"The worst part was that there were internet-related problems. There was a child who had an internet connection problem, and even though they were willing to participate in activities, they were constantly having connection problems, and this was an upsetting situation in every activity.*" Preservice teacher Nur stated that both she and other preservice teachers and the children experienced technological difficulties caused by internet connections: *"The most difficult part of this process for me was the internet difficulties. Sometimes we suffered from this problem and sometimes children or our peers experienced it. Especially when one of the children wanted to talk during an activity and we didn't understand him, it became a difficult situation for both the child and the teacher."*

Another lack of technological resources emphasized by the preservice teachers was the lack of hardware. One of the preservice teachers, Türkan, explained these hardware problems as follows: *"I had a lot of problems with phones and computers, and this was hard for me. I conducted lessons over the phone, especially because I had a lot of problems with the computer. But then I couldn't see all the kids on the phone. They would raise their hands, for example, and I couldn't see them all. I was trying to monitor them one by one to see who was raising their hands and which students were reacting in which ways. This was very hard for me, for example. Using a computer is really important in this process, but, I mean, I couldn't set it up."* Another preservice teacher, Gözde, explained the lack of technological equipment experienced by the children as follows: *"Not everyone has the same economic conditions. Some kids can use a tablet easily to see us more clearly, or some may have a computer. But some kids use phones. Our teacher Naz told us that some families don't have extensive means [of communication] in their homes. For example, some families use a common phone, when there may be two kids in the house studying…"*

In addition to internet and hardware-based problems in the context of a lack of technological resources, the preservice teachers also noted that they experienced software problems. Ilgaz described these problems as follows: *"It was really difficult to conduct remote education activities with the children. We were meeting via Zoom, and unfortunately, the children were passive due to the limitations of the application. I think the process would have been much more productive if a platform more suitable for the children was designed and if the kids could be more active in the process."* Similarly, Akif noted the occurrence of software-related problems as follows: *"We were having problems caused by Zoom. For example, we didn't have enough time. Because the process was online, it took us 15 minutes to connect and wait for all the children. Waiting for fifteen minutes was wasting a lot of time."*

LIMITATIONS IN RELATIONSHIPS WITH CHILDREN AND ASSESSMENT

Not being able to form strong relationships between the children and preservice teachers in the process of this remote teaching practicum and, accordingly, not becoming familiar with the children was evaluated as a factor complicating the process by most of the preservice teachers (n=8).

One of the participating preservice teachers, Aykan, expressed the difficulties created for the activity-planning process by the inability to establish sufficiently strong relationships with the children and get to know them as follows*: "We had trouble with planning. We weren't familiar with the children; we didn't know anything about the children and we had no idea about their developmental characteristics. If we could at least be in a classroom with them, joining them as observers…then we could have planned accordingly. We prepared our plans based entirely on the [general] characteristics of children in early childhood that we learned [at school] ourselves."* Şeyda, on the other hand, explained the difficulties for both parties that arose from not being able to get acquainted with the establishment of strong relationships with the children: *"The biggest challenge for me was the activity-planning process, because we didn't really know the children; we prepared an activity for a utopian classroom somewhere else. The range [of students] being so wide made this process more difficult. If we were face-to-face, it would have been much more convenient and productive to plan the day according to the children and create new activities with them. I think the same applies for the children, because I conducted activities every 2 weeks.*

It's difficult to establish a strong relationship with children at such long intervals with such a short period of time for an event."

Similarly, Hande addressed the difficulties experienced due to not being able to form adequate relationships between children and preservice teachers as follows: *"I think that if I were in a classroom environment, I could communicate with the children and get to know them better. I think I could at least observe what the children were interested in, what they didn't like, and what caused their shortcomings. We were practicing with the kids once a week, and the kids didn't get to know us well, either. The semester was over before we even learned the kids' names. I think that was a big problem… We experienced the disadvantage of not being in the same environment with the children and thus not being able to communicate with them."*

ONLINE CLASSROOM MANAGEMENT

Another factor that negatively affected the quality of the remote teaching practicum and thus experienced as a "hindering" factor according to the participating preservice teachers was online classroom management. More than half of the participating preservice teachers (n=7) stated that the intricacies of online classroom management complicated the remote teaching practicum.

Preservice teacher Demet expressed the difficulties of online classroom management in this process as follows: *"Sometimes during activities, the children start talking at the same time. It's very difficult to manage this situation. Some turn on their microphones, some move to other parts of the rooms they're in… We experienced these kinds of problems."* Similarly, Hande described the hindering effects of online classroom management for the remote teaching practicum as follows*: "I was having some trouble getting the kids' attention. I think it would be easier to get their attention in the classroom environment because there is inevitable communication with the children when you're face-to-face. A lot of factors intervene when the process is remote. You can have at least some control in the classroom, but there are so many things that you can't control in a home environment. This complicated things to a degree."*

Another of the preservice teachers, Türkan, noted the complexity of online classroom management during this practicum: *"It was a little difficult for me to manage the children in practice, because we met abruptly. How can I put it? Because we didn't meet face-to-face, I had a hard time having the floor at the beginning, when the children were reacting sporadically."*

FAMILY INTERVENTION

The final factor considered to complicate the processes of the remote teaching practicum by these preservice teachers was family intervention. Five of the participating preservice teachers stated that the intervention of families negatively affected the quality of the remote teaching practicum.

One of the preservice teachers participating in the study, Ilgaz, stated that family intervention negatively affected and complicated the practicum process: *"I think that the families of the children also affect the quality of the practice, because families may complete the activities for their children without giving the children the opportunity, and this reduces the value that the children receive from the process… Families were sabotaging a lot. They were doing everything themselves, thinking that we can't see them behind the screen. They take away the fun and activeness that the child would receive from this process. We also observed that the children weren't being left alone by their siblings and that families didn't allow the children to complete the activities independently. I think that this also negatively affected the independence of the children."*

Another participant, Şeyda, emphasized the negative impact of family intervention on assessment processes, explaining that it complicated the remote teaching practicum as follows: *"I think the most important factor is the family, because some families were more thoughtless or more perfectionist about the education of their children. During my activities, parents interfered too much with the work of the children. This is both a problem for the children and a problem for me, as it prevents me from observing the actual level of knowledge and the performance of the child. Our assessments were sometimes directed at the parents. Some of these parents were really perfectionists. They wanted everything to get done quickly. In situations like this, the children were a little more passive. The parents were doing the activities all of a sudden. No matter how much we wanted them not to interfere, their whispers were being heard from behind. They were giving the answers to the children. In fact, in some*

evaluations, we were not evaluating the child because it was not the child who did the activity. It was the parents' intervention. This was a situation that was reflected in both the process and the evaluation."

4 | DISCUSSION & CONCLUSION

In the midst of the COVID-19 pandemic, face-to-face teaching practicums were limited and alternative modes of teaching practicums were utilized. As explained by Callaway-Cole and Kimble (2021), in situations such as a pandemic, best practices are not always possible and professional responsibility requires the implementation of various adaptations to ensure the safety of everyone, including the children, in-service teachers, and preservice teachers. However, while making such changes – in this case, shifting to a remote teaching practicum– it is necessary to ensure the quality of the process as much as possible. Therefore, it is crucial to identify factors affecting the quality of remote teaching practicums and make adaptations in accordance with those factors. In this regard, the current study aimed to identify the factors affecting the quality of remote teaching practicums from the perspectives of preservice preschool teachers. The data obtained revealed that "guidance of the mentor teacher and university supervisor," "interactions with mentor teacher and university supervisor," "paired peer placement," "being a trainee teacher in the same class for two semesters," and "access to course/learning materials" were factors that facilitated the remote teaching practicum and enhanced the quality of the process. On the other hand, "lack of technological resources," "limitations in relationships with children and assessment," "online classroom management," and "family intervention" were found to be factors that hindered the remote teaching practicum and reduced its quality.

It is known that teaching practicums have three main groups of stakeholders: preservice teachers, mentor teachers, and university supervisors or teacher educators. Teaching practicums are designed for preservice teachers and, via these practices, they are exposed to the strategies that they will use while educating children. In educational institutions, mentor teachers play a guiding role throughout the practicum process. In addition to current teachers of these educational institutions participating in practicums, university supervisors or university teacher educators also assist preservice teachers in higher education institutions and in their assigned practicum institutions as well. This may bring about situations that call for these staff to also take on mentoring roles (Lawson et al., 2015). The guidance and valuable support of mentor teachers and university supervisors play crucial roles in the education and training of preservice teachers and they have been considered as factors leading to the quality of teaching practicums (Mourlam et al., 2019). Similarly, to face-to-face teaching practicums, the current study has shown that guidance from mentor teachers and university supervisors is important for remote teaching practicums as well, facilitating the enhancement of the quality of the process. In addition to guidance, easy interactions with mentor teachers and university supervisors were also found to enhance the quality of the remote teaching practicum in this study. Using a systems perspective and placing teacher candidates at the center of the developing system, Laparo et al. (2018) highlighted the importance of relationships between preservice teachers and both mentor teachers and university supervisors in the processes of development and learning in teaching practicums. Similarly, Sepulveda-Escobar and Morrison (2020) underlined the important role of the relationships, communication, and care that preservice teachers received from mentor teachers and university supervisors during an online teaching practicum. Thus, collaborative working relationships, communication, and the guidance of other stakeholders should be provided to help preservice teachers learn about distance education and help them gain various pedagogical skills for teaching online (Mohebi & Meda, 2021).

Another factor found to facilitate the remote teaching practicum and enhance the quality of the process in the present study was working with peers or partners, or, in other words, paired peer placement. The statements of the participating preservice teachers revealed that working with peers during a teaching practicum allowed them to benefit from peer coaching. Many studies in the literature have highlighted the positive outcomes of paired peer placement in teaching practicums (Callaway-Cole & Kimble, 2021; Silvera, 2012; Walsh & Elmslie, 2005; Wynn & Kromrey, 1999). For instance, Wynn and Kromrey (1999) underscored the importance of paired peer placement in field experiences and listed the development of support and collegiality, improved instructional strategy implementation, and expansion of opportunities for reflection and self-analysis as benefits of peer coaching. Similarly, Silvera (2012) suggested placing preservice teachers in pairs to reduce the problems experienced during teaching practicums and described peer coaching as one of the most effective ways for preservice teachers to enjoy

improved teaching practicum experiences. In line with the findings of the present study, Callaway-Cole and Kimble (2021) noted the benefits of peer coaching during the fieldwork-based experiences of preservice early childhood teachers during the COVID-19 pandemic, such as allowing them to engage in productive feedback process. Therefore, it is of great importance to benefit from paired peer placement with peer coaching to enhance the professional development of preservice teachers in distance education.

The results of the current study furthermore revealed that placement in the same classroom during a year-long teaching practicum was viewed as being as important as paired placement. Most of the participants mentioned that training in the same classroom for two semesters helped them to get to know the children and mentor teachers and to plan and implement activities. Thus, placement in the same school in both fall and spring semesters was a facilitating factor that enhanced the quality of this remote teaching practicum. Considering the fact that due to the COVID-19 pandemic preservice teachers were both physically and socially distanced during the teaching practicum, this result is not surprising. As stated by Silvera (2012), placement in a strange school and perceptions of the environment as threatening are among the most challenging aspects of teaching practicums for preservice teachers. To overcome these challenges, particularly in circumstances where it is difficult to get to know the children, teachers, and other school staff, a year-long placement in a single classroom can be considered as a solution.

The final facilitating factor that emerged and enhanced the quality of the practicum evaluated here was access to learning materials. The participants mentioned that in addition to synchronous learning they also took advantage of asynchronous learning by reviewing the recordings of the lessons. It is known that learning materials and proper storage of those material are two of the most critical components of effective distance education (Baytiyeh, 2018), and for a smoother transition to distance learning in teacher education programs access to learning management systems is a key element (Quezada et al., 2020). Therefore, as revealed in the current study, maintaining access to learning materials is of great importance in providing high-quality remote teaching practicums.

As would be expected, in addition to factors that positively affected the quality of the remote teaching practicum, there were also factors that negatively affected the quality. The lack of technological resources was found to be the first factor that hindered the remote teaching practicum and decreased its quality. It was found in the present study that both preservice teachers and children faced certain constraints related to technological resources. These constraints have also been emphasized in other studies. Flores and Gago (2020) stated that lack of internet access and lack of equipment such as laptops or tablets were some of the main problems that young learners faced during online teaching practicum sessions. Moreover, Sepulveda-Escobar and Morrison (2020) listed the main problems related to the lack of technological resources faced by preservice teachers during remote teaching practicums as not having an adequate internet connection or a laptop with a working camera and microphone. In this regard, to efficiently carry out remote teaching practicums and also support the education of the children it is of great importance to ensure that both preservice teachers and children are equipped with the necessary technology.

In early childhood education, building and sustaining positive relationships with children is fundamental for promoting development and learning among the children (Bredekamp, 2017). Education in early childhood is grounded on high-quality positive relationships and teachers learn a lot about children while interacting with them. However, the findings of the present study revealed that the remote teaching practicum did not allow the participating preservice teachers to build rich relationships with children and the lack of direct interactions limited their ability to learn about the children's interests, strengths, and needs. Sepulveda-Escobar and Morrison (2020) similarly pointed out these challenges in their study conducted with preservice teachers of English as a foreign language and they evaluated the lack of direct interactions with leaners as the most predominant disadvantage of remote teaching practicums. Therefore, as in face-to-face education, strategies to foster positive relationships between children and preservice teachers and for them to get to know each other should be included in remote teaching practicums to enhance the quality and prepare future teachers well.

Although dealing with the demands of classroom management can be a significant challenge for many preservice teachers (McGarr, 2021), effective classroom management is viewed as a condition for student learning (Emmer & Stough, 2001). Similarly, to face-to-face education, managing courses and learning is crucial for

teaching effectively in an online environment (Albrahim, 2020). In a recent study conducted with preservice early childhood educators and their university supervisors, the importance of high-quality effective classroom management for successful online teaching and learning in early childhood was underscored by all participants (Mohebi & Meda, 2021). However, the present study indicated that online classroom management was challenging for the participating preservice teachers and acted as a hindering factor for quality during this remote teaching practicum. For this reason, preservice teachers must be equipped with the necessary knowledge, skills, and experiences for effective classroom management in distance education as well as face-to-face education. To this end, virtual simulations (McGarr, 2021) and online video analysis can be utilized and further enhanced by online expert feedback, which has the potential to contribute to and promote preservice teachers' professional visions of classroom management (Prilop et al., 2021).

Because the distance education of young children requires parental involvement (Mohebi & Meda, 2021), the COVID-19 pandemic turned parents into necessary components of education (Lau & Lee, 2020). It has been found in many studies that parents were collaborators in the distance education of their young children during the pandemic (Mohebi & Meda, 2021). However, in the present study, parental involvement was generally considered to be a hindering factor that affected the quality of the teaching practicum negatively. The participating preservice teachers stated that parents who desired their children to complete tasks correctly or quickly completed the assigned tasks for their children and prevented the children's learning. As Spiteri (2021) noted, this was generally the first time in their lives that parents faced the challenge of taking on substantial teaching duties. This may be why parents interfered with their children's learning. Therefore, both preservice and in-service early childhood educators should meet with parents and discuss their roles in supporting and promoting learning (Lohmann et al., 2021).

Teaching practicums have important roles in the training of qualified teachers. Although face-to-face education is the standard strategy for teaching practicums and it offers invaluable hands-on knowledge (Peyton et al., 2020), the application of distance education in this process is also valuable and it can be implemented in contexts where face-to-face education is not possible. In such cases, to ensure the quality of the education and increase the supply of qualified teachers, it is very important to be informed of all factors affecting the process and consider those factors in planning and implementing remote teaching practicums. The factors affecting the quality of remote teaching practicums that were revealed in this study accordingly provide a basis for teacher educators, mentor teachers, and other key partners to plan and implement high-quality remote teaching practicums.

LIMITATIONS AND FUTURE SUGGESTIONS

The preservice preschool teachers who received practical experience within the scope of this study completed both the theoretical and practical parts of the teaching practicum remotely and synchronously. However, different methods were used in different countries for the implementation of teaching practicums during the pandemic period. For instance, a report produced by the National Association for the Education of Young Children regarding the impact of COVID-19 on higher education programs for early childhood education revealed that using videos and self-reflections, having students videotape themselves implementing the curriculum with or without children, and allowing students to implement the curriculum with specific children were some methods for supplementing field experiences (Peyton et al., 2020). Therefore, the results of the present study reflect only one type of such practices. To be well prepared for situations such as pandemics, future studies could investigate teaching practicums implemented with different strategies. Furthermore, the present study was conducted with a relatively small number of participants from one public university, which prohibits the generalization of the results. Future studies with more diverse and larger samples should be conducted. Finally, in the present study, a structured interview protocol was the sole means of data collection, and future research using different data collection techniques and triangulating data could approach this topic from a broader perspective. All types of studies and projects examining teaching practicums implemented with different strategies constitute steps towards ensuring high-quality teacher education.

STATEMENTS OF PUBLICATION ETHICS

Ethical approval for this research was obtained from the Ethics Committee of Anadolu University Social and Humanity Sciences.

RESEARCHERS' CONTRIBUTION RATE

Researchers' Contribution Rate

Authors	Literature review	Method	Data Collection	Data Analysis	Results	Conclusion	(Other)
Author 1	☒	☒	☒	☒	☒	☒	☒
Author 2	☒	☒	☒	☒	☐	☐	☐

CONFLICT OF INTEREST

The author declares that they have no conflict of interest.

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The Effects of Learning Activities on Eliminating Learners' In-Class Barriers to Critical Thinking

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ABSTRACT

Critical thinking is a skill people need to survive and succeed in today's world. Whereas it is considered crucial to teach critical thinking skills in every subject area in order to prepare students for the developing world, there are barriers to critical thinking which should be detected in order to be eliminated. Eliminating the barriers that hinder thinking critically can ease the development and implementation of critical thinking. The main purpose of this research is to determine the effect of learning activities based on the removal of critical thinking barriers on eliminating the English preparatory class students' barriers to critical thinking. In this respect, a mixed model of qualitative and quantitative research was used. A questionnaire has been developed in terms of the experimental study to determine the barriers to critical thinking which can be worked on within the classroom context and alternative activities have been developed. These activities which aimed at eliminating the barriers to critical thinking have been implemented during an 11-week period to examine their effect on removing the barriers to and developing critical thinking skills of the students. Then an interview is conducted as a case study to support the quantitative method. Although the results of the quantitative study revealed no significant statistical evidence on eliminating students' barriers to critical thinking within the 11-week period, when considered together with the qualitative analyses, the present study supports the importance of eliminating barriers to critical thinking with the support of learning activities for eliminating classroom barriers related to critical thinking.

Keywords: Barriers to Critical Thinking, Barriers to Critical Thinking Questionnaire, Critical Thinking.

Öğretim Etkinliklerinin Öğrencilerin Sınıf-İçi Eleştirel Düşünme Engellerinin Kaldırılmasına Etkisi

Öz

Eleştirel düşünme, insanların günümüz dünyasında hayatta kalmak ve başarılı olmak için ihtiyaç duyduğu bir beceridir. Bireyleri gelişen dünyaya hazırlamak için her konu alanında eleştirel düşünme becerilerinin öğretilmesi önemlidir. Dolayısıyla, bu beceriyi öğretebilmek için ilk etapta bu becerinin geliştirilmesine engel olabilecek eleştirel düşünme engellerinin belirlenmesi gerekir. Eleştirel düşünmeyi engelleyen engellerin ortadan kaldırılması, eleştirel düşünmenin geliştirilmesini ve uygulanmasını kolaylaştırabilir. Bu araştırmanın temel amacı, eleştirel düşünme engellerinin kaldırılmasına dayalı öğrenme etkinliklerinin İngilizce hazırlık sınıfı öğrencilerinin eleştirel düşünme engellerinin ortadan kaldırılmasına etkisini belirlemektir. Bu doğrultuda nitel ve nicel araştırmaları içeren karma model kullanılmıştır. Sınıf ortamında, üzerinde çalışılabilecek eleştirel düşünmenin önündeki engelleri belirlemek için deneysel çalışma açısından bir anket ve derslerde kullanılmak üzere öğretim etkinlikleri geliştirilmiştir. Eleştirel düşünmenin önündeki engelleri kaldırmayı amaçlayan bu etkinlikler, öğrencilerin eleştirel düşünme becerilerinin önündeki engelleri kaldırma ve geliştirme üzerindeki etkisini incelemek için 11 haftalık bir süre boyunca uygulanmıştır. Ardından nicel yöntemi desteklemek için vaka çalışması yapılmıştır. Nicel araştırmanın sonuçları, öğrencilerin eleştirel düşünmenin önündeki engellerin ortadan kaldırılmasına dair anlamlı bir istatistiksel kanıt ortaya koymasa da, nitel analizlerle birlikte değerlendirildiğinde, bu çalışma, eleştirel düşünme engellerini ortadan kaldırmaya ilişkin etkinlik kullanımının, eleştirel düşünmenin önündeki engelleri ortadan kaldırmaya yönelik önemini desteklemektedir.

Anahtar kelimeler: Eleştirel Düşünme Engelleri, Eleştirel Düşünme Engelleri Ölçeği, Eleştirel Düşünme.

1 | INTRODUCTION

In today's rapidly developing world, besides basic information, the ways to reach more advanced information and how to use it play a significant role in the development of individuals and the society. The ability of individuals to conduct research, solve problems, think in a creative and critical way, and employ higher-order thinking are factors that can positively affect both the individual and the social development. The most important skill to possess, which is one of the important features that distinguish humans from other living things, is thinking (Dewey, 1957). Critical thinking, generally described as a high-level thinking disposition (Gheith, 2007, 8), has an important place among the types of thinking. The fact that the world is getting more and more technical and complex leads to the need for making substantial decisions. Emergence of this necessity requires critical thinking skills for the citizens of the 21st century (Dam & Volman, 2004; Garrison, 2002; Halpern, 2003; Klimoviene et al., 2006).

Critical Thinking

Critical thinking, dating back to ancient times, has gained more importance since the 1980s and its importance has gradually increased (Dam & Volman, 2004). Critical thinking, which begins with recognizing and revealing the contrast between the ideal world affairs and their present situation (Brookfield, 1997, 24), includes interpretation, analysis, evaluation, inference, explanation, self-regulation, enthusiasm, trustworthiness, openness to information and curiosity (Facione, 2011). It is the state of "thinking about thinking" to enlighten and develop the thinking process (Moore & Parker, 2009, 3). In addition, Dewey (1957) mentioned that critical thinking is the search for the accuracy of information and stated that it is realized through continuous and precise examination of all kinds of beliefs and knowledge.

Critical thinking includes being able to handle the available data correctly, question existing data in depth, and approach these data objectively without subjective comments. Therefore, asking the right question is important for critical thinking (Paul et al., 1997). According to Brookfield (1997, 4), individuals' state of questioning and asking the "why question" states an indication of their critical thinking. There are also some who define critical thinking as the reasoning process (Hirschhorn, 2008). It is also the systematic way of creating and shaping knowledge and the basic component of information literacy (D'Angelo, 2001). Critical thinking can also be explained as a self-regulated and purposeful judgment process that includes interpretation, evaluation, analysis, and inference (Giancarlo & Facione, 2001; Wessel & Williams, 2004). It is a purposeful, disciplined, understandable, detailed and reasonable process, and it shows an active, purposeful and organized cognitive feature that enables active use of intelligence, knowledge and abilities (Chaffee, 1997; Halpern, 1997).

It can be inferred that critical thinking is a skill that everyone should have and constantly improve for a quality life. It is a skill for which individuals actively use their cognition and emotions and are aware of their own cognitive processes. It includes the use of metacognitive skills such as questioning, problem solving, evaluating assumptions and analyzing, synthesizing and evaluating. Whereas Russell formulates critical thinking as "attitude + knowledge + thinking skills = critical thinking" (Halpern 2003, 7), with further consideration Critical thinking can be formulated as follows:

Critical Thinking = knowledge + intelligence + attitude + awareness + higher order thinking skills + tendency to use knowledge

Critical thinking is a skill that can be learned by everyone (Aliakbari & Sadeghdaghighi, 2013; Vong & Kaewurai, 2017). However, students cannot become critical thinkers by simply attending and listening to lectures, participating in classroom discussions, and completing standard assignments and exams (Paul, 1993). Therefore, it is not a skill that develops spontaneously over time; it requires conscious effort (Lee, 2004; Vieira et al., 2011). Apart from the importance of teaching critical thinking, it is important to evaluate the factors in the education process and to use them to carry it to success. Critical thinking is a process that must be supported by the school environment, staff, administration and students. Developing critical thinking is associated with success in teaching thinking skills, managerial support and the cohesion of student and the teaching approach as well as the program content, in-class activities and teacher training. Whereas critical thinking is an important and developable skill (Halpern, 2003; Dekker, 2020), there are some factors that keep individuals away from thinking critically and hinder their questioning process (Moore & Parker, 2009). Chaffee (1999) has mentioned that these factors are

unreasonable judgments that seem logical and that they lead individuals to make mistakes by activating their feelings and prejudices.

Barriers to Critical Thinking

According to the literature, there are different opinions and perspectives on what the critical thinking barriers are and how they are grouped. While Carroll (2004, 19) classifies barriers to critical thinking under "physical" and "emotional" dimensions, Moore and Parker (2009, 200, 229) classifies them as "emotional barriers" and "other barriers." In addition, Nosich (2012, 22, 121) focuses on barriers in terms of education and thus groups them under "educational practices" and "school-related things." In the light of the information obtained, the barriers can be classified under "individual" and "environmental" dimensions in general.

When the content of the barriers is further examined, these barriers are generally caused by the individuals' lack of experience, knowledge and questioning (Carroll, 2004; Coughlan, 2008; Dewey, 1957; Gambril, 2005; Nosich, 2012; Paul & Elder; 2006; Wood, 2002). When studies on barriers to critical thinking are reviewed through literature, it is understood that barriers to critical thinking are illusions that restrain individuals from thinking critically, and that most critical thinking barriers are problems caused by lack of knowledge or inability to use information correctly. Furthermore, the following list have been created according to the data gathered (Table 1).

Table 1. Categories of Barriers to Critical Thinking

BARRIERS TO CRITICAL THINKING					
INDIVIDUAL BARRIERS				SOCIAL BARRIERS	
COGNITIVE	AFFECTIVE	PHYSIOLOGICAL	ENVIRONMENTAL BARRIERS	BARRIERS IN EDUCATION	
				PROCESS	PHYSICAL ENVIRONMENT
Intelligence	Prejudice	Tiredness			
Memory errors	Dreams and expectations	Stress	Culture	Information transfer	Crowded classes
Illiteracy	Devotion to absolute truth	Malnutrition	Society and expectations	Rote-learning	Architectural structure
Inexperience	Indifference to new ideas and criticism	Poisoning	Rules	Content	High school walls
Perception limitations	Not being objective	Substance abuse	Prohibitions	Teacher as a source of information	Fencing outside the school, iron bars
Expression/language confusion	Socio-centric thinking	Physical defects	Pre-taught information/past		
Impulses/motives	Superstitions	Laziness	Traditions	Books as a source of information	High school walls/doors
Lack of questioning	Generalization	Genetic barriers	Beliefs	Technology	Classroom atmosphere
Misinformation/ Assumptions	Egocentrism		Stereotypes-Clichés	Insufficient material	Classroom, paint, windows, school
	Perfectionism		Dogmas	Traditional education	Classroom arrangements
	Acting without thinking		Media	Assessment procedures (exams, homework, activities, question types)	
			Worldviews		
	Fussiness		Economical power	Teacher (knowledge level, expectations, teaching method, wrong time use, knowledge-activity and theory-practice linkage; competence, guiding students, considering students.)	
	Emotional Barriers/Attitude (pride, indecision, indifference, jealousy, irritability, insistence, blame, inconsistency)		Technology		
			Conditions		
			Collective encouragement		
	Making excuses		Special interest groups	Institutional structure of the school	
			Facts	Curriculum, syllabus, lesson plan	
	Nationalism		Social pressure	Teachers and those with educational responsibilities; Staff, Administration, Students…	
			Suppression		
			Commitment to authority		

As shown in Table 1, barriers to critical thinking in educational practices can stem from any aspect of the teaching-learning process that includes the teachers, students, management, educational environment and assessment procedures as well as the approach that the process is built on. From an educational perspective, transferring knowledge (Aliakbari & Sadeghdaghighi, 2013; Onosko, 1991) and memorizing (Nosich, 2012) are important obstacles to critical thinking. The importance of instruction in critical thinking is also mentioned by Vong and Kaewurai (2017). Being passive in the classroom and not being able to ask questions (Nosich, 2012), accepting the information transferred by the teacher without questioning and taking the teacher as the only source of information are some other critical thinking barriers of the students (McKendree et al., 2002). Also, the expectations of students about school and education (Aliakbari & Sadeghdaghighi, 2013), and teachers' keeping their expectations too high or low (Onosko, 1991) can also be regarded as educational barriers to critical thinking. Thus considering the students in general, their characteristics and expectations, and attitudes towards education, process, teacher, content, etc. can be taken as a major barrier to critical thinking as also suggested by Aliakbari and Sadeghdaghighi (2013). In addition, the teachers' inability to plan their teaching time efficiently (Aliakbari & Sadeghdaghighi, 2013), their lack of content knowledge and keeping the subjects they teach too broad or limited are other educational barriers to critical thinking (Onosko, 1991).

In addition to these, teachers not being knowledgable about critical thinking (Alagözlü & Suzer, 2009; Aliakbari & Sadeghdaghighi, 2013; Chabanchi & Behrooznia, 2014; Gul et al., 2010) and/or not integrating it to their lessons (Aliakbari & Sadeghdaghighi, 2013); being incompetent, unqualified and inadequate in their major; and being disrespectful to and having a hierarchical relationship with their students also prevent critical thinking (Leming, 1998). Not taking different perspectives in the teaching process into account, not being able to relate the lessons with real life issues and having an exam-oriented teaching environment are also barriers that hinder critical thinking (Leming, 1998). Moreover, the content of the lessons (Gul et al, 2010; Nosich, 2012), curricula, and the legislation can hinder critical thinking. Crowded classrooms (Onosko, 1991), the classroom atmosphere, the physical environment that includes the row and chair arrangement in the classrooms (Gul et al, 2010) can prevent students from thinking critically, as well. In addition, exams that only focus on measuring content knowledge and expecting to have a definite answer for each question (Nosich, 2012); similarly "standardized tests and exercises (Dewey, 1957, 55)," and explicitly formulated assignments (Nosich, 2012) are other dimension of barriers to critical thinking.

Significance of the Study

As suggested by Aliakbari and Sadeghdaghighi (2013, 4), "improvements in critical thinking skills and strategies would be easier if the obstacles along the way could be removed," in a situation where thinking, more importantly, high-level thinking, is important. Determining the barriers blocking this process and determining some action styles to overcome these barriers and seeing whether this process really benefits the development of critical thinking is a process that needs to be examined in order to develop. In this respect, the present study aims to answer the following question:

> What is the effect of learning activities in the writing lessons, which are based on removing the critical thinking barriers, on eliminating the English preparatory class students' critical thinking barriers?

2 | METHOD

Research Model

The study was conducted on a mixed model that included qualitative and quantitative methods. In the pattern used as a mixed method, firstly quantitative data were collected and qualitative data was used to support quantitative data (Büyüköztürk, et al., 2014; Fraenkel et al., 2012).

Quantitative Study

In the experimental method, "pre-test and post-test control group design" (Büyüköztürk et al., 2014, 200; Cohen et al., 2007, 276) was used. Both the experimental and control groups' barriers to critical thinking were compared and the effect of the independent variable (activities based on removing critical thinking barriers) on the dependent variable (students' barriers to critical thinking) was investigated. The symbolic view of the experimental design with pre-test - post-test control group prepared within the scope of this study is as follows:

G1	R	O 1	X	O 2
G2	R	O 3		O 4

G1 = Experimental Group
G2 = Control Group
R = Neutrality in forming groups

O 1/O 3 = Pre-test
O 2/O 4 = Post-test
X = Independent Variable

Experimental Study Group

The experimental study group consisted of 90 students; 39 from Molecular Biology and Genetics Department, 23 from English Language and Literature Department, and 28 from Faculty of Medicine, who took compulsory English courses at the School of Foreign Languages of a state university in Turkey.

Cluster analysis was performed to divide the study group into similar and homogeneous groups and to make classifications to ensure neutrality in determining the students to be assigned to the groups (Cohen et al., 2007; Fraenkel et al., 2012). In this context, four data were used as criteria: (a) university entrance grades, (b) high school graduation averages and (c, d) two exam grades taken during fall semester. The collected grades were grouped with 4, 3 and 2 of the data groups, respectively, but enough number to form a group could not be reached. Next, the four grades (university entrance grade, high school average, exam 1, exam 2) used to make the grouping were grouped into three's, leaving one of the data out each time, and the highest result was sought. As a result of the groupings with 3 grades, the highest number of students was reached by the use of the high school grade average, exam 1 and exam 2 grades as 26 to 64 students. Due to the fact that the group with 64 was more comprehensive in number and reflected the general number more easily (Tan et al., 2006), it was decided to be used in the study. The number of students distributed to groups is given in Table 2:

Table 2: Experimental and Control Groups after Cluster Analysis

CLASS	GROUP	Experimental and Control Groups after Cluster Analysis	
		NUMBER OF STUDENTS INCLUDED IN THE STUDY AFTER CLUSTER ANALYSIS	NUMBER OF STUDENTS INCLUDED IN THE STUDY AFTER MATCHING
A	Control	17	17
B	Experiment	19	16
C	Control	18	11
D	Experiment	10	7
Total Control		35	28
Total Experiment		29	23
TOTAL		64	51

As can be seen in Table 2, two classes were determined as experiment and two classes were determined as control groups. The reason for 64 students to fall to 51 after cluster analysis was that some students' pre-test and post-test results couldn't be matched, one student didn't speak Turkish and thus couldn't complete the questionnaire, and one other student was absent at the day of the questionnaire. Classes A and C, and B and D were paired considering the number of students in each group (trying to have close number of students) and the day on which these classes took their writing lessons according to the academic program. Then, as the researcher was the instructor of class B on the program determined by the administration at the beginning of the semester, the group in which this class was included - B and D classes – was the experimental group, and the other group – class A and C– was the control group.

Collection of Quantitative Data

The data of the study were collected by the "Barriers to Critical Thinking in Education Scale" developed by the researchers. The items of the scale were initially prepared as 143 items, based on the literature, covering in-class and outside-class barriers. Later, these items were reduced to 66 items after removing the items related to out-of-class barriers, assuming that the barriers which the teachers can be most effective on are the in-class barriers. Next, the items were presented to 13 experts from the field of English Language Education, Curriculum and Instruction, Measurement and Evaluation in Education, and experts who worked on critical thinking and teaching specifically. The draft scale, which was revised in line with expert opinions, took its final form as a total of 81 items, 46 of which were positive and 35 of which were negative.

After this stage, the KMO value of the scale was found to be 0.904 and the Bartlett test value was 10796.109 (Sd=1596, p<.05), which indicated that factor analysis can be carried out on the scale. Factor analysis was applied to data to reveal the dimensions of the items perceived by the respondents and to decrease the number of variables (Cohen et al., 2007; Sipahi et al., 2006). In order to perform the factor analysis, the draft scale was applied to 583 undergraduate students attending the English preparatory class at the School of Foreign Languages of three different state universities. However, two data that were found to be incomplete were removed from the system and 581 data were studied. Later, the negative 35 items in the scale were reversed in order to align them with the other items (Acock, 2008; Fairclough, 2010; Vaus, 2002). After conducting the factor analysis, the item weights were found to be at least 0.44, and the total item loads were found to represent 53,627 percent of the total variance. As a result of the factor analysis, a scale of 40 questions with six factors–16 positive and 24 negative items- was obtained. Factors and reliability coefficients of the scale were as follows: In-class process (0.898), Commitment to authority (0.7917), In-class communication (0.731), Social pressure (0.737), Self-confidence (0.629), Environmental rules (0.684).

The general reliability coefficient of the scale –Cronbach's Alpha– was found to be 0.859, showing high internal consistency. Cronbach's Alpha value varies between 0 and 1, and it is a measure of internal consistency and reliability that shows how closely the items in the scale are related as a group (Gliem & Gliem, 2003; Santos, 1999; Tavakol & Dennick, 2011). The Cronbach's Alpha value used to measure the reliability is generally accepted to be satisfactory between 0.70 and 0.80 (Bland & Altman, 1997; Gliem & Gliem, 2003; Tappen, 2011), and when this value approaches 1, the degree of reliability is known to increase (Gliem & Gliem, 2003; Santos, 1999). Therefore, "Barriers to Critical Thinking in Education Scale" developed by the researchers can be considered as highly reliable.

Also, in order to test the usability of the scale, with the assumption that there will be an inverse relationship between barriers to critical thinking and critical thinking disposition, the "California Critical Thinking Disposition Scale" was accepted as the equivalent test, and the equivalent test, test-retest and half-test analyzes were performed. In order to find out the equivalent test correlation, 62 data pairs were made by applying the California Critical Thinking Disposition Scale to students studying at the School of Foreign Languages together with the Barriers to Critical Thinking in Education Scale. After the correlation analysis, a moderate, negative relationship ($r = -625$ / $p <.05$) was found between the "California Critical Thinking Disposition Scale" and the "Barriers to Critical Thinking in Education Scale" as expected. Moreover, to look at the test-re-test correlation, the scale was applied twice with a 17-day interval and 67 data pairs were made. As a result of the correlation analysis conducted to determine the relationship between both applications, it was concluded that there was a medium level positive relationship ($r = 0.495$ / $p <.05$) between the two applications. In addition to these analyzes, in order to increase the reliability of the "Barriers to Critical Thinking Scale", after clearing of the items discarded as a result of the factor analysis and reliability analysis, the remaining items were again numbered from 1 to 40. Then the single and double items were separated and each group's item load average was taken. After this stage, correlations of both halves of the scale were analyzed. The result was $r = 0.816$ ($p <.05$), which showed that the reliability limit of 0.70 was exceeded (Acock, 2008; Vaus, 2002). It was concluded that both halves of the scale had a strong and positive relationship with each other.

Experimental Process

After the control and experimental groups were determined, the control groups continued the traditional, structure-based teaching process focusing on grammar, use of vocabulary and rules for academic writing parallel to the book subjects, as they did through the first semester. On the other hand, the experimental groups took lessons

according to the 11-week lesson plans prepared separately for each week that included specific activities prepared considering the barriers to critical thinking determined through the pre-tests, in line with the book subjects.

The purpose of the activities adapted or developed for each lesson as a result of the literature review in order to eliminate students' common barriers to critical thinking was to ensure active learning on the experimental students and make them understand the subject in depth, while overcoming their barriers to critical thinking through the writing lesson. The activities prepared were placed in a one-day lesson plan and prepared for each dimension of the Barriers to Critical Thinking Scale. Examples of prepared activities and other in-class practices are given in Table 3.

Table 3. Samples of Weekly Activities

WEEKLY ACTIVITIES – SAMPLES	
Week 1	Students are randomly divided into 6 groups (each with 4 students) and each group is given a different mixed paragraph. First, students are expected to put these sentences in order, individually. These students are then expected to choose the best arrangement by exchanging ideas within their groups. Next, each group's paper is collected and given to another group, and this new group's members are first expected to write the introductory and concluding sentences for the paragraph individually and then choose the best one as a group. Then, these papers are given to a third group, where necessary corrections are made individually and as a group, and the best paper is selected. Therefore, after each of the 6 papers is circulated in three groups, the group is changed again and the fourth groups are expected to grade each paragraph. Finally, the best paragraph is posted on the classroom notice board. During this process, corrections and other points that are not understood in the paragraph can be discussed with the responsible group and with the teacher when necessary. This activity enables students to; -work individually and in groups (self-confidence, in-class communication), -receive different ideas through peer-feedback. (commitment to authority, social pressure), -be comfortable with their teacher and friends. The teacher facilitates the process and assists students. There are no grades or worries of failure (in-class process).
Week 9	By bringing some news from magazines, newspapers or the internet, the following questions are asked: . What is the situation? . Why did this happen? . What if it wouldn't be like this? . What should be done to fix this situation? . What should be done to prevent this situation from recurring? Whole class is involved in the activity. The news is copied for each student, so each student will have the opportunity to examine the same news and be guided to defend their own ideas. This activity enables students to; -share their own ideas, think individually, discuss as a group/class, listen to other ideas, and compare/question their own. (self-confidence, commitment to authority) -hear different ideas/voices, and express their opinions in an environment free of grading anxiety and pressure. (in-class process, in-class communication, social pressure)
Week 11	The students select a movie that they have never watched before by voting among the options determined by the teacher and watch it. (The alternatives are chosen among the movies that haven't been watched by any of the students.) Then the students are asked to write a summary for the movie. The students' papers will be given to each other without their names written. Each student will grade their friend's paper in the light of some points and the one with the highest grade will be rewarded by hanging their work on the notice board. This activity enables students to; -consider different ideas in the stages of giving and receiving peer feedback. (in-class communication) -share ideas, write and give feedback in the classroom, and not to be under any pressure while doing these. (in-class process) - learn in a pressure-free and stress-free classroom environment where everyone is equal and not afraid of grades. (social pressure) - work individually and write by using personal perspective. (self-confidence) - study different ideas, articles and thus perspectives, and make personal arrangements accordingly. (commitment to authority)

In addition to the 11-week activity plans prepared, general criteria considering the classroom environment and the details of the process were prepared to be followed while conducting the activities and in-class practices (Table 4).

Table 4. General Criteria – In-Class Practices and Critical Thinking Barriers They Aim to Remove

In-Class Practices	Critical Thinking Barriers The Practices Aim to Remove
Students' seating arrangement will be changed every week. (In order for each student to have a chance to sit with each other.)	SELF-CONFIDENCE COMMITMENT TO AUTHORITY SOCIAL PRESSURE
Students will have a chance to attend classes with tea, coffee, etc. (Although it is forbidden in other classes.)	IN-CLASS PROCESS
Students will be free to exchange ideas with each other during the lesson.	IN-CLASS PROCESS
In each lesson, students' ideas about classroom temperature and lighting will be taken and necessary arrangements will be made as much as possible.	IN-CLASS PROCESS
Students' papers will be checked by their friends AND/OR teachers and they will receive feedback for each assignment.	IN-CLASS PROCESS IN-CLASS COMMUNICATION COMMITMENT TO AUTHORITY
Groups will be created with different students each time there is a group work. (random grouping will be done by choosing a color or number from the bag)	SELF-CONFIDENCE COMMITMENT TO AUTHORITY SOCIAL PRESSURE
A sample of each week's activity chosen by the students and/or the teacher will be posted on the notice board.	IN-CLASS PROCESS
In each lesson, different materials and topics will be used in addition to the book.	IN-CLASS PROCESS
Everyone will have an equal right to speak in the activities/during the lessons. Thus, every week notes will be taken about the students' performances within the lessons.	SOCIAL PRESSURE
Both individual and group work activities will be done every week.	SOCIAL PRESSURE IN-CLASS PROCESS IN-CLASS COMMUNICATION
Through the lessons, the teacher will be the facilitator; will be assisting the students rather than answering the questions or doing the activities.	SOCIAL PRESSURE
After students are asked a question, they will be given enough time to answer.	IN-CLASS PROCESS
When students give a wrong answer to any question, they will be given another chance together with the message that it is normal, instead of immediately switching to someone else or giving a negative reaction. If the situation continues, the teacher will then move on to another student without demoralizing the student.	SOCIAL PRESSURE
The process and attendance will be graded rather than the result. (There will be formative assessment rather than summative.)	SOCIAL PRESSURE
Students will be informed about the objectives of the activities from the very beginning.	IN-CLASS PROCESS
Each assignment given will be planned in a way that will direct students to research and it will be evaluated accordingly.	IN-CLASS PROCESS
While giving the rules about the activities, students' ideas will be taken on each rule and each rule will be shaped accordingly within the preplanned structure.	ENVIRONMENTAL RULES

Analysis of Quantitative Data

The data collected through the scale were analyzed using the SPSS program in line with the homogeneity test. Although there was normal distribution among the data collected, nonparametric tests – the Mann-WhitneyU and Wilcoxon Tests – were preferred in the study as the data were ordinal –ordered– (Demirgil, 2010) and the number of data under each group during the analysis was less than 30 –low number of samples– (Demirgil, 2010; Sipahi et al., 2006).

Qualitative Study

Qualitative data are descriptive data collected in line with the explanations and opinions of the participants and are more detailed and rich in content than quantitative studies, although they are conducted in small groups (Cohen et al., 2007; Fraenkel et al., 2012) it was made use of within the study in order to support the experimental study. In this study, "case study" design has been used in order to find out how students affected and were affected by a certain situation as the purpose of this pattern is to reveal results regarding a specific situation and understand the changes and processes that occur within a situation (Yıldırım & Şimşek, 2008). With the support of it, the opinions of English preparatory school students on critical thinking, barriers to critical thinking and the effectiveness of learning activities in writing lesson that are based on removing barriers to critical thinking were analyzed.

Qualitative Study Group

Qualitative study group consisted of students who participated in the experimental study. Since the willingness of the participants in focus group interviews is of great importance (Freitos et al., 1998; Morgan, 1997), they were determined randomly on a voluntary basis – 7 students from Class B and 5 students from class D. Thus, 12 students have been interviewed for the qualitative study. However, since the students to be included in the qualitative study were determined on voluntary basis, two of the students volunteered were from the ones not included in the experimental study.

Collection of Qualitative Data

The qualitative data of the study were collected through focus group interview. The focus group interview is a group interview process in which information is gathered on the thoughts and feelings of the participants (Freeman, 2006; Freitos et al., 1998), enabling them to speak equally (Flick, 2014). "Interview" is a holistic method of interpretation that is used to reveal people's perspectives, feelings, perceptions and experiences (Büyüköztürk et al., 2010, 161; Yıldırım & Şimşek, 2010, 40-41). The purpose of conducting the interview within the present study was to reveal the effectiveness of the activities prepared to eliminate the critical thinking barriers and to see the changes these activities have made on students. In this context, "semi-structured interview" which includes both fixed choice answering and going in depth in the relevant field (Büyüköztürk et al., 2010, 163), was used. Eight semi-structured questions (Table 5) were determined for the focus group interview by taking expert opinions, and they were directed to the students within the 90 minute interview –5 sections, 4 pieces of 20-minute and 1 piece of 10-minute recordings, all of which are decoded and archived.

Table 5. Focus Group Interview Questions

Focus Group Interview Questions
Q1: What is critical thinking?
Q2: What do you need in class in order to think critically?
Q3: What kind of circumstances would urge you to think critically? What were they in the lessons?
Q4: What do you think hinders critical thinking?
Q5: What are the barriers to critical thinking you encounter in the lessons?
Q6: Considering the barriers to critical thinking you have mentioned, how do you think each activity practiced in the lessons affected these barriers? (Each activity will be focused on separately.)
Q7: Do you believe that the activities practiced through the term supported your way of considering/evaluating topics and situations with different point of views?
Q8: Do you think there are any differences in your way of thinking considering the beginning of the semester? If yes, what kind of differences have you experienced?

Analysis of Qualitative Data

The data obtained within the scope of qualitative study were analyzed with the "content analysis" method, which enables researchers to study human behaviors indirectly through communication method (Fraenkel et al., 2012, 478), the main purpose of which is to reach the concepts and relationships that can explain the data collected (Büyüköztürk et al., 2010; Yıldırım & Şimşek, 2011). N-VIVO, a computer-aided qualitative data analysis program, was used for the purpose of theming students' comments, determining the frequencies under themes, and modeling in the analysis of the data collected through the interviews.

Research Ethics

The data collected were treated in confidence and were only reported in anonymised form. This paper doesn't require an ethics approval document as the data were collected before 2020.

3 | FINDINGS

The data analyzed for determining the effect of in-class activities specifically prepared for eliminating the English preparatory class students' barriers to critical thinking, on these students' barriers to critical thinking skills have been interpreted in line with the hypothesis.

Findings Regarding the Barriers to Critical Thinking of Experimental and Control Groups

Table 6. Experimental and Control Group Pre and Post-Tests on Barriers to Critical Thinking and Its Sub-dimensions

Experimental and Control Group Pre-Tests on Barriers to Critical Thinking and Its Sub-dimensions - Mann-WhitneyU Test					
	Pre-tests	N	Mean Rank	MWU	p-value
General Critical Thinking Barriers	Control Gr. Pretest	28	25,54	309,000	0,805
	Experimental Gr. Pretest	23	26,57		
In-class Process	Control Gr. Pretest	28	24,04	267,000	0,297
	Experimental Gr. Pretest	23	28,39		
Commitment to Authority	Control Gr. Pretest	28	28,93	240,000	0,119
	Experimental Gr. Pretest	23	22,43		

		N	Mean Rank	MWU	p-value
In-class Communication	Control Gr. Pretest	28	22,95	236,500	0,100
	Experimental Gr. Pretest	23	29,72		
Social Pressure	Control Gr. Pretest	28	28,79	244,000	0,138
	Experimental Gr. Pretest	23	22,61		
Self-confidence	Control Gr. Pretest	28	23,32	247,000	0,148
	Experimental Gr. Pretest	23	29,26		
Environmental Rules	Control Gr. Pretest	28	27,20	288,500	0,522
	Experimental Gr. Pretest	23	24,54		
Experimental and Control Group Post-Tests on Barriers to Critical Thinking and Its Sub-dimensions - Mann-WhitneyU Test					
	Post-tests	N	Mean Rank	MWU	p-value
General Critical Thinking Barriers	Control Gr. Posttest	28	26,54	307,000	0,776
	Experimental Gr. Posttest	23	25,35		
In-class Process	Control Gr. Posttest	28	25,25	301,000	0,690
	Experimental Gr. Posttest	23	26,91		
Commitment to Authority	Control Gr. Posttest	28	27,64	276,000	0,382
	Experimental Gr. Posttest	23	24,00		
In-class Communication	Control Gr. Posttest	28	24,61	283,000	0,451
	Experimental Gr. Posttest	23	27,70		
Social Pressure	Control Gr. Posttest	28	29,13	234,500	0,097
	Experimental Gr. Posttest	23	22,20		
Self-confidence	Control Gr. Posttest	28	26,13	318,500	0,946
	Experimental Gr. Posttest	23	25,85		
Environmental Rules	Control Gr. Posttest	28	27,54	279,000	0,412
	Experimental Gr. Posttest	23	24,13		

When the post-tests of control and experimental groups are considered in terms of general and sub-dimension barriers to critical thinking, no significant difference was found between the two groups ($p = 0.05$). However, some additional findings are observed as a result of detailed analyses between pre-test and post-test comparisons. Considering the relationships between pre-tests and post-tests with the scope of the data obtained in the findings are as follows: There is a decrease in the "commitment to authority" barrier of the control group, and an increase in the "social pressure" barrier both of which were high in the pre-test; "social pressure" factor increased, and the "environmental rules" barrier remained the same. However, all three are found to be higher than the experimental group results. When the experimental group is considered, a decrease is found in each "in-class process," "in-class communication," and "self-confidence;""self-confidence" barriers higher in the post-test result of the control group when compared with the experimental group. On the other hand, when the "general critical thinking" barriers data are considered, a decrease in favor of the experimental group is found between the pre-test and post-test comparisons; while the general critical thinking barriers of the experimental group are higher in the pre-test, that of the control group is higher than the experimental group in the post-test. Therefore, it can be claimed that the experimental process carried out reduced the critical thinking barriers, though not significantly.

Pre and Post-Test Findings of Experimental Group Regarding Barriers to Critical Thinking

Table 7. Pre and Post-Tests of Experimental Group on Barriers to Critical Thinking and its Sub-dimensions

	Pre and Post-Tests of Experimental Group on Barriers to Critical Thinking and its Sub-dimensions - Wilcoxon Test				
	Tests	N	Mean Rank	WILCOXON(Z)	p-value
General Critical Thinking Barriers	Experimental Gr. Posttest – Pretest	Neg. 12a Pos. 10b Ties 1c Total 23	13,71 8,85	-1,235a	0,217
In-class Process	Experimental Gr. Posttest – Pretest	Neg.10a Pos. 13b Ties 0c Total 23	14,45 10,12	-,198a	0,843
Commitment to Authority	Experimental Gr. Posttest – Pretest	Neg. 11a Pos. 12b Ties 0c Total 23	12,14 11,88	-,137b	0,891
In-class Communication	Experimental Gr. Posttest – Pretest	Neg. 12a Pos. 6b Ties 5c Total 23	9,33 9,83	-1,180a	0,238
Social Pressure	Experimental Gr. Posttest – Pretest	Neg. 10a Pos. 13b Ties 0c Total 23	15,20 9,54	-,430a	0,667
Self-confidence	Experimental Gr. Posttest – Pretest	Neg. 11a Pos. 10b Ties 2c	11,82 10,10	-,508a	0,612

		Total 23			
Environmental Rules	Experimental Gr. Posttest – Pretest	Neg. 13a Pos. 7b Ties 3c Total 23	10,92 9,71	-1,395a	0,163

a. posttest value<pretest value
b. posttest value > pretest value
c. posttest value = pretest value

Within the scope of barriers to critical thinking and its sub-dimensions, the result of the pre- and post-test evaluation analysis of the experimental group does not show any significant difference between the pre-test and the post-test. As a result of the detailed rank value averages examinations, the following conclusions can be reached: There is an increase in the "in-class process", "commitment to authority" and "social pressure" barriers of the experimental group participants, and a decrease in their "in-class communication," "self-confidence" and "environmental rules" barriers as well as the "general barriers to critical thinking" factor. The barriers that have increased are the ones that are dependent on others, external factors; therefore, the reason behind not overcoming these barriers can be attributed to lack of extracurricular activities.

Pre and Post-Test Findings of Control Group Regarding Barriers to Critical Thinking

Table 8. Pre and Post-Tests of Control Group on Barriers to Critical Thinking and its Sub-dimensions

Pre and Post-Tests of Control Group on Barriers to Critical Thinking and its Sub-dimensions - Wilcoxon Test					
	Tests	N	Mean Rank	WILCOXON(Z)	p-value
General Critical Thinking Barriers	Control Group Posttest –Pretest	Neg. 16a Pos. 12b Ties 0c Total 28	12,91 16,63	-,080a	0,936
In-class Process	Control Group Posttest –Pretest	Neg.15a Pos. 13b Ties 0c Total 28	12,87 16,38	-,228b	0,820
Commitment to Authority	Control Group Posttest –Pretest	Neg. 15a Pos. 13b Ties 0c Total 28	13,97 15,12	-,148a	0,882
In-class Communication	Control Group Posttest –Pretest	Neg. 9a Pos. 10b Ties 9c Total 28	10,61 9,45	-,020a	0,984
Social Pressure	Control Group Posttest –Pretest	Neg. 17a Pos. 11b Ties 0c Total 28	15,82 12,45	-1,518a	0,129
Self-confidence	Control Group Posttest –Pretest	Neg. 8a Pos. 19b Ties 1c Total 28	13,88 14,05	-1,897b	0,058
Environmental Rules	Control Group Posttest –Pretest	Neg. 14a Pos. 10b Ties 4c Total 28	14,64 9,50	-1,582a	0,114

a. posttest value < pretest value
b. posttest value > pretest value
c. posttest value = pretest value

The statistical comparison between the pre and post tests of control group, as a result of the traditional training, showed no significant difference at the p≤0.05 significance level. Considering the rank values, following the 11-week traditional training process of the control group participants, the "in-class communication" barrier increased as well as the "self-confidence" barrier. In addition, there has been a decrease in the "in-class process," "commitment to authority," "social pressure" and "environmental rules." Moreover, there was a decrease in the "general barriers to critical thinking" factor of the participants. Based on the findings, it can be claimed that traditional education negatively affects the barriers concerning self-confidence as well as in-class communication of the individuals.

Findings Regarding the Effectiveness of Learning Activities Based on the Elimination of the Barriers to Critical Thinking

As a result of the focus group interview, under the comments made by the participants on "critical thinking," "barriers to critical thinking" and "the effects of the experimental study on removing the barriers to critical thinking," three main themes emerged: "the effects of the experimental study in removing the barriers to critical thinking,""the sources of the barriers to critical thinking," and "the requirements for critical thinking." The three themes and their sub-topics are as follows:
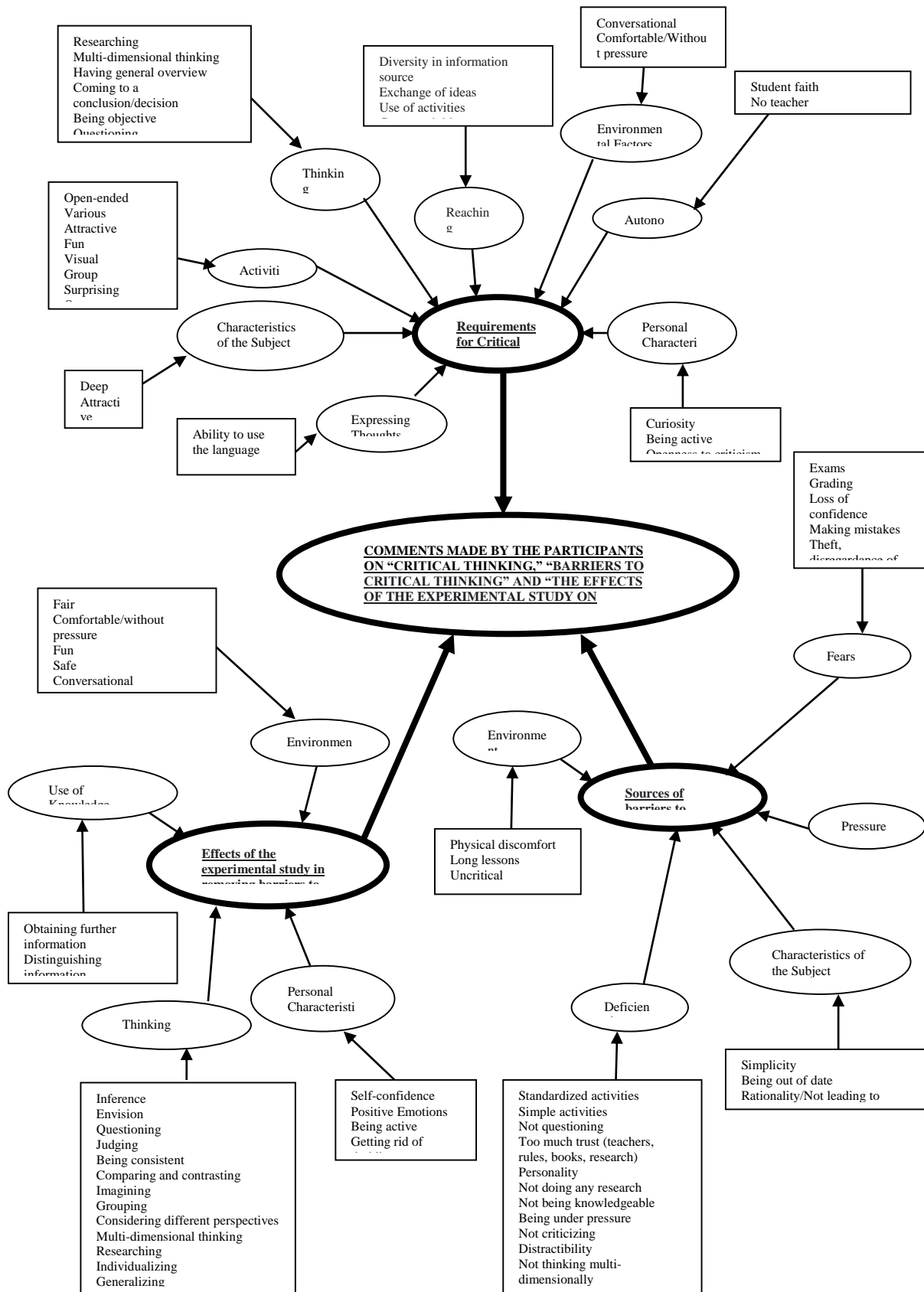
Figure 1: *Focus Group Interview Themes and Sub-themes*

Under the theme of "Requirements for critical thinking," the ideas the participants mostly pointed out are; *Reaching knowledge* (F = 20) through *student interaction* (F = 10) and *exchange of ideas* (F = 14); *use of activities* (F = 19), especially *group activities* (F = 5); and *thinking strategies* (F = 19) including *multi-dimensional thinking* (F = 7). Next, under the theme of "Source of barriers to critical thinking," the points that were especially emphasized were; *deficiencies* (F = 52) including *not questioning* (F=17), *too much trust* (F=11), *not being knowledgeable* (F=10) and *not doing any research* (F=8);*fears* (F = 13), especially on *being ignored* (F = 5); and *being under pressure*(F = 12).Lastly, when the "Effects of the activities used in the experimental study for removing the barriers to critical thinking" were considered, the answers revealed that the participants have developed on the following: *Thinking strategies* (F=68) including *evaluating different perspectives* (F=23), *multi-dimensional thinking* (F=12),*group thinking* (F=11), *questioning* (F=10) and *self-awareness* (F=9);and *self-confidence* (F = 16)in *expressing opinions* (F = 11); and *personal characteristics* (F = 58)especially in the context of affecting *emotions* (F=39) related to *respect for differences* (F = 11).In addition to these, it was pointed out that *acquiring new and different information* (F=16) is quite effective in *information use* (F = 20) and that environment that is *entertaining* (F=9),*free of pressure* (F=9) and *suitable for integration* (F=9) are the most prominent features of the *environment* (F=29) factor.

The data obtained revealed that the activities made students gain awareness, questioning skills and research skills, and desire and need for detailed thinking, as well as making them learn how to express their ideas with self-confidence; as a group and by respecting each other.

4 | DISCUSSION & CONCLUSION

In order to think critically, identifying and eliminating the barriers that hinder it is an important step. Therefore, the results of the study have been conducted in this direction and discussed together with the literature:

At the end of the experimental process, it was determined that the barriers to critical thinking of both the experimental and control group participants regressed. Although there was a regression in the barriers of both groups, the barriers of the control group were found to be slightly higher than the experimental group. Elimination of the barriers to critical thinking takes place through the use of strategies used in education and critical thinking strategies used in activities (Vieira et al., 2011). It is necessary to encourage students to think and question, while avoiding traditional activities and training including repetition, rote learning, and memorization as they inhibit reasoning and critical thinking (Halpern, 1997). At this point, it can be concluded that the 11-week experimental study process aimed at removing the barriers to critical thinking was a right step towards eliminating the barriers to critical thinking on the experimental group.

As a result of the barriers to critical thinking pre and post statistical comparison of the experimental group, the in-class process as well as the authority and societal barriers, that can be considered as barriers related to external commitment, were found to be problematic and these barriers increased even more in the 11-week period. Considering that these barriers are characteristics that will be affected by the general upbringing processes of individuals, the intensity and manner of including critical thinking in other subjects, and extracurricular activities, it is understandable that these barriers cannot be overcome. According to Pogrow (1998) a problematic situation of external commitment barriers can be due to the most high-level thinking activities being independent from classroom activities. Thus, directing students to extracurricular social and cultural activities would develop critical thinking (Aybek, 2006; Li & Zhang, 2013). Similarly, Shcheglova et al. (2019) suggested that academic, research and extracurricular engagement of individuals are positively associated with critical thinking skills. Therefore, it can be concluded that extracurricular activities would be effective in eliminating students' out-of-class barriers.

As a result of the experimental study, although there were no significant differences, results were obtained in favor of the experimental group. This situation can be attributed to some reasons. The 11-week training that the participants were exposed to can be inadequate. Critical thinking is more effective when it is used beginning from an early age. Although it has certain effect as the age progresses, its development decreases (Dewey, 1957; Thompson, 2011); and it requires rather long time for teaching it (Baker & Rudd, 2001; Chabanchi & Behrooznia, 2014; Coughlan, 2008; Fell & Lukianova, 2015; Moon, 2008, 95; Pogrow, 1988; Shor, 1980). The present study lasted 11 weeks and 4 hours a week; such an education should be planned in earlier years and for a longer period in order to obtain more effective results (Akbıyık & Seferoğlu, 2006). Similarly, according to some research results, critical thinking is an important goal that should start from primary education and continue until university,

but university education alone has little effect on making students creative and critical thinkers (Baker and Rudd, 2001). Also, the present study was done only within the scope of writing. The need for similar activities to be included in the whole education process (Gibson, 1995; Gul et al, 2010; Vong & Kaewurai, 2017) within multiplicity of disciplines (Dekker, 2020) and even to be used in other areas of individuals' lives (Pogrow, 1988) is another limitation of the study. Also, in addition to the writing course, which can be considered as a way of expressing the knowledge that students have acquired, directing students to critical thinking in "reading," "listening," "speaking" and "grammar" lessons is a practice that would support them to learn and internalize this skill better. Ultimately, for critical thinking to be successful, it is important that not a single course, but the entire educational process is planned accordingly (Baker & Rudd, 2001), and that it requires a certain time to be successful in learning and internalizing it.

When the control group data were examined, it was determined that the participants' self-confidence barriers increased as a result of the ongoing education process. When examining the status of other barriers, it was decided that although some barriers had dropped, none of them were significant. In short, it can be concluded that traditional, structure-based teaching process focusing on grammar, use of vocabulary and rules does not have any positive effects on lowering participants' barriers to critical thinking. Therefore, it can be interpreted as being insufficient to make individuals critical thinkers, and to remove their critical thinking barriers, and the education system should be reorganized according to today's conditions and requirements, according to the needs of students and society (Dam & Volman, 2004; Garrison, 2002). Besides, there is a need of educating individuals to think critically (Dekker, 2020; Gul et al., 2010; Vong & Kaewurai, 2017; Wilson, 2016) and this is one of the main objectives of education, which at the same time would mean supporting individuals to reduce and/or eliminate their barriers to critical thinking.

The data collected as a result of the interviews have provided some clues about the participants' critical thinking, barriers to critical thinking and the effect of the activities on eliminating these barriers. Firstly, when the opinions of the participants on "critical thinking and its requirements" are considered, it is noteworthy that the participants especially emphasized group work activities, communication, information exchange through activities, and multi-dimensional thinking by evaluating different perspectives and possibilities. Developing different perspectives, being open to alternatives and considering new values are among the values that individuals should use while thinking critically. Halpern (2003) also emphasized the need for critical thinkers to be good at communication and consensus.

Besides, the importance of class discussions, panels, group projects and other similar active learning activities that include multi-dimensional thinking and group work, in developing critical thinking has been demonstrated by various researchers (Gibson, 1995; Vieira et al., 2011). Similarly, the importance of individuals' involvement in collaborative work in terms of developing critical thinking has been emphasized (Huang et al, 2017; Klimoviene et al., 2006; Smith, 1990; Swartz, 2002, 73).

The comments made by the participants on "barriers to critical thinking" reveal that barriers to critical thinking are mostly caused by fears, social pressure, and thinking deficiencies. It is also stated in the literature that pressure, fear and thinking deficiencies are among the barriers to critical thinking. "Fear" is a condition that can be discussed under the heading of emotion, causing individuals to be distracted and unable to think rationally (Chaffee, 1999, 513; Moore & Parker, 2009, 200; Nosich, 2012, 22). "Social pressure/impact" is the conscious or unconscious orientation of individuals by the environment which results in individuals' inability to question as they can't do or don't prefer to (Dewey, 1957, 14; Ennis, 1996, 57; Moore & Parker, 2009, 200; Sarıgül, 2005, 39; Shor, 1980, 241). Therefore, "thinking deficiencies" is a situation that keeps individuals away from questioning due to their experiences and lack of knowledge (Carrol, 2004, 12; Gambril, 2005, 499; Paul & Elder, 2006, 4; Sarıgül, 2005, 38).

Finally, the participants' comments on "the effect of the activities for eliminating the barriers to critical thinking" were discussed. As a result of the comments, the participants claimed the activities to be good for the following: Directing individuals to questioning, research and raising awareness; developing desire and need to think in detail; enabling individuals to act with the group, to respect others and to take different people and ideas into consideration; developing self-confidence; and giving comfort of expressing one's ideas. When the effects

stated by the participants are examined, it is seen that the obtained effects are among the critical thinking characteristics. Each of "questioning" (Aybek, 2007, 10; Brookfield, 1997, 7-9; D'Angelo, 2001, 308), "self-confidence / ease of expressing ideas" (Brookfield, 1997, 114; Paul et al., 1990, 59-61; Zhang, 2003, 517), "respecting the other" (Akınoğlu, 2003, 16; Brookfield, 1997, 114; Chaffee, 1997, 62; Coughlan, 2008, 8-9; Norris, 1985, 40); "awareness" (Chaffee, 1996, 47; Coughlan, 2008, 8-9; Cüceloğlu, 1994, 216; Halpern, 1997, 5; Moore & Parker, 2009, 3; Reed, 1998, 91), and " research "(Brookfield, 1997, 7-9; Zhang, 2003, 517), and "taking action with the group (collaborative work)" (Huang et al, 2017, 214; Klimoviene et al., 2006, 82; Swartz, 2002, 73) that participants claim to have developed in them are needed in critical thinking.

As a result, although the process aimed at removing the barriers to critical thinking was not statistically significant, considering the further statistical analyses and the interview conducted, it can be concluded that the process of integrating critical thinking activities evoked positive tendency in students towards eliminating the obstacles before critical thinking. This shows that the only thing that can remove the problems in front of thinking is again thinking. Therefore, determining the barriers in front of critical thinking and then determining the appropriate actions to overcome these barriers can be claimed to be beneficial in the development of critical thinking skills.

The current study which aimed at removing the barriers to critical thinking fills a gap in the literature by bringing in a questionnaire to reveal individuals' barriers to critical thinking that can be worked on within in-class process, and it can also be taken as a good starting point for future studies in terms of developing critical thinking skills in individuals.

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Declaration of Conflict of Interest

This study does not have any conflict of interest.

Researchers' Contribution Rate

Authors	Literature review	Method	Data Collection	Data Analysis	Results	Conclusion
Özlem Miraç Özkaya	☒	☒	☒	☒	☒	☒
Nuriye Semerci	☐	☒	☐	☒	☐	☐

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APPENDIX-1

Critical Thinking Barriers Scale

Rate your level of agreement with each statement by marking the most appropriate choice. 1 (Strongly Disagree) ------------ 5 (Strongly Agree)	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
	(1)	(2)	(3)	(4)	(5)
1. I obey the classroom rules without questioning.					
2. I cannot express myself in the lesson as I am afraid of making mistakes.					
3. I cannot think efficiently within stressful classroom environment.					
4. The teacher's positive reinforcement supports my thinking.					
5. I am open to new ideas.					
6. Being able to ask questions in the classroom comfortably supports my thinking.					
7. The teacher giving hints about the questions asked in the lessons supports my thinking.					
8. Effective lessons (student-centered, active, etc.) support my thinking..					
9. I cannot think when I feel the pressure of my friends.					
10. Being ridiculed in the classroom effects my thinking negatively.					
11. I am open to innovations.					
12. Effective use of time (having enough time to ask and answer questions, etc.) supports my thinking.					
13. Feeling safe in the classroom supports my thinking.					
14. I am curious about new facts.					
15. I accept new ideas without questioning.					
16. I don't question my teachers.					
17. The teacher's teaching style (variety of techniques, activities, way of teaching, questioning, etc.) supports my thinking.					
18. The teacher's expectations support my thinking.					
19. The teacher giving me right to speak supports my thinking.					
20. Feeling comfortable in the classroom supports my thinking.					
21. I cannot think when I feel my teacher's pressure.					
22. I agree with what the majority says.					
23. I can defend my ideas.					
24. I support my friend's ideas without questioning.					
25. I question the data I come across in order to reach the right information while doing extracurricular activities such as homework, projects, educational activities, etc.					

26. Being informed about the objectives of the courses supports my thinking.					
27. Feeling free in the classroom supports my thinking.					
28. Teacher's feedback in the lessons (informing the student about his/her success, level and failure) supports my thinking.					
29. My friends' attitudes towards me supports my thinking.					
30. Thinking process bores me.					
31. I obey the rules in the environments I am in without questioning.					
32. I support my friend's actions without questioning.					
33. The teacher's behaving according to student psychology eases my thinking.					
34. I am afraid of being ignorant among others.					
35. Knowledge of teachers on the subjects supports my thinking.					
36. Appropriateness of classroom lighting supports my thinking.					
37. I am a sociable person.					
38. I try to be informed about the topics that are important to me.					
39. I don't consider ideas other than my own.					
40. I obey the school rules without questioning.					