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The Effect of Classroom Debate Activities on Pre-service Teachers' Argumentativeness

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Abstract

The aim of this study is to examine the effect of classroom debate activities on the argumentativeness of Turkish language teacher candidates. The study group of the research consists of 29 freshman students in the Turkish Language Teaching program. Designed in mixed method, in this study Argumentativeness Scale and Semi-Structured Interview Form were used as data collection tools. The application process of the study took a total five weeks. For the analysis of the quantitative data which was obtained through the Argumentativeness Scale, the pre and post-test scores were compared using the t-test. However, at the end of the application, the opinions of the students were taken through the semi-structured interview form and these data were analyzed using the content analysis technique. As a result of the research, it was determined that there is a significant difference between the argumentativeness pre-test scores and post-test scores of the study group. The findings obtained from the interviews also confirmed that there is a difference in the argumentativeness of the teacher candidates. As a result, it was seen that classroom debate activities carried out in accordance with the rules can motivate prospective teachers to do discussions and reduce their anxiety and fear of discussions. In addition to this, according to the findings, debate activities encourage students to do research, create a competitive environment in the classroom and ensure active participation in the lessons. In line with the research results, suggestions for classroom discussion practices and suggestions for future research have been presented.

Keywords: debate activities, argumentativeness, discussion skills.

1. Introduction

Discussion involves the processes of dealing with an issue, expressing it with its positive and negative aspects, and presenting it with support and evidence (Kinneavy, 1971). Kuhn (1991) considered discussion as a necessary skill for generating ideas and problem solving. Turunç, Eser and Dinç (2018) emphasize that debate is of vital importance for the development of thought. Discussions can enable people to apply different mental processes, compare their thoughts with those of others', and learn the functioning of thinking processes (Güneş, 2012). Vázquez (2002) stated that the discussion is the result of mental reasoning whether in written or verbal format. Brookfield and Preskill (2005) emphasized that discussion is a way of teaching and is important for creating a democratic classroom environment. Discussion is an important process for generating ideas and solving problems in these aspects.

Involving students in discussions deliberately has been accepted as a teaching method that serves various purposes from elementary school to higher education by educators (Brookfield & Preskill, 2005; Kuhn, Wang & Li, 2010). Gall and Gillett (1980) state that the discussion is a technique used by teachers for many different purposes such as helping students understand the subject better, improving their problem-solving skills, and teaching them to respect others. Discussion is one of the techniques recommended by educators for improving thinking skills. In curriculums, it is projected that the students share their opinions and thoughts, and learn new ideas by discussing them (Güneş, 2012). Gall and Gillett (1980) stated that discussion is a method that not only supports teacher-student interaction, but it also triggers students to learn from each other in the classroom, so teachers and students should be trained to use discussion skills. Discussion is an essential technique for mental development and interaction between the students and teachers. Discussions practiced in accordance with rules also mediate the parties to learn from each other.

Discussions conducted in accordance with rules in the classroom can encourage students' participation in the lesson. Since discussion is a reciprocal action, it is an effective method to ensure students' active participation. As a matter of fact, Tokdemir (2013) found in his study that the discussion method promotes students' participation skills and encourages them to do research. In addition, discussions practiced in accordance with rules will support speaking and writing skills. Although discussion is an activity that can be performed verbally or in writing, it is usually carried out through verbal speaking and listening skills. Discussion method, in which speaking and listening skills are actively used, contributes to speaking and listening skills in that sense. It promotes attentive and respectful listening. Dallimore, Hertenstein and Platt (2008) emphasized that discussion is a very useful method that can be used to improve oral and written communication skills. Tokdemir (2013) stated that the discussion method supports the communication and interpretation skills of the students.

Classroom discussions can provide interest and motivation regarding the topic. Discussion can be carried out individually or as a group. By any means, the person has views that the s/he defends or will defend individually or as a group. This situation allows the debater to do more research on the subject and be more interested in the subject. Hence, Huerta (2007) stated that discussion supports active participation. Besides, discussions in classroom environment provide an opportunity to look at the subject from different perspectives. There is always room for different opinions and ideas in a discussion. Pollock, Hamann and Wilson (2011) stated that in the literature, discussion is emphasized as a method that can be used to develop students' critical thinking skills.

With that being said, discussion is a method that can contribute to educational environments in many aspects such as encouraging coming to the lessons prepared, developing cooperative learning, promoting research, and teaching to listen on the basis of respect. Developing the teacher candidates' communication and discussion skills and so that they can use this in the classroom will increase the effectiveness of the education. For this reason, effective communication should be established in educational settings and discussion method should be used within the limitations (Ocak, Karakuş & Ocak, 2018). In their research, Ocak, Karakuş and Ocak (2018) examined the relationship between the communication skills and discussion skills of prospective teachers and concluded that there is a positive significant relationship between communication skills and discussion skills, and communication skills are an important predictor of discussion skills. From this aspect, it can be said that discussion, which is a communication type, is a method that can be used to strengthen students' communication skills.

In discussions, methods such as small group discussions, large group discussions, forums, seminars, six thinking hats, six action shoes, circle technique, opposite panel, panel discussions, debates etc. can be used (Demir, Şahin & Tutkun, 2016). Debate is one of the methods that can be used to discuss in lessons and to improve democracy in the classroom (Demir, Şahin

& Tutkun, 2016). Debate technique emerges as one of the techniques frequently used in discussions. Although there are many different ways of practice, debates are generally a discussion technique in which two groups who advocate opposing opinions on a topic defend their opinions in front of a jury within the framework of certain rules.

Debates attract students' attention because of they are of a competitive nature. In addition to this, it is a useful technique in terms of improving students' oratory skills, boosting their self-confidence, and seeing the different aspects of a subject. During debates, students can also defend opinions that they do not agree with or that they do not believe to be correct (Tokdemir, 2013). During discussions in the form of debates, students take sides on the relevant issue. They identify and discuss their views around the question. In this aspect, the aim is not to reach the truth but to win the discussion. For this purpose, while the students strengthen their own views, they make an effort to find the weaknesses of the other side (Kuhn, 1991).

Discussion, a democratic activity, is peculiar to people. Schools are responsible for providing students with democratic discussion attitudes and behaviors. Learning and developing to think without thinking, and to criticize without criticizing is not just difficult but impossible. An effective way to overcome this impossibility is the use of discussions in educational activities. Individuals should be allowed to learn to discuss by doing, experiencing, and observing (Yeşil, 2004). The argumentativeness of people has a very important place for the materialization of quality discussion activities both in the classroom and in all social settings. Thus, the attitudes of the people taking part in discussions are an important factor in the initiation and continuation of the discussions with due regard.

Argumentativeness refers to the characteristic of the individual in the communication process that represents the individual's tendency to defend his/her position and verbally attack the position of the other party regarding controversial issues (Infante & Rancer, 1982). It is suggested that individuals with strong argumentativeness have lower motivation to avoid discussions and have higher tendencies to argue (as cited in Turunç, Eser & Dinç, 2018). While the individual with higher argumentativeness trusts his/her ability to discuss to a great extent, the one with low trust cannot depend on this ability much (Infante & Rancer, 1982). Infante, Trebing, Shepherd and Seeds (1984) emphasized that there is a relationship between argumentativeness and verbal aggression by stating that verbal aggression can mainly result from a lack of discussion skills. Therefore, it is important to develop the argumentativeness of the students and help them develop a discussion culture.

The general purpose of this study is to reveal the effect of the debates held in the classroom environment on the argumentativeness of Turkish teacher candidates. In line with this general purpose, answers to the following questions are looked for:

1. Is there a significant difference between the pre-test and post-test scores that the pre-service teachers got from the overall argumentativeness scale?
 - 1.1. Is there a significant difference between the pre-test and post-test scores of the pre-service teachers' argumentativeness in terms of approach dimension, which is a sub-dimension of the argumentativeness scale?
 - 1.2. Is there a significant difference between the pre-test and post-test scores of the pre-service teachers' argumentativeness in terms of avoidance dimension, which is a sub-dimension of the argumentativeness scale?
2. What are the opinions of the teacher candidates on the effects of debates on their own argumentativeness?

2. Method

This research was designed in a mixed method in which qualitative and quantitative approaches are both used. The mixed method research enables the use of qualitative and quantitative approaches together (Creswell & Clark, 2018). The mixed method is preferred here because the aim is to reach detailed and reliable results using both qualitative and quantitative data in the study.

First of all, quantitative data was collected in the research. Then, it was attempted to explain the quantitative data using the qualitative data. For this reason, sequential descriptive design was used which can be used in mixed method research. In sequential descriptive design, quantitative data is reviewed first. After the quantitative data, usually the qualitative data is used to explain and expand on the quantitative data. The analysis of the quantitative and qualitative data collected is interpreted in relation to each other and for this reason; these data sets are combined in the commentary and discussion sections (Creswell & Clark, 2018).

2.1 Study group

29 students that were registered at a state university in Turkey during the fall semester of 2019-2020 academic year constitute the study group of this research. There is only one group since the quantitative aspect of the research is designed in a single group pre-test/post-test quasi-experimental design. Convenience sampling method was used to determine the study group in the study. In the convenience sampling method, the study group is selected based on its proximity to the researcher and convenience of accessibility (Creswell & Clark, 2018).

2.2 Data collection tools

The Argumentativeness Scale: Originally developed by Infante and Rancer (1982), the validation study of the Argumentativeness Scale's Turkish version was carried out by Turunç, Eser and Dinç (2018). Within this scope, the scale was translated into Turkish using the translation and back-translation method, and it was applied to a total of 1561 university students, 997 of which were females and 564 were males. The scale was tested by making comparisons with exploratory and confirmatory factor analyses and internal consistency analysis applied at different times in two separate samples. As a result of the exploratory factor analysis, two dimensions (Tendency to Avoid Arguments and Tendency to Approach Arguments) of the Abbreviated Argumentativeness Scale compatible with the original were confirmed in both female and male student samples. As a result of the analyses carried out, it was determined that the abbreviated 10-item form of the argumentativeness scale is a reliable and valid measurement tool, and it consists of two sub-dimensions as approach and avoidance. In addition, Cronbach Alpha, which indicates the internal consistency of this scale, was calculated as .71 (Turunç, Eser & Dinç, 2018). The Cronbach Alpha Coefficient of the scale obtained in this study was determined as .70.

Semi-Structured Interview Form: The semi-structured interview form that has been developed aims to reveal the effect of classroom debates on pre-service teachers' argumentativeness. This interview form, which was prepared by the researcher(s) in order to reveal the effects of classroom discussions on students' argumentativeness, was finalized after receiving opinions from two field experts. There are a total of two open-ended questions in the semi-structured interview form.

2.3 Data collection procedure

In the data collection process of the study, the Argumentativeness Scale, which was developed by Infante and Rancer (1982), and validity and reliability study of which was conducted by Turunç, Eser and Dinç (2018) were applied to the study group as a pre-test before the in-class discussion practices were initiated during the data collection process. After the pre-test application, debates were held with the students within the framework of the curriculum, one day a week, for a total of 5 weeks. It was ensured that each student took part in at least one debate activity for 5 weeks. At the end of the 5-week process, the argumentativeness scale was applied to the students as a post-test, and then their views on the effects of the debates on their argumentativeness were taken through the semi-structured interview form developed by the researcher. These interviews were recorded using a voice recorder. The research was conducted as part of Turkish Language 1 course in the fall semester of the 2019-2020 academic year.

2.4 Experimental process

The steps of the experimental process conducted in four stages are presented in Figure 1 below.

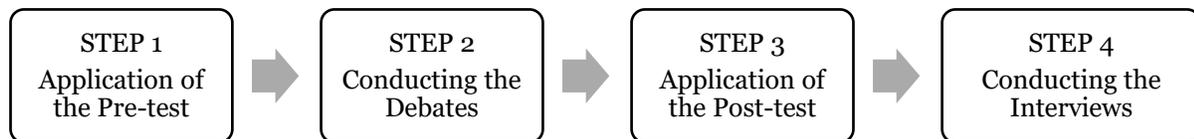


Figure 1. Schematic representation of the experimental process

In the first stage of the experimental, a pre-test was applied to the study group. Students were asked to answer the Argumentativeness Scale in a way reflecting the reality. The data obtained from the Students' Argumentativeness Scale was processed as pre-test scores.

In the second phase, debates were held with the students for 2 hours a week for 5 weeks. At the beginning of the debates and throughout the process, students were often reminded of the rules to be followed in the discussions. It was made sure that each student was included in at least one debate group. A debate was held each week, with two groups supporting one opinion each and two opposing groups debating each other. However, a fixed jury was determined and after the debates, the jury made their evaluations. The first stage of the debates was group discussions, and the last stage was the question-answer stage.

In the third step, the post-test application was carried out with the study group. In the post-test, the data was obtained by using the Argumentativeness Scale as in the pre-test. The data obtained from the scale was processed as the post-test.

In the fourth step, the interview technique was used by utilizing the semi-structured interview form developed by the researcher in order to obtain the qualitative data of the study. The interviews were recorded on a voice recorder and transferred to written media. The data transferred to the written media was analyzed using the content analysis technique.

The research lasted for a total of eight weeks, including one week of pre-tests, five weeks of classroom debate activities, and two weeks of post-tests and interviews.

2.5 Data analysis

For the analysis of quantitative data, numerical data obtained through the Argumentativeness Scale was used. It was checked whether there was a significant difference between the group's pre-test and post-test argumentativeness scores. In order to determine whether pre-test and post-test scores of pre-service teachers differ in general and according to the sub-dimensions of the scale, dependent samples t-test was applied. In the analysis of qualitative data, the data obtained through a semi-structured interview form and the data recorded with the help of a voice recording device which was transferred to written media were analyzed using the content analysis technique. A qualitative research program was utilized for the content analysis.

3. Results

This section includes the findings obtained in accordance with the aims of the research.

3.1 Findings regarding the quantitative dimension of the study

Whether the data obtained in the study showed normal distribution was analyzed using the Shapiro-Wilk test. The findings are presented in Table 1.

Table 1. Argumentativeness scale Shapiro-Wilk test results

		Statistics	SD	p
Argumentativeness Scale	Pre-test	.932	29	.063
	Post-test	.969	29	.533

When Table 1 is examined, it is seen that each data set has a normal distribution ($p > .05$). The normal distribution of the pre-test and post-test data sets means that parametric tests (t-tests) can be applied to the data. For this reason, in the study, whether there is a significant difference between the students' argumentativeness scale pre-test and post-test mean scores was examined using the dependent sample t-test and the results were given in tables.

Table 2. Paired sample t-test results of tendency to avoid arguments dimension pre and post-test average scores

		N	Mean	S	SD	t	p
Tendency to Avoid Arguments	Pre-test	29	2.91	.67	28	2.83	.001
	Post-test	29	2.36	.42			

Upon examining Table 2, it is seen that there is a negative significant difference between the tendency to avoid arguments dimension pre-test and post-test scores, which form a sub-dimension of the pre-service teachers' argumentativeness scale ($t_{28} = 2.83$; $p = .001 < .05$). This shows that classroom debating activities contributed to the decrease in pre-service teachers' tendency to avoid arguments.

Tendency to approach arguments is another dimension of the Argumentativeness Scale. The results of the t-test for tendency to approach arguments dimension are presented in Table 3:

Table 3. Dependent sample t-test results of tendency to approach arguments dimension pre and post-test average scores

		N	Mean	S	SD	t	p
Tendency to Approach Arguments	Pre-test	29	3.40	.82	28	-2.27	.031
	Post-test	29	3.77	.64			

Upon examining Table 3, it is seen that there is a positive significant difference between the tendency to approach arguments dimension pre-test and post-test scores, which form a dimension of the pre-service teachers' argumentativeness scale ($t_{28}=-2.27$; $p=.031<.05$). This shows that classroom debate activities are effective in encouraging prospective teachers to do argument.

3.1 Findings regarding the qualitative dimension of the study

In this aspect of the research, the findings and results obtained from the interviews with 8 of the students participating in the research are included. The data obtained in the qualitative aspect of the research was analyzed using the content analysis technique. The following figure was created in accordance with the data obtained:

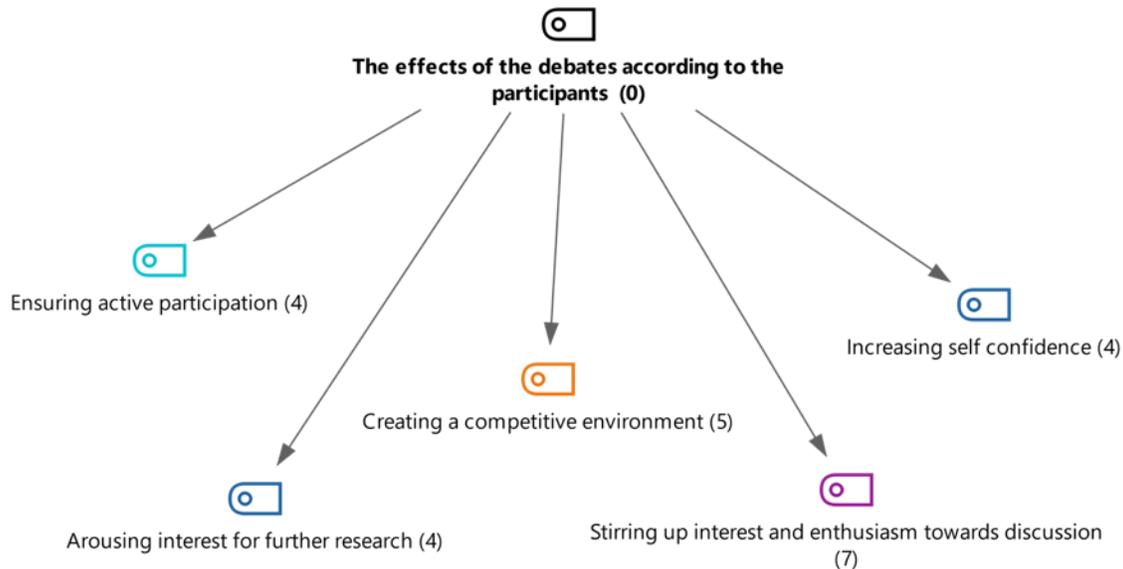


Figure 2. The effect of the debate activities according to the participant

Some of the opinions of the participants who stated that the debates encourage them to discuss and do research, increase their self-confidence, create a competitive environment, and enable them to participate actively in the class are as follows:

“Before the debates were held, since the topics of discussion were known, we did some reading and research with our friends. The debate events created a nice environment for us to express our thoughts. Thanks to these events, we expressed our thoughts easily.” (Participant 1)

“As I attended the debates, I realized that there was nothing to be afraid of. This situation encouraged me.” (Participant 4)

“The debates helped us learn about the subjects. That was because we had to gather information on the subject before the debates were held. Therefore, this situation enabled us to be knowledgeable about the subject. I think that as our knowledge on the subject increases, our willingness to participate in discussions also increases.” (Participant 5)

“With the help of these debates, I learned how to do research while getting ready to debate, the points that I should pay attention to while defending my views, how to be respectful to the other party's views, and how to express myself. Therefore, these debates showed me very clearly that I should not avoid discussions and should not hesitate to express my views.” (Participant 6)

“All of our friends have attended the debates that we have organized. At this point, I think debates encourage active participation. There was a fun atmosphere in the classroom. I can say that the more I see my friends participate in the discussions, the more I will be willing to discuss.” (Participant 7)

“These debates we have organized had a positive effect on my argumentativeness. Before these debates, I would hesitate to discuss, to be involved in any discussion, and try to stay away as much as possible, but now I do not hesitate and say that if I think an idea is really true, I will defend and support it till the end.” (Participant 8)

4. Discussion

According to the findings of the research, debate activities organized in the classroom in accordance with rules encourage students to do research, participate in the lesson and discuss. Therefore, classroom debate activities organized within a framework of the rules and purposes can be useful in encouraging students who avoid discussion. Göçmez (2016) stated that discussion methods, especially debate technique, are used very little in education. It will especially be beneficial to use the discussion methods, specifically the debate technique, effectively in classroom settings. As a matter of fact, Göçmez (2016) stated in his study that the group that had their lessons using the debate technique showed a positive improvement in terms of course success and critical thinking skills compared to the group that had their lessons using traditional methods. The findings of this study also showed that debate activities can encourage students to discuss, thus encouraging active participation. Considering the importance of active participation in education, the significance of discussion techniques with the participation of students can be understood better.

In his study, Sarıgöz (2013) stated that the discussion method is a method that can improve students' listening, generating ideas, questioning, and evaluation skills. Findings obtained in this study also showed that debate activities can be useful for students to develop self-confidence, create a competitive environment, and actively participate in the lesson. Infante and Rancer (1982) stated that an individual who develops an argument will experience a sense of accomplishment. In this study, it was seen that discussions in which arguments are put forward can increase students' self-confidence. The findings of this study also showed that the debating technique can be effective in developing students' argumentativeness. In addition to all these, the findings of the study conducted by Cin Şeker (2020) showed that Turkish teachers' attitudes towards discussion skills differ according to the number of books read. According to the findings of this study, Turkish teacher candidates who read 5-6 or more books a month have more positive attitudes towards their discussion skills.

According to the results of the research, debates for which students get to prepare beforehand encourage students to do research on the subject. This situation contributes to the students' ability to express their opinions on the subject and to participate in the discussions. This result of the research matches up with the study carried out by Tokdemir (2013). As a matter of fact, Tokdemir also reached the conclusion in his research that the discussion method motivates students to do research. However, Göçmez (2016) stated that the debates encourage students to do research and that the topics of the debate should be announced to them at least two weeks in advance in order for them to be able to do research. The findings obtained in this study also support the opinions expressed by Göçmez (2016) and Tokdemir (2013). Therefore, it can be said that one of the techniques that can be used in education to encourage students to do research on a subject is debate. However, before the debates are held, the topics for the debate and the dates for the debates should be determined in advance so that the students can do enough research on the subject.

5. Conclusions

According to the results of the research, debates create a competitive and challenging environment in the classroom which encourages students to participate in the discussions. After participating in discussions several times, the fear and anxiety felt by the students about participating in discussions decreases. Debates organized for the active participation of students can prevent their fear and anxiety towards participating in discussions as they positively affect each other. As a matter of fact, the students stated that their anxiety and fear diminished as they witnessed the discussions done by their friends during their interviews. For this reason, doing discussion practices frequently in educational environments will help prevent students' anxiety towards discussions.

The findings of the research showed that discussion technique, in general, and debate technique, in particular, can be used in order to ensure active participation in the lesson in educational environments, so that the students develop discussion attitudes and gain a culture of discussion. However, when discussion techniques are used, it will be beneficial to provide students with training on this subject. Otherwise, unwanted situations may happen during discussions. The findings of the research show that the argumentativeness can be improved. For this reason, it is important to investigate what other practices can be used to develop discussion attitudes in educational environments, and to create democratic classroom environments.

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References

- Brookfield, S. D., & Preskill, S. (2005). *Discussion as a way of teaching: Tools and techniques for democratic classrooms* (2nd edition). New York: Wiley.
- Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2016). *Bilimsel araştırma yöntemleri* [Scientific research methods]. Ankara: Pegem Akademi.
- Cin Şeker, Z. (2020). Attitudes of Turkish teacher candidates towards discussion. *Journal of Language and Linguistic Studies*, 16(2), 993-1005. <https://doi.org/10.17263/jlls.759355>
- Creswell, J. W., & Clark, V. L. P. (2018). *Karma yöntem araştırmaları tasarımı ve yürütülmesi* [Designing and conducting mixed methods research]. (Çev. Ed. Dede, Y. & Demir SB) Ankara: Anı Yayıncılık.
- Dallimore, E. J., Hertenstein, J. H., & Platt, M. B. (2008). Using discussion pedagogy to enhance oral and written communication skills. *College Teaching*, 56(3), 163-172. <https://doi.org/10.3200/CTCH.56.3.163-172>
- Demir, M. K., Şahin, Ç., & Tutkun, T. (2016). Sosyal bilgiler dersi için sınıf öğretmeni adaylarının münazara konusu oluşturma becerilerinin değerlendirilmesi [Analyzing candidate classroom teachers' skill of identifying a subject of debate in social studies course]. *Atatürk Üniversitesi Kazım Karabekir Eğitim Fakültesi Dergisi*, (32), 51-66. Retrieved from <https://dergipark.org.tr/en/pub/ataunikkefd/issue/26879/282678>.

- Gall, M. D., & Gillett, M. (1980). The discussion method in classroom teaching. *Theory Into Practice*, 19(2), 98-103. <https://doi.org/10.1080/0040584800954288>
- Göçmez, B. (2016). İlkokul 4. sınıf sosyal bilgiler dersinde münazara tekniğinin ders başarısı ve eleştirel düşünmeye etkisi [The effect of the debate technique in the primary school 4th-grade social sciences course on the coursesuccess and critical thinking]. Unpublished Master's Thesis, Çanakkale Onsekiz Mart Üniversitesi, Eğitim Bilimleri Enstitüsü, Çanakkale.
- Güneş, F. (2012). Öğrencilerin düşünme becerilerini geliştirme [Improving the thinking skills of students]. *Türklük Bilimi Araştırmaları*, (32), 127-146. Retrieved from <https://dergipark.org.tr/en/download/article-file/157123>.
- Hamilton, M. A., & Mineo, P. J. (2002). Argumentativeness and its effect on verbal aggressiveness: A meta-analytic review. In M. Allen, R. W. Preiss, B. M. Gayle & N. Burrell (Eds), *Interpersonal communication research: Advances through metaanalysis* (pp. 281-314). Mahwah, NJ: Lawrence Erlbaum.
- Huerta, J. C. (2007). Getting active in the large lecture. *Journal of Political Science Education*, 3(3), 237-249. <https://doi.org/10.1080/15512160701558224>
- Infante, D. A., & Rancer, A. S. (1982). A conceptualization and measure of argumentativeness. *Journal of Personality Assessment*, 46(1), 72-80. https://doi.org/10.1207/s15327752jpa4601_13
- Infante, D. A., Trebing, J. D., Shepherd, P. E., & Seeds, D. E. (1984). The relationship of argumentativeness to verbal aggression. *Southern Speech Communication Journal*, 50(1), 67-77. <https://doi.org/10.1080/10417948409372622>
- Kinneavy, J. A. (1971). *A theory of discourse: The aims of discourse*. Englewood Cliffs, NJ: Prentice Hall.
- Kuhn, D. (1991). *The skills of argument*. Cambridge, UK: Cambridge University Press.
- Kuhn, D., Wang, Y., & Li, H. (2010). Why argue? Developing understanding of the purposes and values of argumentive discourse. *Discourse processes*, 48(1), 26-49. <https://doi.org/10.1080/01638531003653344>
- Ocak, G., & Karakuş, G. (2015). Öğretmen adaylarının tartışma becerilerine yönelik tutumları [Pre-service teachers' attitudes towards the ability of discussion]. *Trakya University Journal of Social Science*, 17(2), 153-170. Retrieved from <https://dergipark.org.tr/en/download/article-file/321304>.
- Ocak, G., Karakuş, G., & Ocak, İ. (2018). Öğretmen adaylarının tartışma becerileri ile iletişim becerileri arasındaki ilişkinin incelenmesi [Investigating the relationship between discussion and communication skills of pre-service teachers]. *Trakya University Journal of Social Science*, 20(1). <https://doi.org/10.26468/trakyasobed.437704>
- Pollock, P. H., Hamann, K., & Wilson, B. M. (2011). Learning through discussions: Comparing the benefits of small-group and large-class settings. *Journal of Political Science Education*, 7(1), 48-64. <https://doi.org/10.1080/15512169.2011.539913>
- Sarıgöz, O. (2013). Sınıfla ve grupla tartışma yöntemlerinin meslek yüksekokulu öğrencilerinin akademik başarılarına etkisi [Class and group discussion methods effect of higher vocational school students' academic achievement]. *Electronic Journal of Vocational Colleges*, 3, 100-106. Retrieved from <https://dergipark.org.tr/en/download/article-file/62560>.
- Tokdemir, M. A. (2013). *Ortaöğretim tarih dersinin öğretiminde tartışma yöntemine ilişkin öğretmenlerin görüş ve uygulamaları* [Teachers' opinions and applications for the use of discussion method in secondary history courses: Sample of Ankara]. Unpublished Dissertation, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara
- Turunç, Ö., Eser, H. B., & Dinç, M. (2018). Tartışmacı tutum ölçeği kısa formunun Türkçe geçerlilik ve güvenilirlik analizi [The analysis of Turkish validity and reliability on the short version of argumentativeness scale]. *OPUS–Uluslararası Toplum Araştırmaları Dergisi*, 9(16), 731-759. <https://doi.org/10.26466/opus.480175>

- Vázquez, S. M. (2002). Argumentative text: An instructional proposal. *Thinking: The Journal of Philosophy for Children*, 16(1), 18-22. <https://doi.org/10.5840/thinking20021614>
- Yeşil, R. (2004). Öğrenci ve öğretim elemanlarının tartışma tutum ve davranışları arasındaki ilişki [The relation between the discussion attitudes and behaviors of instructors and students]. *Gazi Üniversitesi Kırşehir Eğitim Fakültesi*, 5(2), 195-208. Retrieved from <https://dergipark.org.tr/en/download/article-file/1336988>.





“The Translanguaging Reader”: Investigating Primary Education Students’ Reading Strategies

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Abstract

Translanguaging has been placed at the center of the research and teaching activity over the last decade, while teachers seem to promote the use of all the linguistic resources of their students in classrooms with linguistic and cultural diversity. Among the best practices for promoting translanguaging and the flexible use of the students’ resources, reading multilingual texts is proposed as an important activity for students who are daily bombarded with a great variety of diverse stimuli. To clarify it more, students tend to come into contact with “texts” in every mode, that are not only offered in their L1 but they usually include and are written in various linguistic codes known or not to them. However, limited research has focused on such issues of reading a text with multilingual wealth, thus this was a major factor and reason behind this research initiative. This paper presents a study that aimed at investigating young learners’ reading strategies when approaching a multilingual text. More specifically, 27 primary education students of Greek origin were provided with two different types of multilingual texts and they were asked to complete a specifically designed record protocol reflecting on their reading behavior. At first, the students came across a text, which was given both in another language and in Greek while at a second phase, the students were encouraged to read a text in which different languages were used. Within this context, an attempt was made to identify the strategies of students prior to reading, while-reading and upon reading with the purpose to shed light into the multidimensional framework of reading a multilingual text. Following the processing of the data derived from the multidimensional research, it was revealed that students employed a great variety of reading strategies before they begin to read the text. Nevertheless, they did not seem to use while-and post-reading strategies to a great extent, when a multilingual text is given to them inciting more interest in raising students’ reading strategies through implementing educational activities.

Keywords: multilingual texts, reading strategies, translanguaging, young learners.

1. Towards an understanding of translanguaging

“*Translanguaging*” as a term was a later creation developed as a continuation of the Welsh *trawsieithu*, coined by Cen Williams (1994, 1996) and then translated into English as “*translinguifing*”. At initial stages, “translanguaging” referred to a pedagogical practice within a framework that students are encouraged to alternate languages for purposes of receptive and productive language use.

The performance of “*translanguaging*” refers to the use of the entire linguistic repertoire of the speakers, without being restricted to social and political boundaries (Otheguy et al., 2015). More specifically, translanguaging use implies the free process of developing and utilizing the entire language potential of bilingual and monolingual speakers. Within such a framework, teachers allow and encourage students not only to maintain and use their previous language practices, “*but also to expand them and develop new ones, thinking and reflecting on both languages*” (Garcia, 2014: 66). Besides, in her own study, Papadopoulou (2018a) emphasizes the need for the coexistence and utilization of all the practices and strategies of expression of other-language students in a modern and creative language class.

Essentially, the promotion of translanguaging is an important priority as it is closely intertwined with the multiple language practices and strategies used by bilingual speakers in order to communicate and interact with their environment (Papadopoulos, 2020), to make meanings (Daniel & Pacheco, 2015), to share their personal experiences (Wei, 2013), to gain and maximize their knowledge and to gain a deeper understanding of the bilingual environment in which they operate (Garcia, 2009a; Papadopoulou, 2018b).

Applying the pedagogy of translanguaging in the teaching practice can help students develop their languages, which are used in a holistic and coherent way (Cahyani et al., 2018). After all, translanguaging is used in the teaching practice, emphasizing both the positions of teachers and their practices regarding the use and utilization of students’ resources, so that they themselves can evaluate them in the context of their learning and interaction.

The promotion of translanguaging and the use of pedagogy of translanguaging have been shown to improve both the teaching and learning process (Creese & Blackledge, 2010). In this context, students have the opportunity to demonstrate what they know, while at the same time they can develop and activate ways of cultivating literacy (Garcia & Sylvan, 2011).

In such a context of promoting the use of students’ languages in the classroom, the student brings and “presents” different aspects of his personal history, experiences and elements of his environment, his attitude, faith and ideology, his cognitive and physical ability through a coordinated and meaningful performance (Hua et al., 2015: 1223).

After all, in such a multivocal context, students are encouraged to show a willingness to understand their relationships and perceptions, promoting a greater openness to meaningful negotiation trends (Flores & Jonathan, 2015) which has been receiving an increased attention from research and teaching perspective within the multicultural and multilingual context of the society and the school.

2. Translanguaging and multilingual text reading

Multilingual texts have been proposed as effective tools for promoting translanguaging in the school classrooms (Garcia & Wei, 2017). Multilingual texts can be texts that have been written in more than one language internally while there are cases, in which texts written in a particular language, are given in another language as well to facilitate students’ comprehension. This can serve beneficially for students as in this way, they are provided with various opportunities to strengthen all of their languages and develop their identities (Garcia, 2009).

Multilingual texts can be “*contact zones*” while their reading can be either comparative or contrastive in nature (Coldiron, 2015). In particular, when readers first come across a multilingual text, this calls for a prompt acknowledgment of alterity while this can be a source for further development of critical and creative thinking of the readers (Papadopoulos, 2020). However, it is very important to state that reading a multilingual text is seen as a skill that requires

“education, experience, imagination and a willingness to engage with the familiar and unfamiliar (Jones & Richards, 2015).

According to Blomaert (2005), multilingual texts are like “*poetic constructions*” and within this context, languages are not seen as separate and discrete systems but as a “whole” that allows and further helps the reader to achieve a better understanding of the text and its creation and meaning made. In other words, when a reader deal with a multilingual text, he/she is led to deal with the other people’s imagination us and this situation encourages him/her to see not behind the glosses of the people but through them (Geertz, 1983).

No matter how important reading a multilingual text is, research is quite limited in this field. According to Green (2002: 42), “*Reading is a sociocultural process, which is based on students’ prior knowledge and it helps broadening students’ experiences and knowledge developing a cultural identity and a personal sense of citizenship.*” Given that multilingual texts can constitute a cross-road of languages (and cultures), it is worth mentioning that bringing students closer to multilingual texts, can facilitate the development of this multicultural citizenship, which has been proposed as a priority in the 21st century (Council of Europe, 2016).

Reading is a process in which a person/reader attempts to extract and construct meaning from a written text, which has been written for a particular purpose (Vellutino et al., 2004). Within this context, readers make use of certain mechanisms known as “*reading strategies*” in their attempt to delve into the text. Reading strategies constitute problem-oriented actions/techniques, which can be employed either consciously or unconsciously within the context of an interaction between the reader and the text (or/and the writer of it) (Maley & Chamot, 1990). There are various studies, which have been conducted to investigate reading strategies of students in one or another language; however, there is no study to investigate the reading strategies of students when “approaching/dealing with” multilingual texts.

Appreciating that, researching on reading strategies of students can have both short- and long-term effects on students, as following a carefully designed and systematic training on developing reading strategies awareness and repertoire of the speakers can allow them to read more effectively texts that are produced and offered within this linguistically and culturally diverse era.

3. The study

3.1 *Rationale and objectives*

Given that multilingual texts are regarded as important educational tools towards promoting students’ translanguaging use in parallel with the fact that no study has been conducted to investigate students’ reading strategies employed for multilingual texts, this study was designed to shed light into this context. More specifically, this study aimed at investigating the reading strategies that are employed by primary education students in Greece when coming into contact with multilingual texts. In particular, two research questions were posed in an attempt to clarify certain aspects of the field:

(1) *Which reading strategies do primary education students of Greece employ when reading multilingual text?*

This particular research question stemmed from the research interest in identifying strategies used by the students prior to the reading of the text, while reading the text and upon the completion of the reading process.

(2) *Is there any differentiation in the use of reading strategies used by students, on the basis of the type of the multilingual text?*

This particular research question was developed in an attempt to investigate the reading strategies of students with two different types of items: (a) a text, which was given first in English and then translated in Greek; and (b) a text in which different languages (known/unknown to students) were used within the same text.

Based on the above, the study aspired to offer important findings, which can be further used for potential educational programs development and implementation.

3.2 *The participants*

In order to investigate reading strategies for multilingual texts, 27 primary education students, 11 years old, were engaged in this study. The students were all of Greek origin and they had been learning English as a foreign language for 4 years.

Table 1. Students' profile

Gender	<i>Female Students – 60%</i> <i>Male Students – 40%</i>
Years of Age	<i>11 years old</i>
Country of Origin	<i>Greece</i>
Years of Learning English	<i>4 years</i>
Multilingual Activities	<i>Listening to foreign songs – 42%</i> <i>Watching foreign movies – 40%</i> <i>Reading news in English – 32%</i> <i>Reading foreign books – 32%</i> <i>Communicating with foreign people – 28%</i> <i>Searching for information on school projects – 26%</i>

4. Research instrument and procedures

As for the study implementation, the researcher made use of specifically designed questionnaires that elicited information about the students' profile and their reading strategies employed when reading multilingual texts.

In particular, the questionnaire was divided into four thematic strands. At first, the students had to complete certain pieces of information in relation to their personal profile, their gender, their age, their school year, their origin as well as multilingual activities that they are engaged in. As for the second thematic strand, the students were invited to select the strategies that they use before they start reading the text, then they had to complete the questionnaire reflecting on the strategies employed while reading the text and last, the strategies they used after they have read the multilingual text.

As for the first type of multilingual texts, the students were provided with a text written in English and then a translation version of the same text in Greek. The students were encouraged to read the first text and then the second one thinking about their actions. Therefore, the students had to complete a questionnaire on the pre-, while- and post- reading strategies within the context of having two texts with the same content but given in two different languages, a foreign language and their L1.

In the second stage, the students were provided with a text, which was internally multilingual, that is, it was written in different languages apart from the students' L1. In this case,

the students also had to complete the questionnaire thinking about the reading strategies they employed before, while and after they had read the multilingual text.

In this way, an attempt was made to identify reading strategies that have been used by students when coming into contact with multilingual texts in two different contexts of reading.

5. Findings

With regard to the first research question “*Which reading strategies do primary education students of Greece employ when reading multilingual text?*”, the researcher attempted to record strategies used by the students prior to the reading of the text, while reading the text and upon the completion of the reading process. The following table (Table 2) presents the frequency of use of the reading strategies employed by learners before they start reading the texts. In particular, the students tend to read the title of the text and try to recognize the language it is written (always: 57%) while they also exploit the photos/pictures (always:45%) or the title of the text (33%) and they guess the content of the text (always: 45%).

Table 2. General pre-reading strategies for multilingual texts

Before I begin to read the text, ...	Always/Almost Always	Sometimes	Rarely/Never
I look at the photos/pictures and I guess the content of the text	45%	38%	17%
I read the title of the text to understand the context in which it was developed (who wrote it, why, etc...)	11%	33%	56%
I read the title of the text and I guess about the content of the text	33%	47%	20%
I try to recognise the text genre	21%	17%	62%
I read the title of the text and I try to recognise the language it is written	57%	31%	12%

With regard to specifically pre-reading strategies employed by students when coming into contact with multilingual texts, the following table (Table 3) provides information about their repertoire. More specifically, the students seemed to look for unknown words/keywords and underline them (always: 64%). In parallel, they tend to try to focus on important information (always: 51%) and look for connecting words to see the text organization (always: 48%).

Table 3. Specific pre-reading strategies for multilingual texts

Specific Pre-Reading Strategies	Always/Almost Always	Sometimes	Rarely/Never
I read quickly the text to see which languages are used and If I know them	38%	35%	27%
I read the text quickly to acquire a first awareness of the content	17%	18%	65%
I read quickly the whole text and then I look at the photos to understand its content	34%	42%	24%

I read firstly the text and then I see the photos to check if there are common words	22%	18%	60%
I set specific goals as for the way I will read the text	14%	15%	71%
I look for unknown words/keywords and I underline them	64%	22%	14%
I look for connecting words to see the text organisation	48%	44%	8%
I try to focus on important information	51%	37%	12%
I focus on information given in another language	47%	37%	16%
I try to find information about the purpose of the text	31%	30%	39%
I try to understand the context in which the text has been developed	13%	24%	63%

Concerning the while-reading strategies that students employ when reading a multilingual text, the following table (Table 4) presents students' efforts to comprehend the text. In particular, the students seemed to make use of various strategies when reading multilingual texts such as “*I circle the words given in other languages I don't know and ask for my classmates' help*” (always: 51%), “*I circle the words given in other languages I don't know and ask for my teacher's help*” (always: 50%), “*I re-read what I do not understand in another language*” (always: 58%), “*I use my imagination and make pictures of what I read in the other languages*” (always: 44%), “*I say something in my own words to better understand what I am reading in another language*” (always: 55%), and “*I try to connect the pieces / words / phrases of the text that are in other languages with those that are in my own language*” (always: 46%).

Table 4. Specific reading strategies for multilingual texts

In order to comprehend the text, ...	Always/Almost Always	Sometimes	Rarely/Never
I group words/phrases of each language, and gradually search for them to understand the content of the text.	41%	38%	21%
I circle the words given in other languages I don't know and ask for my classmates' help.	51%	47%	2%
I circle the words given in other languages I don't know and ask for my teacher's help.	50%	45%	5%
I put headings in every paragraph in the Greek language	21%	35%	44%
I put headings in each paragraph in the language that dominates within the paragraph	31%	38%	31%
I re-read what I do not understand.	58%	31%	11%
I underline or circle key information / words-phrases in the text	52%	41%	7%
I put the information in an imaginary order, from the first to the last as shown in the text	18%	28%	54%

I use my imagination and make pictures of what I read in another language.	44%	32%	24%
I use linguistic or other elements of the text (eg bold, typographic) to understand parts of the text	39%	41%	20%
I change the way I read the text when I can't understand the text	37%	38%	25%
I pay attention to the organization of the text (eg prologue, main part, epilogue, paragraph elements, sections in which the text is divided)	17%	19%	64%
I use frames (surrounding words and phrases) to understand points that make it difficult for me to speak other languages.	10%	7%	0,83%
I take notes while reading to understand what I am reading	49%	28%	23%
I say something in my own words to better understand what I am reading in other languages.	55%	31%	14%
I try to understand the unknown words that seem important by associating them with similar words from languages I know	27%	28%	45%
I say in my own words the information I read in other languages	32%	35%	33%
I try to connect the pieces / words / phrases of the text that are in other languages with those that are in my own language.	46%	38%	16%

6. Discussion

Through this study an attempt was made towards investigating the reading strategies which are employed by young language learners when approaching/reading a text given in more than one language. In particular, multilingual texts seem to be not only a tool of research but a literacy-input for students in this globalized environment. As a lot of studies have been conducted focusing on recording the reading strategies of L1 and L2 or FL learners in one-language text, this study has come to differentiate the research context, appreciating the important role of translanguaging in literacy, and particularly in reading.

As stated by Wenden (1987), reading strategies are considered to be specific, problem-oriented actions or techniques, which can be either conscious or unconscious and automatic. They also demonstrate the ways the students interact with what they read, comprehend it and the methods they apply to do so (Maley & Chamot, 1990). Especially in this study, it was revealed that the existence of multiple languages in a text encouraged the students to make use of various reading strategies, which is quite promising. According to Baker (2002) and Singhal (2001), the use of reading strategies and the knowledge that students bring to approach the text influence the reading process to a great extent, a fact which was also released in this study in which texts given in multiple languages had to be read, approached and comprehended by students.

What is worth mentioning is that the students made use of various techniques. Utilizing already acquired knowledge was the most preferable strategy. Moreover, students

utilized pictures and figures as well as the general context of the text. They seemed to read with a purpose in mind, they checked their understanding when confronting new information, and made notice of general information of the text. The students also attempted to find relations within ideas, underlined or circled information to remember/investigate further, asked questions to themselves, took notes and discussed their readings with others to check their understanding.

Taking all into consideration, students appeared to make use of strategies that solved problems of comprehension in their attempt to better understand what they read. Moreover, the findings of the present study showed that students employed strategies which focus on the words/phrases given in a language other than their L1. Given the above, it becomes clear that strange and unknown elements can attract students’ attention and thus becoming more strategically-oriented learners. Indeed, this tendency can serve beneficially towards encouraging the employment of reading strategies of students with the purpose to facilitate their active engagement in and interaction with the text(s).

It becomes clear that reading is a dynamic process with a multidimensional character which requires a continuous direct interaction between the reader and the “text” in parallel with a continuous reflection on the purposes and the context it was written by a particular author. Towards that interaction and reflection, readers make use of certain mechanisms titled which facilitate this dual purpose.

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References

- Baker, L., & Scher, D. (2002). Beginning readers’ motivation for reading in relation to parental beliefs and home reading experiences. *Reading Psychology*, 23(4), 239-269.
- Blommaert, J. (2005). *Discourse: A critical introduction* (Key Topics in Sociolinguistics). Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511610295>
- Cahyani, H., de Courcy, M., & Barnett, J. (2016): Teachers’ code-switching in bilingual classrooms: exploring pedagogical and sociocultural functions, *International Journal of Bilingual Education and Bilingualism*. <https://doi.org/10.1080/13670050.2016.1189509>
- Coldiron, A. (2015). *Printers without borders*. Cambridge University Press.
- Council of Europe (2016). *Competences for democratic culture*. Strasbourg.
- Creese, A., & Blackledge, A. (2010). Translanguaging in the bilingual classroom: A pedagogy for learning and teaching? *Modern Language Journal*, 94, 103-115.
- Daniel, S., & Pacheco, M. (2015). Translanguaging practices and perspectives of four multilingual teens. *Journal of Adolescent & Adult Literacy*, 1-11.
- Flores, N., & Jonathan, R. (2015). Undoing appropriateness: Raciolinguistic ideologies and language diversity in education. *Harvard Educational Review*, 85, 149-171. <https://doi.org/10.17763/0017-8055.85.2.149>
- García, O. (2009). *Bilingual education in the 21st century: A global perspective*. Oxford: Wiley-Blackwell.

- Garcia, O. (2009b). Reimagining Bilinguals in Education for the 21st Century. NA-LDIC (National Association for Language Development in the Curriculum), 17th Annual Conference: *Integrated language, Integrated Curriculum*. Retrieved from www.youtube.com/watch?v=rVI41CMw6HM.
- García, O. (2014). Multilingualism and language education. In C. Leung & B-V. Street (Eds.), *The Routledge companion to English studies*. New York: Routledge.
- Garcia, O., & Sylvan, C. (2011). Pedagogies and practices in multilingual classrooms: Singularities in pluralities. *Modern Language Journal*, 95(iii), 385-400.
- García, O., & Wei, L. (2014). *Translanguaging: Language, bilingualism and education*. New York: Palgrave Macmillan.
- Geertz, C. (1983). "From the native's point of view": On the nature of anthropological understanding. In C. Geertz (Ed.). *Local knowledge: Further essays in interpretive anthropology* (pp. 55-70). New York: Basic Books.
- Green, P. (2002). Teachers' intervention in children's reading. *Journal of Childhood Education*, 46(3), 147-149.
- Hua, Z., Wei, L., & Lyons, A. (2015). *Language, business and superdiversity in London: Translanguaging business*. Working Papers in Translanguaging and Translation (WP. 5). Available at: <http://www.birmingham.ac.uk/generic/tlang/index.aspx>.
- Jones, R. H., & Richards, J. C. (2015). *Creativity in language teaching: Perspectives from research and practice*. New York and London: Routledge.
- O'Malley, J. M., & Chamot, A. U. (1990). *Learning strategies in second language acquisition*. Cambridge: Cambridge University Press.
- Otheguy, R., Garcia, O., & Reid, W. (2015). Clarifying translanguaging and deconstructing named languages: A perspective from linguistics. *Applied Linguistics Review*, 6(3), 281-307.
- Papadopoulos, I. (2020). *From translanguaging pedagogy to classroom pedagogy: Supporting literacy, communication and cooperative creativity*. Thessaloniki: Disigma Publications.
- Papadopoulou, Sm. (2018a). Persuasion: the power of persuasion as a teaching tool for learning Greek as a foreign language. *European Journal of Foreign Language Teaching*, 3(2), 18-27.
- Papadopoulou, Sm. (2018b). Teaching approaches of Greek as a foreign language at the Greek Language Center of the University of Ioannina: Dynamics of the Greek language regarding foreign scholars of IKY as well as free students. *European Journal of Foreign Language Teaching*, 3(2), 1-17.
- Singhal, M. (2001). Reading proficiency, reading strategies, metacognitive awareness and L2 readers. *The Reading Matrix*, 1, 1-9.
- Vellutino, F. R., Fletcher, J. M., Snowling, M. J., & Scanlon, D. M. (2004). Specific reading disability (dyslexia): what have we learned in the past four decades? *Journal of child psychology and psychiatry, and allied disciplines*, 45(1), 2-40. <https://doi.org/10.1046/j.0021-9630.2003.00305.x>
- Wei, L. (2013). Translanguaging identities: Creating transnational space through flexible multilingual practices amongst Chinese university students in the UK. *Applied Linguistics*, 34, 516-535.
- Wenden, A. L. (1987). Metacognition: An expanded view on the cognitive abilities of L2 learners. *Language Learning*, 37 (4), 573-598.
- Williams, C. (1994). *Arfarniad o Ddulliau Dysgu ac Addysgu yng Nghyddestun Ad- dysg Uwchradd Ddwyieithog* [An evaluation of teaching and learning methods in the context of bilingual secondary education]. Unpublished Doctoral Thesis (University of Wales, Bangor).
- Williams, C. (1996). Secondary Education: Teaching in the bilingual situation. In C. Williams, G. Lewis & C. Baker (Eds.), *The language policy: Taking stock* (pp. 39-78). Llangefni, UK: CAI.



Coronavirus in the Children's World: Discourses and Drawings

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Abstract

More than 1.5 billion students and young people worldwide have been affected by school and university closings due to the COVID-19 outbreak. With the closure of schools due to the COVID-19 pandemic in Turkey, a free distance education system was launched by the Ministry of Education on 23 March 2020 with a national level television and internet-based curriculum. The opinions of the children who have just started primary school but whose school has been closed due to the pandemic in the spring term are considered to be necessary. The aim of this study was to determine the perspectives of 1st grade primary school (6.5-7 years old) students on the Coronavirus and its effects. In current study, the perspectives of 1st grade primary school students on Coronavirus and its effects were investigated. In this context, interview and document analysis techniques were used within the scope of qualitative research methods. A total of 16 primary school students from four provinces in different geographical regions of Turkey were included in the study to ensure maximum diversity. These students formed the working group of the research. In the study, semi-structured interviews and pictures drawn by students were used to reveal students' perspectives on Coronavirus and the effects of the virus. In the research, semi-structured interviews were used for content analysis, and the pictures drawn were utilized for document analysis. In the study, it was assumed that 1st grade primary school students have the consciousness that Coronavirus has tremendous and adverse effects on human life and threatens health. It was concluded that 1st grade primary school students gained awareness about proper handwashing, using masks and gloves as a means of protection from Coronavirus.

Keywords: Coronavirus, COVID-19 pandemic, children, primary school students.

1. Introduction

The number of patients admitted to the hospital with viral pneumonia in China in December 2019 showed that this was due to the new Coronavirus disease (COVID-19). The COVID-19 outbreak turned into a pandemic very quickly (Yıldız et al., 2020). On 30 January 2020, the WHO announced that an international worrying public health emergency would break out due to COVID-19. And in March 2020, the WHO began to describe it as a pandemic to emphasize the seriousness of the situation and encourage all countries to take action (Güner et al. 2020).

On 11 February 2020, WHO called the new Coronavirus-induced pneumonia Coronavirus Disease 2019 (COVID-19). Symptomatic transmission refers to transmission from a person with symptoms. It is the primary mode of transmission, and breathing droplets occur either through direct contact with infected people or through contact with contaminated objects and surfaces (Malik, 2020). After touching the surfaces contaminated with the respiratory particles of the patients, the virus can be removed by taking the hands to the face, eyes, nose, or mouth without washing. It is risky to touch the eyes, nose, or mouth with dirty hands (Ministry of Health, 2020).

The current global epidemic, which caused a large number of deaths due to COVID-19 infection, is spreading rapidly in many countries. The available information on COVID-19 is limited, but it is quickly evolving. During this outbreak, the medical community uses data collected from past SARS-CoV and MERS-CoV outbreaks to predicting the behavior, clinical presentation, and treatment of COVID-19. Many countries only apply restrictions that allow significant activities, and health systems around the world are trying to manage the increase in critical patient influx (Gulati et al., 2020).

Having knowledge and facts about COVID-19 will help reduce students' fears and concerns about the disease and support their ability to cope with secondary effects in their lives. For this, it is essential to listen to children's interests and answer their questions in an age-appropriate manner, and they should not be overwhelmed with much information. It is recommended to encourage children to express their feelings and to discuss the different reactions they may face and explain that these are normal reactions to an abnormal situation (UNICEF, 2020). Similarly, in the study conducted by Gray et al. (2020), the necessity of video / cartoon-based entertainment-education intervention was revealed for children by mentioning the importance of strengthening and habituation of correct hygiene practices.

The main factor of slowing down the outbreak or stopping the virus is classical approaches, which include social withdrawal, quarantine, and mobility interventions as there is currently no treatment (Lee Minha, 2020). In addition to the necessary medical care in the current outbreak, all individuals around the world need to be aware of the security measures to be followed during the pandemic (Venigalla & Dheeraj, 2020). First of all, the World Health Organization (WHO, 2020) listed the items related to protecting ourselves and others from the COVID-19 outbreak as follows:

- Clean your hands regularly by rubbing them with an alcoholic base or wash them with soap and water.
- Keep at least one-meter distance between you and others.
- Avoid going to crowded places.
- Avoid touching the eyes, nose, and mouth.
- If you need to leave your home, wear a mask to prevent contamination with others.
- Get medical attention if you have a fever, cough, and trouble breathing.
- Track the latest information from reliable sources such as WHO or local and national health authorities.

Covid-19 may be transmitted as an aerosol infection, to cope with possible similar infections in the future, we have to wear masks in highly polluted areas and care for hand hygiene to prevent direct transmission of infections from contaminated surfaces. However, some precautionary measures should be taken, such as not smoking and maintaining social distancing with symptomatic individuals both at home and at work (Shoor et al., 2020).

Social distancing is particularly useful for preventing the further transfer to people who are believed to have a community transfer but the connections between cases are uncertain

and only known to be exposed. Social distancing includes examples, such as the closure of schools or office buildings, cancellation of public meetings (Wilder-Smith & Freedman, 2020). Social distancing is a realistic solution that all individuals can participate in to reduce the risk of infection while increasing available resources for critical patients during this pandemic (Sen-Crowe, McKenney & Elkbuli, 2020). To alleviate the epidemic of COVID-19, one of the critical (non-pharmacological) control measures in reducing the transmission rate of SARS-COV-2 in the population is the social (physical) distance (Gao et al., 2020).

Individual measures to avoid Covid-19 include working remotely, avoiding public transport, and staying at home. Among social criteria, the transition to online education is the widespread engagement of telecommunication (Sen-Crowe, McKenney & Elkbuli, 2020).

In addition to the measures, we can take individually in the event of an outbreak, governments issue “stay at home” orders to reduce the spread of infectious diseases. The COVID-19 epidemic also led to the widespread implementation of extraordinary physical distance interventions (for example, home orders) to slow the spread of the virus (Fowler et al., 2020; Tull et al., 2020).

Following the exponential growth in the number of approved cases, the Federal Emergency Management Agency (FEMA) announced its first major disaster in the state of New York on 20 March 2020, followed by California and Washington on 22 March (FEMA, 2020). As of 11 April 2020, FEMA declared the COVID-19 pandemic disaster in each state, and Wyoming became the last. On 19 March 2020, California became the first state to order “Stay at Home” (Chenfeng Xiong et al. 2020).

The Turkish government has also implemented various protection measures. These include social distance, travel restrictions from visitors from high-risk areas, and quarantine measures for citizens returning from high-risk places. The closure of schools and specific workplaces are among the actions taken. In Turkey, the government closed all its schools, including universities, as of 16 March (Güner et al. 2020). Turkey has been utilized in distance education with the closure of schools due to the pandemic. With a network called EBA (Education Information Network), necessary compensation training support has started to be provided over the internet and television screens. Primary, secondary, and high school level courses have been carried out by distance education.

Despite the nature of the process, when the literature is analyzed, although there are many studies on Coronavirus and COVID-19 in medicine, researches in educational sciences and social sciences are almost nonexistent. To fill this gap in the literature and to reveal the effects of the process, searches should be done in all branches of science. The group that needs to be provided with psychological support and increased psychological resilience primarily in the COVID-19 process is children (Çaykuş & Mutlu Çaykuş, 2020). UNESCO and teachers also support this situation, and school administrators are encouraged to teach life by using educational applications to help communicate with children in almost all countries (Chang and Satoko Yano, 2020). In this context, the opinions of the children who have just started primary school but whose school has been closed due to the pandemic in the spring term are considered to be necessary. The aim of this study was to determine the perspectives of 1st grade primary school (6.5-7 years old) students on the Coronavirus and its effects. For this purpose, answers were sought for the following questions:

- (1) How do 1st grade primary school students define Coronavirus?
- (2) What information do 1st grade primary school students have on Coronavirus?
- (3) What are the thoughts of 1st grade primary school students regarding the effects of Coronavirus?

(4) What comes to life in the Coronavirus minds of 1st grade primary school students?

2. Method

The qualitative research method is a method that uses an inductive approach where the researcher is allowed to get out of the data of the analysis categories as the study progresses and starts with specific observations (Mertens, 2010). Qualitative research methods are used in study designed to provide an in-depth description of a particular program, application, or environment. In current study, the perspectives of 1st grade primary school students on Coronavirus and its effects were investigated. In this context, interview and document analysis techniques were used within the scope of qualitative research methods.

2.1 Participants

In the research, maximum diversity sampling, which is one of the purposeful sampling types, was used to determine the participants. Maximum diversity sampling is a sampling type that covers both outlier and typical cases (Palys, 2008). A total of 16 primary school students from four provinces in different geographical regions of Turkey were included in the study to ensure maximum diversity. These students formed the working group of the research.

Participant	Gender	School type	Mother’s Educational Status	Father’s Educational Status	Number of children	Region
Ali Kerem	Male	State school	Undergraduate	Undergraduate	3	Southeastern Anatolia
Azra	Female	State school	Primary school	High School	2	Southeastern Anatolia
Beren	Female	State school	Primary school	Associate degree	4	Southeastern Anatolia
Hamza	Male	State school	Primary school	High School	3	Southeastern Anatolia
Muhammed Ali	Male	State school	Secondary School	High School	4	East Anatolia
Leya	Female	State school	High School	High School	4	East Anatolia
Irmak	Female	State school	High School	High School	5	East Anatolia
Berra	Female	State school	Secondary School	High School	4	East Anatolia
Muhammed	Male	State school	Secondary School	Secondary School	3	Central Anatolia
Alperen	Male	State school	Primary school	Primary school	3	Central Anatolia
Rabia	Male	State school	Secondary School	High School	2	Central Anatolia
Hazal Melek	Female	State school	High School	High School	2	Central Anatolia
Mehmet Taha	Male	Private school	Undergraduate	Undergraduate	2	Aegean
Mehmet Akif	Male	Private school	Undergraduate	Undergraduate	2	Aegean
Ayşe	Female	Private school	Undergraduate	Undergraduate	2	Aegean
Aybike	Female	Private school	Undergraduate	Undergraduate	1	Aegean

2.2 Data collection

In the study, semi-structured interviews and pictures drawn by students were used to reveal students' perspectives on Coronavirus and the effects of the virus. Researchers prefer to interview when they want to understand the aspects of the participants or learn how the participants give meanings to facts and events (Berg & Lune, 2015: 139). In this study, one of the interview techniques, semi-structured interview, was used. The semi-structured interview is a qualitative data collection strategy, where the researcher asks participants a set of predetermined but open-ended questions (Ayres, 2008). In this study, first, semi-structured interview forms containing questions about Coronavirus were sent to the parents of the students via WhatsApp application. Parents were asked to see if they found it appropriate for their children to answer these questions. After the "I have no objection in my child to answer these questions," permission from the families, interviews were performed with the students. The conversations were recorded.

Documents were written or printed materials prepared in the form of annual reports, artwork, books, cartoons, diaries, diplomas, newspapers, magazines, notebooks, school yearbooks, memories, tests, etc. These documents could be manuscripts, printed, typed, drawn (pictures), drafted, or unpublished (Fraenkel, Wallen & Hyun, 2012). As part of this study, pictures drawn by students were used as documents. Instead of relying only on verbal descriptions, researchers can ask interviewed people to draw their perceptions, feelings, and situations. The comments drawn from the drawings will certainly support strengthening the study results (Arthur, Waring, Coe & Hedges, 2012). Within the scope of this research, to provide triangulation, and to make the study more reliable, the participant students were asked to paint on the "Coronavirus." After the pictures of the students were analyzed, they were used together with their opinions to support each other.

2.3 Validity and reliability

In qualitative research, for internal validity or credibility, expert review is one of the strategies used (Merriam, 2013). As a data collection tool, a semi-structured interview form containing six open-ended questions was prepared by the researchers. To ensure credibility in the research, a form was presented to two academicians who are experts in primary school education and qualitative research. After the examinations made by the experts, the form was rearranged according to their opinions and suggestions, and the total number of questions was determined as four.

In qualitative research, the reliability data set means stability in the responses of more than one encoder. Regarding reliability, intercoder consensus can be used based on the use of multiple encoders for analysis of transmitted data (Creswell, 2015). In this study, by comparing the codes created by the researchers independently from each other, points with consensus and disagreement were determined. For the reliability calculation, the reliability formula ($\text{Reliability} = \frac{\text{Consensus}}{\text{Consensus} + \text{Disagreement}}$) proposed by Miles and Huberman (1994) was used. The reliability of the study was calculated as 90 at the end of the calculation.

2.4 Data analysis

In the research, semi-structured interviews were used for content analysis, and the pictures drawn were utilized for document analysis.

Content analysis is the process of separating qualitative data into similar themes or sets of conceptual categories to identify consistent patterns and relationships between variables (Julien, 2008). The primary purpose of content analysis is to reach concepts and connections that can explain the collected data. The necessary process in content analysis is to gather the data

similar to each other within the framework of specific concepts and themes and to arrange them in a way that the reader can understand (Yıldırım & Şimşek, 2013: 259). In this research, each participant’s answers were analyzed in small paragraphs and labeled by writing codes next to each paragraph. After the tagging operation, which categories the codes issued will be used is defined. The obtained categories were grouped in such a way to form meaningful whole, and sub-themes were developed. In this manner, sub-themes and categories to be included under the key theme were prepared and shown on the table. Next, each of them was explained in detail as the study findings.

In document analysis, documents are seen as communication channels containing meaningful messages between the author and the reader (Prior, 2008). The first step, while using the materials as a data source in qualitative research, must be finding the necessary and useful documents. Afterward, the originality of the documents should be checked. When these conditions are met, the researcher should establish a system for coding and cataloging and finally interpret the documents by analyzing them (Merriam, 2013: 142-143). In this study, children’s picture’s originality was observed by examining whether they are related to the Coronavirus. These pictures were numbered and classified according to their subject (those with virus form, those with hygiene, those with social distance emphasis, etc.). Then, the researchers analyzed the pictures one by one, and the codes for each picture were created. The codes obtained from the analysis of the pictures were matched with the categories that emerged in the analysis of the interviews to assure triangulation. In the presentation of the findings, direct quotations from the participants’ views and examples from the pictures they have drawn are given.

3. Results

Theme	Sub-theme	Category
Coronavirus	What?	Disease Epidemic
	What are the features?	It is contagious It is dangerous It is fatal
	How is it protected?	Hands are washed Mask and gloves are worn Stay home Social distance is maintained Attention to cleanliness Mouth, nose, and eyes are not touched with hands
	What are the effects of life?	Caused schools to close Caused distance education

3.1 Results on the sub-theme: “What is Coronavirus?”

The children tried to identify the Coronavirus in many ways and ultimately reached the same common point. Under the “What is Coronavirus” sub-theme, disease and epidemic categories have emerged.

3.1.1 Disease

Hayri described the Coronavirus as a disease: *“The Coronavirus is a microbe, so it is a disease.”*

Similarly, Azra said: “Coronavirus is a disease. It is a disease that will give us the flu.”

Hazal Melek explained the Coronavirus as a disease: “A different disease we have not seen.”

3.1.2 Pandemic

Beren described the Coronavirus as a pandemic: “I know it is a dangerous pandemic when we go out.”

Ali Kerem expressed the virus with the words “a pandemic spreading all over the world.”

Leya also described the Coronavirus as “a pandemic that is transmitted to all and is seen worldwide.”



The children tried to emphasize that they perceive Covid-19 as a pandemic in the pictures they draw by drawing a world that this epidemic is global. It is noteworthy that in the first picture, many viruses are enclosing the world, and picture on the right, a giant virus surrounds the world with its networks.

It has been shown that the children possess a general awareness of the Coronavirus from their narratives and pictures. Children cannot technically express that the Coronavirus turns into a pandemic called Covid-19. Still, they stated that it is a worldwide epidemic and that Coronavirus is a kind of disease that damages people’s health.

3.2 Results on the sub-theme: “What are the features of Coronavirus?”

Children described the characteristics of Coronavirus. In this context, the categories of infectious, dangerous and deadly emerged under the sub-theme of “What are the properties of Coronavirus.”

3.2.1 Contagious

Regarding that, the Coronavirus is contagious, Muhammed used the following statement: “Coronavirus can be transmitted through our mouth, through our nose, and our eyes.”

Ali Kerem stated that Coronavirus is contagious as follows: “A killer virus. So it is transmitted from person to person, for example.”

Likewise, Aybike has described it as “lethal, contagious, and has spread properties.”

As for Ayşe, she commented about the Coronavirus being contagious: “It is a highly infectious disease. It can make you very ill.”

3.2.2 Dangerous

Stating that the Coronavirus is dangerous, Beren used the following statement: “I know that there is a danger when we kiss, shake hands, and go outside.”

On the other hand, Mehmet Akif described the Coronavirus as dangerous: “I know it is deadly, dangerous, living in the water and contagious.”



Children drew the Coronavirus in the microscopic form they see on the screen. The picture on the left is drawn with sharp teeth, with a spooky facial expression, and the picture on the right is a giant virus with a sad face.

3.2.3 Fatal

Ali Kerem stated that Coronavirus is fatal as follows: “One killing virus. In other words, it is transmitted from person to person.”

Aybike also described the Coronavirus as fatal as “lethal, contagious, and has spread properties.”

Rabia used the following statement that the Coronavirus is fatal: “I know some people are dead and some are defeating the Coronavirus.”

According to the children’s statements, it can be mentioned that they are aware of how effective Coronavirus is on human life and threatens health. This consciousness directs them to be more cautious about taking precautions against Coronavirus. Their emphasis on Coronavirus prevention in their later narratives and drawings indicate that children are aware of the adverse effects of Coronavirus.

3.3 Results on the sub-theme: “How to protect from the Coronavirus?”

Children addressed the importance of hygiene to prevent Coronavirus and the precautions to be taken at this point. In this context, the categories of washing hands, wearing masks and gloves, staying at home, maintaining social distance, paying attention to cleanliness have emerged under the sub-theme of “How to protect corona from the virus.”

3.3.1 Washing hands

Alperen said that we should wash our hands to protect against Coronavirus and said: “We should wash our hands with soap and water for 20 seconds.”

Likewise, Azra replied: “I wash my hands with soap for 20 seconds.”

Leya stated that we must wash our hands to protect against Coronavirus: “When we come from outside and come out of the toilet, we wash our hands by counting down from 20.”

Aybike also stated her view on Coronavirus protection as: “We should wash our hands frequently with soap and water for at least 20 seconds.”



As they described in the interviews, children tried to emphasize that hand hygiene is essential and that they should wash hands in different ways in their drawings. In the picture on the right, the hygiene importance is tried to be explained with a large hand-drawn under a water-flowing tap, the house, and slogans protecting from the virus in the environment.

3.3.2 Wearing a mask and gloves

Ayşe stated that a mask should be worn to protect against Coronavirus and said: “We should use a mask when we have to go out.”

Similarly, Aybike used the expression: “We should wear a mask when we go out” to protect against Coronavirus.

Rabia stated that she wears a mask and gloves to protect against Coronavirus: “We wear masks and gloves to protect them.”

Similarly, Hamza stated his method of protection by saying: “We must wear gloves and a mask to protect against Coronavirus.”

Mehmet Akif stated: “*We should apply cologne or disinfectant every time we go out and in.*”



By expressing the importance of using masks and gloves, the children tried to emphasize the ways of virus protection by drawing masks, gloves, disinfectants, and cologne in the pictures they draw. In the picture on the left, two hands wearing gloves of different colors, two mask-sized, and small bottles of cologne were tried to emphasize the importance of masks and gloves. In the picture on the right, the hands, and the importance of the mask are emphasized.

3.3.3 Staying at home

Ayşe answered the “How should we protect from Coronavirus?” by saying: “*We should not go out. We should also use a mask when we have to go out.*”

Mehmet Taha also expressed his opinion and said: “*We shouldn’t go out. We must stay at home.*”

Stating that staying at home will provide virus protection, Alperen said: “*We remain at home protected from the virus and not to be sick.*”



The children believed that staying at home is essential for protection from the virus and stated in their drawings that the houses are a loving place, isolated from Coronavirus.

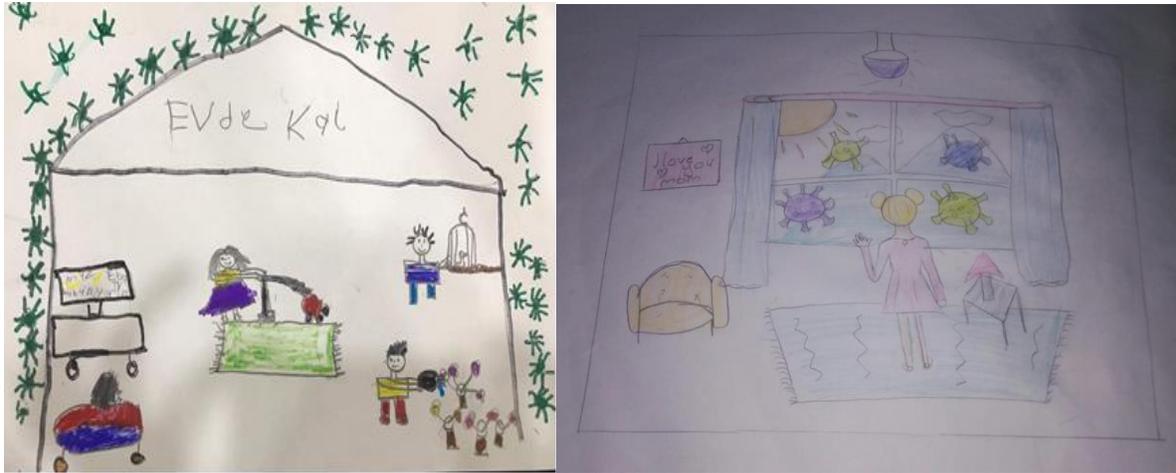
Azra stated that she was staying at home because of the virus and expressed her feeling as follows: “*I am staying at home because there is a virus.*”

Hamza, on the other hand, said: *“I stay at home so that the Coronavirus does not infect us.”*

Beren expressed his view that the virus caused the stay: *“They say stay home because there is a Coronavirus.”*

Stating that staying at home is a way of protection, Mehmet Taha used the following statement: *“There is a Coronavirus, let’s don’t go out and be protected.”*

Rabia also said: *“We should stay at home so that Coronavirus does not come to us,”* and said that the reason for staying at home is for protection.



In their discourses, the children stated that they perceived the Coronavirus as a factor that caused their stay at home. Similarly, they drew pictures describing that life in the house is protected. In the picture on the left, the viruses that do not enter, although they surround the house, are highlighted. In the picture on the right, it is tried to be expressed that the viruses are outside the window, cannot enter. Thus, the interior of the house is healthy.

3.3.4 Maintaining social distance

Muhammed drew attention to the importance of social distance to protect from Coronavirus and used the expression: *“We must put two steps away.”*

Mehmet Akif made a similar statement saying: *“We must stay one meter away.”*

Ali Kerem talked about the social distance to protect against Coronavirus, and gave an opinion as follows: *“We should not be in contact with people.”*

On the other hand, Irmak stated the social distance rule to be protected from Coronavirus by using the following expressions: *“We should not go to crowded places.”*

Similarly, Hazal Melek used the phrase: *“We should not be in a collective environment.”*



The children exhibited the principle of preserving the social distance expressed in their conversations also in their paintings. The drawing of the child, who washes hands for 20 seconds by counting down from 20 in the picture on the left and emphasizes three steps to protect the social distance with his friend, draws attention. In the picture on the right, one-meter distance is drawn between people with masks on their faces.



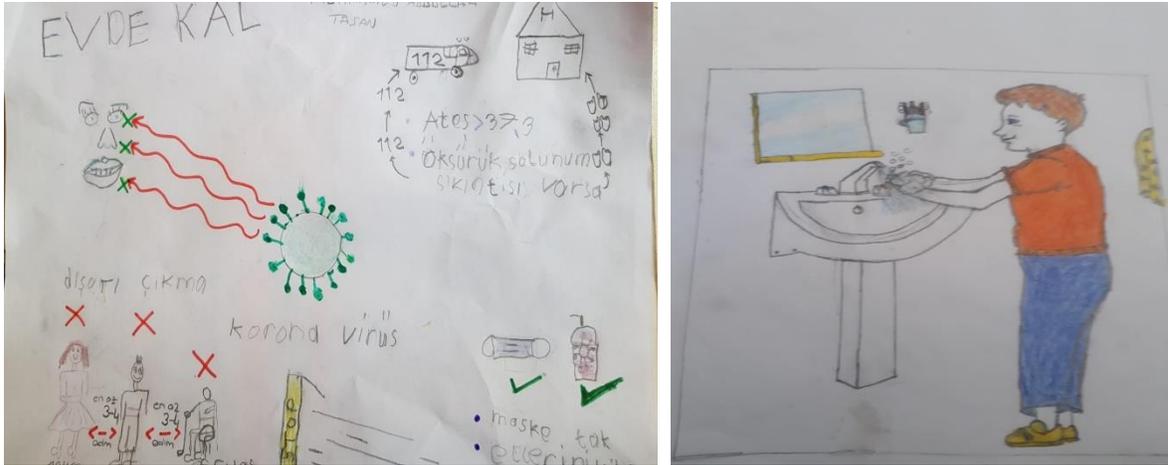
In children’s other pictures, the drawings that stand out the importance of social isolation are the people who live in their homes without isolating themselves in the neighboring houses with distance and without getting into the crowd.

3.3.5 Attention to cleanliness

Aybike talked about Coronavirus protection and clothing cleaning with the words: “We should wash our clothes with normal detergent between 60 and 90 degrees. We should clean the surfaces we frequently use every day.”

Ali Kerem expressed his view on Coronavirus protection by saying: “We should not take our hands to our mouth, nose, and eyes.”

Muhammed Ali similarly expressed his opinion by saying: “We will not touch our face with our hands.”



During the interviews, the children stated the importance of hand cleaning and that the hands should not touch the mouth, nose, and face. By reflecting the same idea to their paintings, they indicated their feelings in the drawings of the mouth, nose, Coronavirus moving towards the face, and children washing hands.

When the participants' views were examined, it was revealed that they understood the importance of washing hands, wearing a mask, staying at home, maintaining social distance, and paying attention to cleanliness. It can be acknowledged that both the family and teacher's warnings and the media products in the form of notifications, news, and public spots applied by the government on TV and other communication channels are also beneficial in creating this awareness.

3.4 Results on the sub-theme: "What are the effects of Coronavirus on our lives?"

In the context of Coronavirus's effects on our lives, children stated that the virus caused schools to close. They revealed their longing feelings that occurred with the closing of the school. They also noted that Coronavirus caused them to receive distance education. In this context, the closure of schools and distance education categories have emerged under the sub-theme of "what are the effects of Coronavirus on our life."

3.4.1 Caused schools to close

As a result of the schools' closure, Azra stated that she missed the school and that she was able to ask her teacher at the school and said: *"I can ask my teacher a question. My teacher is also interested in everything. I love my teacher."*

Similarly, Ayşe stated that she was able to ask her teacher and miss her while she was at school: *"I can ask my teacher at school. I can see her."*

Hamza expressed his longing feeling by saying that his teacher was better: *"You are telling it slowly, and you are telling it very well, teacher. TV sometimes makes it worse."*

By stating: *"You are telling very well, I miss you,"* Ali Kerem also expressed his longing sense, that his teacher is better, and he misses her.

While explaining her longing for school, Aybike stated that she missed her friends and used the following expressions: *"I see my friends alive at school and play games with them."*

Leya said that she similarly missed her friends: *“I am very bored at home, teacher. I miss school and friends.”*

3.4.2 Coronavirus caused distance learning

Due to the Covid-19 pandemic, distance education was also used in primary schools, and compensation education assistance was provided through the Internet and television screens with a network called EBA (Education Information Network). Regarding the distance education system used, students expressed their positive and negative opinions.

3.4.3 Positive opinion

When evaluating distance education (EBA), Muhammed Ali expressed his positive side: *“The teacher explains very well.”*

Azra said: *“We see it bigger on the television. It displays better. We can change the lesson from the computer ourselves,”* and she evaluated the positive aspect of EBA with her words.

Stating that she had the chance to change it from the internet in a similar manner, Ayşe said: *“I can repeat, I can change it.”*

Mehmet Akif also talked about the comfort of home education and stated his positive side: *“The chairs in the school are hard, but the chairs in the house are made of cotton. Therefore, I am listening to it in a comfortable environment.”*

On the other hand, Mehmet Taha said that the lessons were processed faster and stated his positive side in this way by saying: *“It is easier to learn faster.”*

While evaluating EBA, Aybike said that his favorite lesson was mathematics and stated his reason as follows: *“We were working hours in that math lesson. Before the lesson, the teacher said that I would like you to buy straws and red beans. We did that event with my grandmother. It was lovely.”*

Expressing that her favorite lesson was mathematics in EBA, Azra said, *“Our teacher is very entertaining, explains very well,”* reported her reason.

Saying, *“Because the math lesson is more interesting to me,”* Rabia stated that her favorite lesson was math.

When Berra evaluated EBA, she announced that her favorite lesson was Turkish. As the rationale, she replied: *“Because the teacher explains it much better.”*

Hazal Melek said that her favorite lesson in EBA was Turkish and stated her reason as: *“Because I love that lesson.”*

3.4.4 Negative opinion

While evaluating EBA, Berra declared her negative aspects: *“One day the electricity was cut off, and I could not study. And the teacher answers immediately. They should not respond quickly and let us think a little at home.”*

Similarly, Hamza also mentioned his negative thoughts: *“The teacher sometimes explains quickly. We are about to tell the answer, but the teacher says it. They must wait a little bit.”*

Hazal Melek's expressed her negative opinion about EBA as: *"I love teaching more at school. I cannot ask you a question here."*

Azra has likewise assessed its negative side and said: *"We cannot ask the teacher questions in EBA."*

Ayşe stated that she could not ask the teacher as a negative side and stated as follows: *"I cannot see my teacher completely. I can't ask him a direct question."*

Muhammed evaluated the negative aspect of EBA by saying: *"Our eyesight may fail."*

Likewise, Beren evaluated the negative side of EBA by saying: *"Our eyes are near-blind."*

Rabia stated that while evaluating the EBA, the issues were not understood, and she expressed her opinion as follows: *"The negative side is that I do not understand some things."*

Muhammed Ali stated that he asked his parents about unclear subjects when evaluating EBA: *"I ask my father, my sister, and my mother when I do not understand."*

Hamza asked the class teacher about the subjects that were not understood, saying: *"Whenever I do not understand, I ask you, or I ask my mother."*

Beren used the following expressions, saying that he watched again on the subjects that were not understood: *"When I do not understand in the lessons, I repeat it from my father's phone."*

On the other hand, Berra stated that she benefited from the book on subjects that were not understood, saying: *"I look at the places I do not understand from my book."*

It was revealed that primary school students have various opinions about distance education. The fact that watching lessons from the internet is different, having the chance to watch the lesson at any time, and the comfort of the home environment seem attractive. For these reasons, they fancy distance education. Nevertheless, the subjects that were complained by the participants were not being able to ask the teacher questions, being helpless about the things they did not understand, and sometimes not reaching the speed of the teacher who explained the lesson.

4. Conclusion and discussion

This study aimed to discover the primary school students' perspectives on Coronavirus and its effects. In the study, it was concluded that 1st grade primary school students define Coronavirus as a disease. Still, it has been revealed that they see Coronavirus as a global epidemic surrounding the world.

In the study, it was assumed that 1st grade primary school students have the consciousness that Coronavirus has tremendous and adverse effects on human life and threatens health. This information, which the children have, coincides with the information expressed by Lamis et al. (2020) that the Coronavirus is a rapidly spreading fatal disease. And that the virus is threatening health by infecting not only vulnerable people (children, older people, healthcare workers).

In this study, it was concluded that 1st grade primary school students gained awareness about proper handwashing as a means of protection from Coronavirus. In the study conducted by Dominika et al. (2020), it was concluded that all hand hygiene behaviors were better during the Coronavirus secretion compared to the previous one.

It was concluded that 1st-grade primary school students who participated in the study gained awareness about the use of masks and gloves as a method of Coronavirus protection. Along with these, wearing mandatory masks in public places and applying a home-stay policy for the entire city, the confirmed case rates in COVID-19 in Wuhan have been reduced, and the epidemic has been taken under control. Clean gloves should be worn and cover the wrist well and removed immediately after use. Surgical disposable masks can also be used, which are somewhat protective and useful, mainly as they prevent close contact with droplets (Cirincione et al., 2020).

In this study, 1st-grade primary school students, by adopting the principle of social distance, think that life in the home is sheltered. It is essential to stay at home to prevent Coronavirus transmission. When the studies conducted are also examined, it has been seen that physical distance measures reduce the contact level and significantly decrease the risk of Coronavirus transmission. Three-way public health measures (restriction in intensive intracity and intercity traffic, social distance measures, house arrest, and central quarantine) proved to be significant (Pan et al., 2020; Jarvis et al., 2020).

Another result of this study is that 1st grade primary school students possess awareness about the cleaning rules recommended by the authorities and that the hand should not be put in the mouth, nose, and eyes. This result suggests that the World Health Organization’s (WHO, 2020) warning of “avoid touching the eyes, nose and mouth” about protecting ourselves and others from the COVID-19 outbreak is effective on children. However, this result is in contradiction with the conclusion that, in Gray et al. (2020) study, school-age children, who are defined as silent donors, are not adequately communicated at the point of health education and that children are falling short at this point.

In this study, 1st grade primary school students stated that the schools were closed with the Coronavirus effect. With the schools’ closure, the students felt a sense of longing towards their friends and teachers and thus developed a positive attitude towards the school. In the study conducted by Boulton et al. (2011), it was concluded that students with positive peer relationships developed more positive attitudes towards the school.

It was concluded that the primary school students who participated in the study received a positive attitude in the distance education system, which was implemented with the Coronavirus’s effect in terms of greater comfort at home and fun lessons.

In this study, it was assumed that 1st grade primary school students were unable to ask the teacher in distance education. They experienced disruptions in education due to the teacher’s narrative speed and access to technology and that this situation was unfavorable. In this context, in a study conducted by Fox (2004), it was similarly revealed that students in the SARS epidemic had difficulties completing and implementing online learning activities in a non-classroom environment. Furthermore, Thomas and Rogers (2020) concluded that when students continue working at home without going to school, the differences in educational progress caused by inequalities can increase.

In light of the conclusions reached in this research, the following suggestions can be made:

- In this study, it was concluded that 1st grade primary school students create awareness against Coronavirus and prevention methods. In the subsequent researches, reviews can be conducted to determine the opinions of students studying at different grade levels.
- As it has a Coronavirus pandemic, it has affected social life all over the world. In this context, to determine the effects of Coronavirus on children’s lives, studies can be conducted with teachers and parents, and the sample group can be diversified.

• Qualitative study method was used in this research. In other analyses, quantitative or mixed-method studies can be designed.

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References

- Akbaba, M., Kurt, B., & Nazlıcan, E. (2014). Yeni Coronavirus salgını [Novel Coronavirus pandemic]. *Türk J Public Health*, 12(3), 217-227.
- An P., Li L., Chaolong W., Huan G., Xingjie H., Qi W., Jiao H., Na H., Hongjie Y., Xihong L., Sheng W., & Tangchun W. (2020). Association of public health interventions with the epidemiology of the COVID-19 outbreak in Wuhan, China. *JAMA*, 323(19), 1915-1923.
- Arthur, J., Waring, M. R., Coe, R., & Hedges, L.V. (2012). *Research methods & methodologies in education*. SAGE Publication.
- Ayres, L. (2008). Semi-structured interview. In L. M. Given (Ed.). *The Sage of Encyclopedia of Qualitative Research Methods* (pp. 810-811). ABD: SAGE Publication.
- Berg, B. L., & Lune, H. (2015). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri* (8. b.) [Qualitative research methods in social sciences] (H. Aydın, Dü., & Z. E. Özcan, trans.). Konya: Eğitim Yayınevi.
- Sen-Crowe, B., McKenney, M., & Elkbulli, A. (2020). Social distancing during the COVID-19 pandemic: Staying home save lives. *American Journal of Emergency Medicine*, 38, 1515-1539.
- Boulton, M. J., Don, J., & Boulton, L. (2011). Predicting children's liking of school from their peer relationships. *Social Psychology of Education*, 14, 489-501.
- Burdina, G. M., Krapotkina, I. E., & Nasyrova, L. G. (2019). Distance learning in elementary school classrooms: An emerging, framework for contemporary practice. *International Journal of Instruction*, 12(1), 1-16.
- Chang, G. C. & Yano, S. (2020 Nisan). *How are countries addressing the Covid-19 challenges in education? A snapshot of policy measure*. Retrived from: <https://gemreportunesco.wordpress.com/2020/03/24/how-are-countries-addressing-the-covid-19-challenges-in-education-a-snapshot-of-policy-measures/>.
- Cirrinzione, L., Plescia F., Ledda C., Rapisarda V., Martorana D., Moldovan R. E., Theodoridou, K., & Cannizzaro, E. (2020). COVID-19 Pandemic: Prevention and protection measures to be adopted at the workplace. *Sustainability*, 12(3603), 1-18.
- Creswell, J. W. (2015). *Nitel araştırma yöntemleri – Beş yaklaşıma göre nitel araştırma ve araştırma deseni* [Qualitative research methods – Qualitative research and research design according to five approaches] (Mesut Bütün; Selçuk Beşir Demir, trans., Ed.). Ankara: Siyasal Kitabevi.
- Çaykuş, E. T., & Mutlu Çaykuş, T. (2020). COVID-19 pandemi sürecinde çocukların psikolojik dayanıklılığını güçlendirme yolları: Ailelere, öğretmenlere ve ruh sağlığı uzmanlarına öneriler [Ways to strengthen children's resilience during the COVID-19 pandemic: Recommendations to families, teachers and mental health professionals]. *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi (ASEAD)*, 5(2), 91-113.

- Dominika, G., Dominika, S., & Dominika, G. (2020). Population-based study of the influence of the COVID-19 pandemic on hand hygiene behaviors—Polish adolescents’ COVID-19 experience (PLACE-19) study. *Sustainability*, *12*(12), 1-17.
- Fox, R. (2004). SARS epidemic: Teachers’ experiences using ICTs. In *Beyond the comfort zone: Proceedings of the 21st ASCILITE Conference*, 5-8 December 2004, pp. 319-327.
- Fowler, J. H., Hill, S. J., Levin, R., & Obradovich, N. (2020). *The effect of stay-at-home orders on COVID-19 cases and fatalities in the United States*. Cornell University Library. Retrieved from <http://arxiv.org/abs/2004.06098>.
- Fraenkel, J., Wallen, N., & Hyun, H. (2012). *How to design and evaluate research in education* (8th Ed.). NY: McGraw-Hill.
- Gao, S., Rao, J., Kang, Y., Liang, Y., Kruse, J., Doepfer, D., Sethi, A. K., Reyes, J. F. M., Patz, J., & Yandell, B. S. (2020). *Mobile phone location data reveal the effect and geographic variation of social distancing on the spread of the COVID-19 epidemic*. Cornell University Library. Retrieved from <https://arxiv.org/abs/2004.11430>.
- Gray, D. J., Kurscheid, J., Mationg, M. L., Williams, G. M., Gordon, C., Kelly, M., Wangdi, K., & McManus, D. P. (2020). Health-education to prevent COVID-19 in schoolchildren: A call to action. *Infectious Diseases of Poverty*, *8*(9), 1-3.
- Gulati, A., Pomeranz, C., Qamar, Z., Thomas, S., Frisch, D., George, G., Summer, R., DeSimone, J., & Sundaram, B. (2020). A comprehensive review of manifestations of novel Coronaviruses in the context of deadly COVID-19 global pandemic. *The American Journal of the Medical Science*, *360*(1), 5-34.
- Güner, R., Hasanoğlu, İ., & Aktaş, F. (2020). COVID-19: Prevention and control measures in community. *Turkish Journal of Medical Sciences*, *50*, 571-577.
- Jarvis, C. I., Kevin V. Z., Gimma, A., Kiesha, P., Klepac, P., Rubin, G. J., & Edmunds, W. J. (2020). Quantifying the impact of physical distance measures on the transmission of COVID-19 in the UK, *BMC Medicine*, *18*, 1-10.
- Julien, H. (2008). Content Analysis. In L. M. Given (Ed.), *The Sage of Encyclopedia of Qualitative Research Methods* (pp. 120-121). ABD: SAGE Publication.
- Lamis, M. F. E., Khalid, Z., Elwakee, & Ahmed, M. E. (2020). COVID-19 from mysterious enemy to an environmental detection process: a critical review. *Innovative Infrastructure Solutions*, *84*(5), 1-13.
- Lee, M., Zhao, J., Sun, Q., Pan, Y., Zhou, W., Xiong, C., & Zhang, L. (2020). *Human mobility trends during the COVID-19 pandemic in the United States*. Cornell University Library. Retrieved from <https://arxiv.org/abs/2005.01215>.
- Malik, Y. A. (2020). Properties of Coronavirus and SARS-CoV-2. *Malaysian J Pathol*, *42*(1), 3-11.
- Merriam, S. B. (2013). *Nitel araştırma-desen ve uygulama için bir rehber* [A guide to qualitative research-design and practice] (S. Turan, trans.) Ankara: Nobel Akademik Yayıncılık.
- Mertens, D. M. (2009). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods* (3rd ed.). ABD: Sage Publications.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis*. Thousand Oaks, CA: Sage Publications.
- Palys, T. (2008). Purposive sampling. In L. M. Given (Ed.), *The Sage of Encyclopedia of Qualitative Research Methods* (pp. 697-698). ABD: SAGE Publication.
- Pior, L. F. (2008). Document Analysis. L.M. Given (Ed.). *The Sage of Encyclopedia of Qualitative Research Methods* (pp. 230-231). ABD: SAGE Publication.
- Sağlık Bakanlığı (Ministry of Health) (2020). Retrieved from <https://covid19bilgi.saglik.gov.tr/tr/covid-19-yeni-koronavirus-hastaligi-nedir.html>.

- Shoor, P., Kaur, G. P., & Chauhan, A. (2020). Atmospheric conditions affecting the transmission of Covid-19 virus. *Preprints*. <http://doi.org/10.20944/preprints202005.0467.v1>
- Thomas, M. S. C., & Rogers, C. (2020). Education, the science of learning, and the COVID-19 crisis, *Prospects*. Retrieved from <https://doi.org/10.1007/s11125-020-09468-z>
- Tull, M. T., Edmonds, K. A., Scamaldo, K. M., Richmond, J. R., Rose, J. P., & Grats, K. L. (2020). Psychological outcomes associated with stay-at-home orders and the perceived impact of COVID-19 on daily life. *Psychiatry Research*, 289, 1-6.
- UNICEF (2020). *Interim guidance for COVID-19 PREVENTION AND CONTROL IN SCHOOLS*. Retrieved from https://www.unicef.org/media/66216/file/Key%20Messages%20and%20Actions%20for%20COVID19%20Prevention%20and%20Control%20in%20Schools_March%202020.pdf.
- Venigalla, A. S. M., Dheeraj, V., & Chimalakonda, S. (2020). *Survive Covid-19 – A game for improving awareness of social distancing and health measures for Covid-19 pandemic*. Cornell University Library. Retrieved from <http://arxiv.org/abs/2004.09759>.
- World Health Organization (WHO) (2020). *Protecting yourself and others from the spread COVID-19*. Retrieved from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>.
- Wilder, A. S., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: Pivotal role for old-style public health measures in the novel Coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine*, 1-4. <https://doi.org/10.1093/jtm/taaa020>.
- Xiong, C., Hu, S., Yang, M., Younes, H. N., Luo, W., Ghader, S., & Zhang, L. (2020). *Data-driven modeling reveals the impact of stay-at-home orders on human mobility during the COVID-19 pandemic in the U.S.* Cornell University Library. Retrieved from <https://arxiv.org/abs/2005.00667>.
- Yıldırım, A., & Şimşek, H. (2013). *Sosyal bilimlerde nitel araştırma yöntemleri* [Qualitative research methods in social sciences]. Ankara: Seçkin Yayıncılık.
- Yıldız, A., Çetinkaya, M., Leventoğlu, S., & Şenköylü, A. (2020). Recommendations for surgical interventions during COVID-19 pandemic. *GMJ*, 31, 283-286.





Organizational Anomie: A Qualitative Research on Educational Institutions

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Abstract

This study, which aims to examine the perceptions of teachers working in primary and secondary schools regarding organizational anomaly, was designed with a phenomenology study from qualitative research designs. The working group of the research consists of 16 teachers working in state schools in the central districts of Erzurum in 2020-2021. The data obtained with the measurement tool consisting of semi-structured open-ended questions prepared by the researchers were analyzed by content analysis method. According to the findings obtained in the study, the main causes of anomie experienced by teachers are corruption in working life, loss of values, lack of certain rules and norms, distrust of administrators, unwillingness, impossibility, dissatisfaction, inefficiency and loss of belonging. It has been concluded that it has consequences such as lack of discipline, self-interest and negligence, and that the teachers generally have uncertain and anxious thoughts about the personal and social future. In order to reduce anomaly in schools, a value-oriented human resources management based on the spirit of teachers and a transition to a merit and justice-based appointment system in manager appointments are the basic proposals.

Keywords: anomie, organizational anomie, worthlessness, normlessness, trust.

1. Introduction

There is organic solidarity in traditional societies, organic society has turned into a mechanical society with the effect of the industrial revolution. During this transformation, various social problems have arisen. Developments in the 20th century have also affected the values and norms in the society. With the impact of the industrial revolution, social life has been deeply affected as a result of this change in cultural norms and values. The world has become global and life has changed now. An event happening in one part of the world has affected other locations, no incident originates entirely from local causes and its consequences are not entirely local. In the 21st century, with the effect of globalization and innovation, the norms and values of the western world spread to the traditional eastern societies, and the eastern societies caught unprepared for this spread fell into a void and meaninglessness. In the postmodern world, a great change in mentality has taken place, a secular lifestyle has been adopted. Legal, moral and religious values

have changed, the calligrapher lost their importance and evaporated. As a result, individuals have begun to lose their ontological sense of belonging and trust, and have begun to be thrown in the void in an unlimited freedom, worry and anxiety. With the expression of Durkheim, it caused the emergence of anomic behaviors (Yang, 2015).

These changes have pushed people to weakness and loneliness, contrary to a rebirth. Religious institutions, rules, values, worship and rituals, which have an important place in the life of society, have no longer meant anything for the individual and have become unable to fulfill their mission. Norms (abstract rules) in terms of survival, continuity, harmony and function of societies or sociological groups; that is, religious and traditional rules, beliefs and teachings are the basic principles of that society or social group. These socio-cultural norms, which are important in terms of the function of staying healthy, provide social control (Erdoğan, 1987, cited in Kasapoğlu, 2019). Along with the anomie experienced in this context, the loss of the power or validity of the rules that are valid in every field and instant of individual and social life among the people on the street, among the drivers in the traffic, among the family members in the family life, in the relations between the school stakeholders in the school, in the entertainment places, the social life is deeply threatened. Individuals stuck under this gripper carried their experiences to the organizations they worked with, and from all this negative situation, organizations and especially schools, where values and virtue should be produced and sustained as a supreme value, took their share and were exposed to organizational anomy (Johnson & Duberley, 2011).

Derived from the ancient Greek word *ánomos* “illegal, no rules”, the idea of anomie means the absence of normal ethical or social standards (Zoghbi & Rodriguez, 2007). This concept arose for the first time in 1893 when the French sociologist Emile Durkheim published his book, *Department of Work in Society*. In this book, Durkheim states that the rules of individuals’ interactions with each other are breaking down and therefore people cannot determine how to treat each other. Durkheim believed that anomia was a situation in which behavioral expectations were uncertain and the system collapsed, and this is now known as normlessness. Durkheim emphasizes that this anomaly leads to deviant behavior and can lead to suicidal consequences.

The norms in a society change depending on developments and changes. As a result of this change, old norms lose their effect and new norms come into being. In this case, some gaps occur in the life of society. In situations such as urbanization, where social change is experienced very rapidly, old norms become unable to meet the requirements and lose their validity is an example of this situation. As a result of the loss of validity of the norms and the decrease in the power of sanction in a society, anomie occurs in the society. According to Durkheim, modern societies based on differences based on division of labor and specialization, where solidarity arising from similarity decreases, and urbanized societies are seen as anomie candidate societies (Özmen, 2019).

Anomie means “balance” and the state of irregularity and normlessness in individual behaviors that arise when the integration is disrupted (Edinsel, 2020; Swingewood, 1998). In general, anomie, which revolves around a psychological state that characterizes a tendency to be self-interested, means rejecting social norms or feeling distanced or isolated from society. In this conceptualization, it includes the feeling that life is meaningless in which feelings of anomie, aimlessness or powerlessness are dominant (Martin, 2000; Kontry, 2005; Baumer, 2007; Bjarnason, 2009).

It is an obvious fact that the deterioration in the social structure, which is an important dimension of the anomie, is closely related to the deterioration of the leadership. When the social structure dimension is q, it puts additional weight on the other. More specifically, leaders become unable to manage problems in society and lose their role as representatives of society (Tyler, 2003; Reicher et al., 2005; Ambrose & Arnaud, 2005). Later in this process, many people experience a feeling that undermines the sense of belonging in society, and they feel like a stranger who is not

fairly taken into account. On the other hand, a deterioration in leadership can also cause a deterioration in the social fabric. Similarly, Rothstein and Eek (2009) found that when trust in authorities decreased, general trust in others eroded (Reicher, 2006; Haslam, 2007; Rothstein & Eek, 2009). Thus, anomie arises when these two dimensions of a functioning society (effective leadership and strong social structure) are eroding. In other words, we can say that anomia occurs both after leadership and after social tissue disruption. Employees feel helpless and hopeless in their ability to work towards their desired goals due to the disruptions in these two dimensions. If a society forces its members to acquire wealth and provides insufficient means to do so, that coercion causes many people to violate norms. In such cases, social behavior becomes unpredictable, and anomic behaviors that range from ritualism, withdrawal to crime, suicide and rebellion occur (Özmen, 2019).

Durkheim sees the anomie as a problem of modern industrial societies. There are six main reasons for the anomie, which weakens the sense of interdependence and solidarity of the individuals in the society and the public morality and deeply shakes the social integration based on the rule of life (Edinsel, 2020):

- Economic fluctuations in society;
- As a result of the development of the social division of labor, the emergence of new occupational groups and the weakening and disappearance of old professions and professional organizations;
- Rapid technical and social developments that make it difficult and slow down the cultural adaptation of individuals;
- The complexity of the rules that ensure adaptation to rapidly changing developments;
- The moral void that emerges with the weakening of the collective consciousness that gives the society a sense of “we” and the inability to form a new collective consciousness, the weakening of the “public authority” in terms of the regulatory power of the society;
- Unfair employment contracts, unfair freedoms.

The concept of anomie has been used to express a situation of normlessness and irregularity that occurs when the rules and order in the social structure do not work or deteriorate. The concept of anomie emphasizes a social situation, that is, a sociological situation, rather than a psychological state of personal and mental origin. It stems from the tension between individual interests and common cultural consciousness (Özmen, 2019). In the lexicon of philosophy, among the causes of the anomie, the depression and depression caused by the weakening of the traditional, especially the moral rules of the society and the individual, and financial difficulties are shown (Ulaş, 2002).

According to Merton (1973), anomie will increase in cases of the aimlessness of the society, the inability of the leaders to meet the demands of the individuals, the loss of the function of the social rules, the society’s fear of deficiencies and the future, the thought that there will be no social development, loss of goals, social regression, disintegration among individuals, feelings of hopelessness and insecurity (Kızılcelik, 1992).

Anomie is the state of irregularity and normlessness in individual behaviors that occur when social “balance” and integration are disrupted (Yeniçeri, 2019). Anomie is a concept that deals with both social and individual mental health, as it deeply shakes the understanding that it is possible for individuals in the society to achieve individual goals together and by looking after each other, isolating the individual from the society by isolating them from the society, or derating and making them reckless. Some striking psychological consequences of anomia: loneliness, isolation, difficulty in finding cultural and social direction, alienation, feelings of powerlessness

and helplessness and suicide. One of the individual consequences of the anomie is suicide, which Durkheim examines as a social phenomenon. Anomic suicides become widespread in the periods of rapid impoverishment or enrichment that occur as a result of rapid social and economic change, when the “public authority”, which means the society itself with its regulatory and rule-making organs, is weakened and cannot produce a morality of social solidarity. With the anomaly experienced in societies, rules and norms become dysfunctional, the hierarchy of values turns upside down, and the individual becomes suitable for all kinds of actions (Durkheim, 1966). According to Ekmekçi (2004): “In societies with anomia, disorder and chaos prevail. The common values that make up the society lose their validity. For this reason, crime rates increase rapidly and suicide cases become widespread. In such a society, the individual may feel useless, pointless and in emotional void. In this case, it becomes meaningless for the individual to make an effort for something. Then individuals start to break the rules. From now on, the only regulatory and determining factor becomes the interests of the people.”

The consequences of anomie can be expressed as follows: The state of imbalance occurs, common values and meanings are neither understood as before, nor can new values and meanings be substituted for them. Individuals may be resorted to illegal vehicles. In these periods, individuals lose their sense of loyalty to the society and carry their endless desires, which are in their interest, to the extreme. The individual may be dragged into a state of mental disorder and meaninglessness. The individual loses his traditional origins and succumbs to mental depression, the crime rate increases, and suicide events become widespread. In such a society, many individuals are pushed into a psychological position defined by a sense of uselessness, purposelessness, emotional emptiness, and hopelessness. Making efforts for anything is now considered useless; because there is no accepted definition of what to strive for. Individuals start to break the rules. The dimension of social norms that connects people to each other becomes ineffective. Traditional social and personal ties are dissolved, the individual's ties with society weaken or even disappear. The individual's sense of attachment to society is eroded, a general confusion, breakdown and conflict situation arises. Norms become ineffective, a state of breakdown, confusion or conflict arises. Situations of innovation, withdrawal, ritualism, rebellion arise. Since people are less attached to the social order, their basic desires can reach unlimited and mixed dimensions. In an anomic environment, the individual may experience status and role confusion, and fall into mental problems such as affective disorders, personality disorders, identity disorders, behavioral disorders, stress, depression, anxiety and anxiety (Öztürk, 2001; Ekmekçi, 2004; Marshall, 1999; Ulaş, 2002; Cevizci, 2000; Budak, 2000).

There have also been studies at the organizational level on the concept of anomie, which is related to the psychological and sociological processes that constitute the subject of organizational behavior (Switzer, 2013; Skiba, Smith & Marshall, 2009; Zoghbi & Rodriguez, 2007; Zoghbi, 2008; Zahra, Priem & Rasheed, 2005; Bass & Riggio, 2006). Organizational anomie is a phenomenon in which the individual norms and values of the employees become inefficient, causing the employees to act in an organizationally perverted manner over time, and a deficiency in the perception of the organization's workforce and social suitability (Formiga, Fleury, Fandino & Souza, 2016). Organizational anomie is the cause of the behaviors that work in the structure of the organization, changing the behavior of deception, changing the conditions for their own benefit, decreasing ethics, mutual commitment and trust in decision-making, guilt and guilt of the employees. In addition, unethical psychological behavior, theft, embezzlement, negative climate and motivation, document fraud, fraud, unrealistic expectation, organizational erosion, destruction of organizational culture, deception, helplessness, obedience, hostility and ruthlessness (Switzer, 2013, Maciejewska, 2016, Zoghbi & Gonzalez, 2009, Martin, Johnson & Cullen, 2009; Atteslander, 2007; Lincoln & Guillot, 2004). It was stated that these determinants should be taken into account in order to diagnose anomic behaviors in the organizational structure and to control the anomie. Because anomie is not regarded as a phenomenon that can be completely eliminated, but as a phenomenon that should be kept under control (Nowodzinski,

2015). When the worker's anomaly is diagnosed, psychological processes and other special conditions should be approached with sensitivity. Therefore, efforts should be made to understand the norms and their consequences in order to combat the anomaly that develops due to the lack of moral behavior and perspective of the employees in business life and organizational structure, and efforts should be made to create an environment where there is a sense of moral confidence at the organizational level (Martin et al., 2009).

The emotions and behaviors of an individual at the organizational level, that is, the employee, may turn from minor deviating behaviors to large-scale unethical behaviors. Employees with anomic feelings; It is considered possible for them to engage in unethical behaviors such as leaving the workplace early, dealing with private affairs during working hours, using or stealing the products or materials of the organization without permission, misinforming their managers or embezzling money (Maciejewska, 2016). For this reason, the presence and level of anomie within the organization should be defined. Because anomie is an important phenomenon that can cause moral decline or collapse when it occurs and affects all decisions and behaviors in the workplace (Formiga et al., 2016). Based on this information in the literature, it is seen that the organizational level anomie phenomenon can lead to serious organizational problems. Therefore, it is important to conduct new studies on organizational anomia, to examine previous studies and to use their results in combating anomie. From this point of view, examining the existence, level and related factors of organizational anomie in schools, which are the basis of social potential, will make a great contribution to the goals, efficiency, effectiveness and quality of education. The social and organizational life in Turkey is extremely important that the sample of studies on the concept that trifling little work in the field of education to be relevant to this issue increases the importance of this work. In this context, the aim of this study is to examine the opinions of teachers about the perception of anomie at school and its causes.

2. Method

2.1 Research model

The phenomenology design, one of the qualitative research methods, was used in this study. The phenomenological pattern focuses on phenomena that we perceive but do not have a deep and detailed understanding. Although a research reports stories about the experiences of one or several people, the phenomenological study defines the common meaning of several people's lived experiences with a phenomenon or concepts (Özet, 2014).

2.2 Working group

The working group of this research consists of 16 teachers working in primary and secondary schools affiliated to Erzurum Provincial Directorate of National Education in the city center of Erzurum during the 2020-2021 academic year. The maximum diversity sampling approach was used in the selection of the participants. In this context, the participants were diversified in the areas of age, professional seniority, gender, and branch differences. Information about the participants is included in Table 1. In order to keep the identity of the participants anonymous, the pseudonym was used instead of naming the participants directly.

Table 1. Demographic Information

Participants	Age	Gender	Branch
Sevda	38	Female	school teacher
Serhat	54	Male	school teacher
Latif	40	Male	Religion
Mehmet	34	Male	school teacher

Murat	26	Male	spor
Ferda	52	Female	Turkish
Işıl	36	Female	İnglish
Erkan	30	Male	Math.
Arzu	48	Female	Guidance
Dilara	46	Female	Technology Design
Ayşe	29	Female	Science
Ömer	51	Male	Social studies
Ali	41	Male	Turkish
Pınar	36	Female	school teacher
Meryem	50	Female	Social studies
Hülya	29	Female	English

As seen in Table 1, 9 of the participants are women and 7 of them are men. Looking at the ages of the participants, it is seen that they are between 26 and 54. 4 of the participants are classroom teachers, 1 is science, 1 is physical education, 1 is religious culture and ethics, 2 is Turkish, 2 is English, 1 is math, 1 is counseling, 1 is a technology design teacher and 2 is a social studies teacher.

2.3 Data collection tools

In the study, semi-structured interview forms consisting of open-ended questions were created to collect data. The research questions were prepared based on the expressions in the scales related to organizational anomaly after theoretical examination in the literature. Durkheim, Merton, and Srole's anomie theories have focused on elements such as the weakening of values, norms and rules, desperation, social and individual despair, business environment, management style, employee behavior, managerial and social insecurity, unethical behaviors of managers (Heydari et al., 2011; Maciejewska, 2016; Teymoori, 2016; Cullen et al., 2004; Caruana et al., 2001; Switzer, 2013). These elements were taken into consideration in the research questions prepared in this context and a draft interview form was prepared. The prepared draft form was consulted with three faculty members who are experts in the department of educational management, a preliminary interview was made with two teachers before the form was finalized, and the application process was initiated after the necessary corrections were made. The interviews were carried out by the researcher in one-on-one interviews with the participant in January and February of the 2020-2021 academic year. The interviews lasted between 15 and 30 minutes. The questions in the interview form are as follows:

1. What do you think about the impact and validity of today's values, rules and norms in social and personal life?
2. What are your views on the profile and practices of current administrators and school principals?
3. What do you think about today's business life, your own business life and the relationships here?
4. If you could, would you consider retiring or changing jobs, why?

2.4 Analysis of data

Content analysis technique was used to analyze the data obtained in the study. Content analysis consists of four stages. In the first stage, the data is encoded, then themes are created by classifying the encoded data, codes and themes are organized, and at the last stage, the findings are defined and interpreted (Yıldırım & Şimşek, 2013). Content analysis technique was used to

analyze the data obtained in the research. Content analysis consists of four stages. In the first stage, the data is coded, then the coded data is classified and themes are created, codes and themes are organized, and in the last stage, the findings are defined and interpreted (Yıldırım & Şimşek, 2013). Accordingly, first of all, the data were coded separately. Then, categories were created in these codes based on the literature. In the last stage, the data were calculated as frequency and percentage values.

2.5 Information on the credibility, transferability, reliability and confirmability of the research

In order to increase the credibility of the research, the opinions of the participants about the findings, comments and results were taken. In order to increase the transferability of the study, the research sample was defined in detail, and each stage of the study was explained in a clear and understandable way. Before starting the interview, a conversation was held with each participant for the purpose of building trust and getting to know each other (Lincoln & Guba, 1986).

The stability in the answers of more than one coder regarding the data sets is perceived as an indicator of reliability in qualitative studies (Creswell, 2016). The reliability of the study was calculated by Miles and Huberman's (1994) Reliability Formula = $\text{Consensus} / \text{Consensus} + \text{Disagreement}$. The codes and themes were sent to another expert in the field of educational sciences, and this expert was asked to reclassify the codes under the heading of the determined themes. In the classification made by the experts and researchers, the agreement rate was found to be 76%. A consensus (reliability) of more than 70% between field expert and researcher evaluations is a valid rate for the reliability of the research (Miles & Huberman; 1994). Codes classified under different themes were re-examined by field experts and researchers and placed on agreed themes. At the last stage of the analysis, the findings were interpreted (Yıldırım & Şimşek, 2013). Consent of the participants was obtained for the interviews, and all interviews were conducted on a voluntary basis. Participants were also informed that the data would only be used for scientific purposes and that their personal information would be kept confidential.

3. Results

In this study, which aims to determine teachers' perceptions of organizational anomie, the data obtained through interviews were discussed according to themes and sub-themes. According to the data obtained; general anomie: current understanding of value and future perception, managerial trust: current managerial value understanding and valid managerial values, organizational anomie: relational value understanding, organizational anomie and organizational behavior relation, current teacher behavior's themes were formed. Of the 16 teachers who participated in the study, 12 (Sevda, Murat, Ferda, Işıl, Erkan, Arzu, Dilara, Ayşe, Ömer, Ali, Hülya, Meryem) had negative views on organizational anomia, and 4 (Pınar, Serhat, Latif, Mehmet) they usually have positive perceptions. Three candidates who have a positive perception of organizational anomia are male. According to these findings, it can be said that teachers mostly experience organizational anomies and female teachers experience more organizational anomies than men. Three of the four participants who have positive thoughts about organizational anomaly are classroom teachers and one is religious culture and ethics teachers. This finding shows that branch teachers experience more organizational anomie than classroom teachers. The themes created from the data obtained and some of the relevant participant views are presented below.

3.1 General anomie: Worth my day

“What do you think about the effect and validity of current values, rules and norms?” and “What are the reasons for this situation?” the questions have been posed. Most of the teachers stated that these values have lost their influence today and that people now believe in these values, but in fact they do not care about these values and rules. The codes formed from teachers’ current understanding of value; divergence (2), stricture, normlessness (3), isolation, disregard (3), degeneration (4), worthlessness (5), backwardness, ineffectiveness, irregularity (6), weakening. The codes regarding the cause of this situation are: technology (7), social and virtual world (6), media (6), changing social order (8), family structure (5), wannabe (5), alienation (3), individual life (3). Two of the participants stated that these rules and values are still valid. The positive codes created regarding the opinions of the participants are order (2), commitment (2) and obligation. Some of the participant views are given below.

“In the developing world, unfortunately, people have moved away from social values and norms, got stuck in their inner worlds with technology and individualization, became lonely and became anti-social individuals thinking about their own interests. This caused corruption...” (Ömer)

“Values do not have as much effect in social life as before. Self-interest and materialism have replaced this value. The reason for this situation is the changing society and family structure, affection and media...” (Ayşe)

“Although the values are decreasing in the life of society, they still have an effect. Rules are very effective ...” (Serhat)

3.2 General anomie: Perception of the future

“What do you think about personal and social future in the context of current rules, values and norms?” the question has been posed. Twelve of the participants were hopeless about the social and personal future and made negative statements. Codes created based on participant views; despair (8), anxiety (6), loneliness (4), taking precautions (3), lack of culture, intolerance, collapse (3), regression. Three of the participants stated that they have positive thoughts about the future (codes: hope (2), wealth, improvement). Some of the participant expressions are presented below.

“With the weakening of values and rules in the future, individuals will become more and more selfish and alienated. A world without these values and rules would consist of chaos, I think these values will weaken even more...” (Işıl)

I see the future of society in loneliness and despair just like my own. I think there will be a series of people living for him ... (Sevda)

With globalization, people stuck in four walls will degenerate, become individualized and move away from values. We have to take measures for these now... (Erkan)

Despite everything, I am hopeful for the future. With education, we will become a society that abides by the rules ... (Latif)

3.3 Managerial trust: Valuable life and practice

To the participants, “What do you think about the current administrators and school principals (in the context of living and applying values such as trust and justice)?” the question has been posed. Except for two of the participants, others think that administrators and school principals have negative qualities in terms of living and applying concepts such as trust and justice. Negative codes created in this sub-theme; positive codes being worthless (5), mediocrity (2),

incompetence (7), norms (4), injustice (8), hypocrisy (6) and insecurity (6), trust (2), justice (3), respect (2). According to these data, it shows that there are negative perceptions in the context of trust between teachers and school principals. Although only 4 teachers trust school principals and administrators, 12 teachers find school principals insecure and unfair. Some of the participants' views on this sub-theme are as follows:

"I cannot trust the principal in general. I think he remained silent in order to maintain his position in every matter and could not put what he said into practice. I cannot see the knowledge and value that should be in the manager..." (Arzu)

"School principals cannot give confidence to the people as they do not trust themselves first. Since there is anxiety and fear of being complained in their actions, they approach people and events with suspicion and take responsibility and do not take risks, and teachers can sell them immediately. For this, they lack justice and trust..." (Ali)

"We work in one of the ministries with the highest number of personnel. There are many candidates for management in such a crowded group. Among them, the number of insecure and unfair managers is not small and I do not believe that they live up to values..." (Dilara)

"I see what they say is the same as what they do. I trust my school principal..." (Pınar)

3.4 Managerial trust: Valid managerial values

"What do you think about the values and facts that apply to today's administrators and school principals?" the question has been posed. Ten of the participants expressed negative opinions on this issue and stated that the behavior of school principals and administrators today consists of actions taken to protect their positions rather than values. The codes created in this sub-theme: negative codes such as cringe (4), nepotism (7), all-ways permissiveness (4), patronage, unionism (5), subversion (3), not something to me, favoritism (5) and diligence (3), positive codes such as honesty (3) and innovativeness. Some of the expressions of the participants are given below.

"Today's principals cringe to become principals and continue, they do everything they say, take everything from bottom to bottom against parents and superiors, and unions do whatever they say..." (Arzu)

"Unfortunately, they say that they would do anything to get this position because they found and appointed an incompetent man and they care so much about this seat. They treat their subordinates as if they were a boss and remain silent towards their superiors..." (Hülya)

"They have the values to work, to be innovative and to drive the school forward, and they work honestly for that..." (Serhat)

3.5 Organizational anomie: Values in relationships

"Mutual trust, meaning of work, ethics, justice, respect, tolerance, etc. When you evaluate it in the context of values, how do you evaluate today's working environments and their relations?" the question has been posed. Although 11 of the participants expressed negative opinions on this question, 5 of them expressed positive opinions. Negative codes created in this sub-theme; positive codes when grouping (2), interests' relations (6), unethical, intolerance (4), insecurity (8), harming (3), resistance, insincerity (4); trust (3), tolerance (3), respect (5) and togetherness (4). The statements of some of the participants are as follows:

“Relationships are damaged because there is no value left in relationships. Tolerance and tolerance have decreased, people have no trust in each other. Since there are no moral and ethical values, the relationships are superficial ...” (Meryem)

“This situation depends entirely on where the person works. I find my environment very good. Relationships at my school have a family atmosphere of fair, diligent and reliable people.” (Serhat)

“Although the relationships seem tight in the environment I work in, there is interest and insincerity. In the changing world, values have decreased and relationships have been damaged ..” (Dilara)

3.6 Organizational anomy: Values in organizational behavior

To the participants, “What kind of behaviors do the existence or absence of the current value rules and norms cause in organizational terms?” The question has been posed. Although 13 of the participants expressed negative opinions, three of them expressed relatively positive opinions. Negative codes created in this sub theme in line with the data obtained: organizational failure (7), lack of motivation (9), organizational distancing (7), negative school climate (6), morale (10), indiscipline (5), inefficiency (4), organizational withdrawal (9), dissatisfaction (8); and positive codes depletion (6): satisfaction (3), positive culture (2), organizational trust (3) and commitment (2). Some of the participants’ views are as follows:

“Because all these values are weakened, teachers do not feel that they belong to their school and they experience professional dissatisfaction. Low motivation at school leads to an unsuccessful and poor school...” (Murat)

“Because the values decrease in the teachers in the school, there is insecurity, the teachers are unhappy, they do not obey the work discipline, they cannot commit themselves to their work ...” (Ferda)

“The more these values in the school, the more confidence increases, the relationships improve, the teachers find what they are looking for...” (Mehmet)

3.7 Organizational anomy: Teacher behaviors today

“How do you evaluate teacher behaviors in the context of valid values, norms and rules in today's business life?” to the participants, the question was posed. Although 12 of the participants tried to explain today's teacher behaviors with negative expressions, 4 of them made positive expressions in general understanding. The positive ones among the codes in this sub-theme created according to the teachers’ opinions: I save the day (5), do whatever they say (6), despair (5), frustration (4), withdrawal (8), loss of excitement (8), timidity (2), avoidance of responsibility (3), selfish; but positive codes: self-sacrifice (3), diligence (3), sacrifice (2), love of profession (2). Some of the teachers’ views on this sub-theme are below:

“Now that the teachers do not see justice in their jobs, they go in and out of their classrooms rather than work too hard and they do not give their opinion on any job, they only think about the salary they will receive ...” (Ali)

“When we ask, there are things that nobody wants to do but everyone does involuntarily in order to be a cogwheel in the functioning. This ends teachers' commitment, happiness and excitement...” (Işıl)

“Despite all the difficult conditions today, teachers are doing their best. They are devoted to students, despite all kinds of humiliation and deterrence. In this age, a teacher who does not do his job fondly cannot be happy...” (Latif)

3.8 Job satisfaction

Finally, to the participants, “When you think about the developments in society and business life, would you consider retiring or changing jobs if you could, why?” the question has been posed.

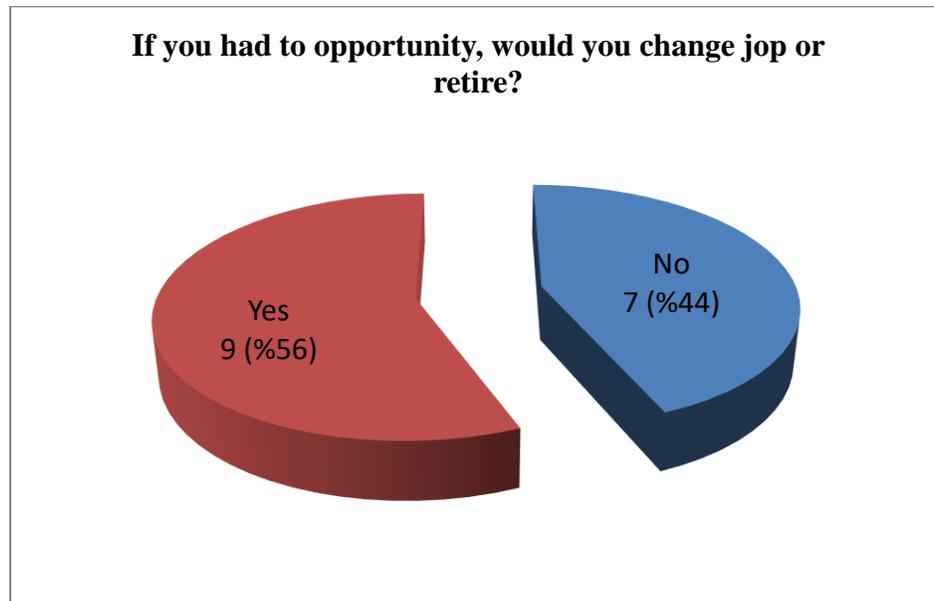


Figure 1. Job Satisfaction Chart

As can be seen in Figure 1, 9 of the teachers stated that they could change jobs or retire if they had the opportunity, considering the current conditions. 6 of the participants stated that they are satisfied with their work. Negative codes occurring under this theme: injustice (7), incompetent managers (5), insecurity (7), selfishness (3), materialism, anxiety (2) and loss of dignity of the profession; positive codes are love of profession (5), respectable profession (5), devotion (3). Some of the teachers' views on this theme are below:

“I love my job very much, even if I have a chance, I will not quit it...” (Mehmet)

“If I had such an opportunity, I would consider changing jobs and moving to a high-return job. Because I am tired of the incompetence of the managers and the fact that the person who finds his man has a seat ...” (Işıl)

“I worked hard to earn this prestigious profession, whatever the conditions are, it is above all for a student to learn something from me ...” (Meryem)

4. Conclusion and discussion

According to the statements of the participants, most of the teachers think that the values and norms have lost their influence in today's social and personal life and the rules are ignored. Today, although there are those who think that the effects of values and rules continue, they remain a minority among the participants. According to these findings, the general anomie levels of most of the teachers are high and according to these teachers, the effect of values, norms and rules in the society is weak. Teachers see phenomena such as media, technology, changing social life, wantingness and individualization as the reason for this situation. Most of the participating teachers are hopeless about the future due to the current state of today's world, they are worried about the future and they have negative expectations for the future. Bayhan (1995), in his study on university students, concluded that 98% of the participants experienced moderate

anomie. In this study, Bayhan (1995) concluded that negative family characteristics, living environment, socio-economic structure, ideology, social structure and friendship are also effective in the anomie experienced by young people. When we associate the opinion of the participants of the present study with the idea that Bayhan (1995) was a student at the time of the research, it can be interpreted that the medium-level anomie potential in almost all of the individuals was triggered by the practices in professional life and turned into a behavior. Fandine et al. (2015) focused on the relationship between the perception of organizational support and lack of self-identity and anomia. According to Messner and Rosenfeld (2006), the four institutional forces associated with the institutional anomie theory are; economy, education, politics and family. Heydari, Davoudi and Teymoori (2011) anomie; They examined it in the context of meaninglessness, weakness, insecurity and excessive indulgence in money, and they saw materialism as the most important reason for the emergence of anomie.

Participants stated that although they are primarily responsible for living the values, norms and rules in society, today's administrators feel a deep distrust, especially of school principals. According to the teachers, school principals try to protect their positions by applying only what the superiors say and the rules, and they work to stay in their seats rather than to raise the educational level or to use human resources effectively. According to the expressions of the participants, today's administrators and school principals are inadequate in living and applying values and norms. Among the participants, although there are some who have positive thoughts about the administrators in the context of facts such as trust, value and justice, their number is small. Generally, when the participants talk about administrative trust, concepts such as lack of merit, worthlessness, injustice, protecting their seat, taking their seat, unionism and lack of vision come to mind. Participants generally do not trust managers, think that they do not attach importance to values and norms and have negative thoughts. Arslan and Yavuz (2019) also concluded in their study that anomia in organizations is closely related to justice and trust. Cullen et al. (2004) states that managers' behaviors in terms of the concept of justice and ethics are in harmony with the organizational anomie. It has been found out that organizational culture, structure, management style, immoral behavior and unethical behavior in an organization increase employee anomaly (Jahanshahi & Dehghani, 2019; Sypniewska, 2017). Bass and Riggio (2006) in their study associating anomie and transformational leadership; they emphasized that the practices of transformational leaders are effective in gaining important goals, meanings and values that employees need and are related to anomia. Teymoori (2016) also discussed anomaly at two levels, namely the erosion of the social structure and the deterioration of leadership, and found that the dissolution in the social structure and the disturbances in leadership increase the sense of helplessness and hopelessness and cause anomia.

Participants generally develop trust, ethics, justice, respect, tolerance, etc. in relationships in their work environment. They stated that values have lost their importance, instead of them, self-interest, individuality, intolerance and intolerance prevail. According to teachers, although individuals say that they believe in so-called values, when it comes to their own interests, they can give up these values very quickly. This degeneration and deregulation experienced in values and norms in organizational life causes organizational behaviors such as exhaustion, lack of motivation, organizational withdrawal, inefficiency, insatiability, unhappiness, indiscipline, withdrawal, negative school climate and culture. Although there are participants who say that teachers exhibit positive behaviors in an individual sense, according to the vast majority of participating teachers, the behavior of today's teachers is shaped by the effect of frustration, despair and negligence with the thought of doing whatever they say. Cohen (1993) concluded that there are relationships between organizational anomaly and organizational culture, ethical climate in the organization, leadership, and organizational socialization. In many studies in the foreign literature on the subject, they emphasized that anomia has effects on employee hopelessness, feelings of helplessness and incompatible perceptions not related to the expectations of the

enterprise, burnout, withdrawal, lack of motivation, and low performance (Penc, 2011; Tsahuridu, 2011; Zoghbi & Gonzalez, 2009; Carter & Carter, 2007; Zoghbi & Rodriguez, 2007).

Although most of the participants think negatively in terms of general and organizational anomie and trust in the manager, it is seen that the statements are not that negative when it comes to professional satisfaction. Despite this, more than half of the participants are not satisfied with their jobs due to the worthlessness, irregularities and irregularities in working life and they want to change jobs or retire if they have the opportunity. Similarly, Choi et al. (2018) found in their study that anomia causes workplace deviation and job change in employees.

According to the results of this study conducted on primary and secondary school teachers, the general anomie and organizational anomie perceptions of the teachers are high. The organizational anomie perceptions of the participants who are classroom teachers are very low compared to the branch teachers. Teachers are deeply distrustful of today's administrators and school principals due to their lack of values and norms. In the context of this anomie and insecurity experienced, the negativities in the phenomena such as organizational behavior, school success, efficiency, satisfaction and job arrest deeply threaten the school and its employees.

According to the results obtained from the research, the recommendations are as follows:

- One of the most important components of the organizational anomie experienced by teachers is the distrust towards the administrator. In this context, it is necessary to create an appointment model that gives importance to merit and justice by eliminating variables such as trade unions, politics and favoritism in the appointment of administrators to schools. For this, an appointment model should be made in cooperation with universities in each province. For this purpose, the commissions, which will be formed under the presidency of lecturers with at least associate professors in the departments of education management in universities, who are experts in this field, and that will be made up of administrators and stakeholders who have come to the fore with their local experience, expertise and value should be functionalized.

- Enriching current principals in the context of values and social norms can help reduce organizational anomaly in schools by increasing trust in school principals.

- Teachers think that values in relationships in their schools become insignificant and self-interest and irresponsibility are very high. For this, the ministry's transition to a human resources management system and personnel evaluation system, which takes into account the relationships in schools, where the teacher willingly enters into work not with threats based on investigation and punishment methods, they feel valued, justice and ethical rules prevail, may help reduce organizational anomaly in schools.

- Written and spoken rules, whose importance is emphasized by fancy sentences as discourse everywhere; The most important factor in the survival and implementation of values such as justice, ethics, equality, tolerance and social norms is the living and implementation of the managers and decision makers from the highest to the lowest. In the context of managerial practices, employees who see that these remain only in writing and in words, quickly move towards the depths of the organizational anomie. In this context, starting from the top level, regardless of the conditions, not compromising these rules and values and pushing those who try to damage them out of the system will be one of the most important steps to prevent anomia in schools.

- Increasing the organizational anomie studies, which are insufficient in our country's sample, and examining the reasons and consequences of this concept at all types and levels in education, in solving the current problems and dilemmas in our education, overcoming inertia and congestion, and most importantly, encouraging teachers, who are the locomotives of education, to be involved and show their potential. It will make very important contributions in terms of.

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References

- Ambrose, M. L., & Arnaud, A. (2005). Are procedural justice and distributive justice conceptually distinct? In J. Greenberg & J. A. Colquitt (Eds.), *Handbook of Organizational Justice* (pp. 59-84). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Arslan Ö. E., & Yavuz, E., (2019). Örgütsel adalet, örgütsel anomi ve örgütsel güven arasındaki ilişki: otel işletmelerinde bir araştırma [The relationship between organizational justice, organizational anomie and organizational trust: A research in hotel businesses]. *Turkish Studies International Periodical for the Languages, Literature and History of Turkish or Turkic*, 14(2), 113-134.
- Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd Edition). Mahwah, NJ: Lawrence Erlbaum.
- Baumer, E. P. (2007). Untangling research puzzles in Merton's multilevel anomie theory. *Theoretical Criminology*, 11(1), 63-93.
- Bayhan, V. (1995). *Üniversite gençliğinde anomi ve yabancılaşma (İnönü Üniversitesi örneği)* [Anomie and alienation in university youth (Inonu University example)] (Unpublished PhD Thesis). İnönü Üniversitesi, Sosyal Bilimler Enstitüsü, Malatya.
- Bjarnason, T. (2009). Anomie among European adolescents: Conceptual and empirical clarification of a multilevel sociological concept. *Sociological Forum*, 24(1), 135-161.
- Carter, E. M., & Carter, M. V. (2007). A social psychological analysis of anomie among national football league players. *International Review for the Sociology of Sport*, 42(3), 243-270.
- Caruana, A., Ramaseshan, B., & Ewing, M. T. (2001a). Anomia and fraudulent behavior by retail customers: A study among employees. *Journal of Retailing and Consumer Services*, 8(1) 181-187.
- Choi, Y. H., Myung, J. K., & Kim, J. D. (2018). The effect of employees' perceptions of CSR activities on employee deviance: The mediating role of anomie. *Sustainability*, 10(3), 1-20.
- Cohen, D. V. (1993). Creating and maintaining ethical work climates: Anomie in the workplace and implication for managing change. *Business Ethics Quarterly*, 3(4), 343-358.
- Creswell, J. W. (2013). *Nitel araştırma yöntemleri* [Qualitative research methods]. M. Bütün & S. B. Demir, Trans. (Eds.). İstanbul: Siyasal Kitapevi.
- Cullen, J. B., Parboteeah, K. P., & Hoegel, M. (2004). Cross-national differences in managers' willingness to justify ethically suspect behaviors: A test of institutional anomie theory. *Academy of Management Journal*, 47(3), 411-421.
- Durkheim, É. (1966). *Suicide, a study in sociology*. New York, NY: Free.
- Edinsel, K. (2020, 12 January). Anomi. <https://dusunbil.com/2020/01/anomi-nerede-ne-zaman-ve-nasil/>.
- Fandino A., Aguiar, S. M., & Bentes, S. R. (2015). Organizational anomie, professional self-concept and organizational support perception: theoretical model evidences for management. *International Journal of Business and Social Science*, 6(11), 1-10.

- Fritsche, I., Jonas, E., & Kessler, T. (2011). Collective reactions to threat: Implications for intergroup conflict and for solving societal crises. *Social Issues and Policy Review*, 5(1), 101-112.
- Haslam, S.A. & Reicher, S. (2007). Identity entrepreneurship and the consequences of identity failure: the dynamics of leadership in the BBC prison study. *Social Psychology Quarterly*, 70(2), 125-47.
- Heydari, A., Davoudi, I., & Teymouri, A. (2011). Revising the assessment of feeling of anomie: Presenting a multidimensional scale. *Procedia – Social and Behavioral Sciences*, 30, 1086-1090.
- Jahanshahi, A. A., & Dehghani, A. (2019). Anomie at public organizations: How can the quality of work life help? *Journal of Public Affairs*, 20(4), 1-9.
- Johnson, P., & Duberley, J. (2011). Anomie and culture management: Reappraising Durkheim. *Organization*, 18(4), 563-584.
- Kasapoğlu, O. (2019). *Anomi sürecinde toplumsal kaos* [Social chaos in the process of anomie] (Master's Thesis). Sosyal Bilimler Enstitüsü. Cumhuriyet Üniversitesi, Sivas.
- Konty, M. (2005). Microanomie: The cognitive foundations of the relationship between anomie and deviance. *Criminology*, 3(1), 107-32.
- Lincoln, Y. S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New Directions for Program Evaluation*, 30, 73-84.
- Martin, R. (2000). Anomie, spirituality, and crime. *Journal of Contemporary Criminal Justice*, 16(1), 75-98.
- Messner, S. F., & Rosenfeld, R. (2006). *The present and future of institutional-anomie theory in taking stock: The status of criminological theory* (Cullen, F. T., Wright, J P., & Blevins, K. R., Eds.). New Brunswick: Tran Saction.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded Sourcebook* (2nd ed). Thousand Oaks, CA: Sage
- Özmen, Ü. (2019, 10 December). *Anomi hastahğı*. <https://www.birgun.net/2019/12/haber/ahlaksizlik-hastaligi-anomi-194581>.
- Penc, J. (2011). *Organizational behavior in the enterprise. Steering creative attitudes and aspirations*. Warsaw: Wolters Kluwer Polska. (in Polish)
- Reicher, S., & Haslam, S. A. (2006). Rethinking the psychology of tyranny: The BBC prison study. *The British Journal of Social Psychology*, 45(1), 40-52.
- Reicher, S., Haslam, S. A., & Hopkins, N. (2005). Social identity and the dynamics of leadership: Leaders and followers as collaborative agents in the transformation of social reality. *The Leadership Quarterly*, 16(4), 547-568.
- Rothstein, B., & Eek, D. (2009). Political corruption and social trust an experimental approach. *Rationality And Society*, 21(1), 81-112.
- Rothstein, B. (2000). Trust, social dilemmas and collective memories. *Journal of Theoretical Politics*, 12(4), 477-501.
- Switzer, T. G. (2013). *Measuring normlessness in the workplace: A study of organizational anomie in the academic setting* [A Ph.D]. Dissertation in Leadership and Change Program, Antioch University.
- Sypniewska, B. A. (2017). Work anomie in an organisation. *International Journal of Contemporary Management*, 16(2), 235-265.
- Şimşek, M., Şerif, Akgemci, T., & Fettahloğlu, T. (2006). Örgütlerde yabancılaşmanın yönetimi. Örgütlerde yabancılaşmanın yönetimi örgütlerde araştırması [Management of alienation in organizations. Management of alienation in organizations research in organizations]. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 0(15), 569-587.

- Teymoori, A., Jetten, J., Bastian, B., Ariyanto, A., Autin, F., Ayub, N., et al. (2016). Anomi ölçümünü tekrar gözden geçirme [Reviewing the anomie measurement]. *PLoS ONE*, 11(7), e0158370. <https://doi.org/10.1371/journal.pone.0158370>
- Teymoori, A. (2016). *The psychology of anomie* [Doctoral Dissertation]. The University of Queensland School of Psychology, Australia.
- Tsahuridu, E. E. (2011). An exploration of factors affecting work anomia. *Journal of Business Ethics*, 99(2), 297-305.
- Yang, a. (2015). *Quantifying anomia: Development of a scale*. Master Thesis. California State University, Fresno.
- Yeniçeri, Ö. (2019, 12 December). *Anomi ve epistemik çöküş*. Yeniçağ. <https://www.yenicaggazetesi.com.tr/2019/12/anomi-ve-epistemik-cokus-51039yy.htm>.
- Yıldırım, A., & Şimşek, H. (2006). *Sosyal bilimlerde nitel araştırma yöntemleri* [Qualitative research methods in the social sciences]. Ankara: Seçkin Yayıncılık.
- Zoghbi, P., & Gonzales, S. M. (2009). The role of anomia on the relationship between organisational justice perceptions and organisational citizenship online behaviours. *Journal of Information, Communication & Ethics in Society*, 7(1), 72-85.
- Zoghbi, P., & Rodriguez, T. E. (2007). Organizational anomie as moderator of the relationship between an unfavorable attitudinal environment and citizenship behavior (OCB): An empirical study among university administration and services personnel. *Personnel Review*, 36(6), 843-866.





Views of Social Studies Teachers on Support and Training Courses

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Abstract

The purpose of this research is to identify the views of social studies teachers working in supportive training courses on courses. In the study, case study pattern which is used frequently in qualitative research has been preferred. To identify the views of social studies teachers about supportive training courses semi-structured interview form has been used. Data has been gathered in 2019-2020 education season and content analysis method has been used in analyzing the data. Study group consists of 21 social studies teachers who both work in secondary schools situated in central Afyonkarahisar and supportive training courses. Most teachers find supportive training courses useful and state the reason of working in them both financial and service score. As to the effects on students while most teachers have mentioned positive effects like equality of opportunity some have stated attention and interest levels of students have decreased due to fatigue. As for the effects on teachers, most have stated positive impacts like financial benefit and service score while some have mentioned negative effects like getting tired. In general teachers have named typical common problems as transportation, nutrition and absenteeism. Accordingly with the findings of the study some suggestions have been made.

Keywords: supportive training courses, social studies, secondary school.

1. Introduction

The changes that have taken place for a long time in education system have created exam-based education perception and this situation has taken a significant place in education and future planning of students. It is clear that the path to a good job in the future passes from getting a good education. Thus, for most students the education process involves exam-based preparations and studies. (Kayapınar, 2006; Ocak, Akgül & Yıldız, 2010). Today supportive training courses are regarded as inseparable part of this process.

Achieving equality of opportunity and possibility in education as the necessity of social state notion like in all developed countries is also one of the fundamental principles of Turkish primary education. (Dönmez, Gürbüz & Tekçe, 2018; Topcu & Ersoy, 2019; Yıldırım, Yıldırım & Ceylan, 2017). But various factors make it difficult to apply equality of opportunity and possibility. Inequality of opportunity and possibility created by private courses as being one of these factors can be shown as one of the reasons of transformation process in private course sector dating back to 2014. As part of this transformation process while some courses have been shut down others have been transformed either into study centers or to private schools (Bozbayındır & Kara, 2017).

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As a result of this reform in private courses issue, supportive training courses have been planned by Ministry of National Education (MoNE) in all primary and secondary education schools since 2014-2015 education season to meet training needs and achieve equality of opportunity and possibility between students. In accordance with this context, Ministry of National Education Formal and Informal Training Support and Education Courses Directive with the office approval of date 23 September 2014 and issue 4145909 has taken affect (Dönmez et al., 2018; İncirci, İlğan, Sirem & Bozkurt, 2017; MoNE, 2014).

These courses have been opened to support the curriculum and planned to last for three terms. Two terms of the courses are carried out in active formal education period of fall and spring semesters and the other is carried out in summer vacation. Also, attendance for courses is mandatory and no fee of any sorts is taken from attendants (MoNE, 2014). To make these courses attractive for teachers MoNE has decided to give additional service scores to teachers for the months of duty in these courses (Official Journal, 2015). Besides, the payments to teachers working in these courses have been doubled (MoNE, 2015). This way both giving teachers what they deserve and making the courses attractive for them are aimed.

For evaluating the process, workshops with school representatives and headmasters coming from all cities were done in various city centers in 2015-2016 education season. These workshops have shown that the courses have decreased extra education needs, teachers have adopted to the courses and as they are presented to students free of charge these courses have provided a financial support to parents (MoNE, 2016). Taking these outcomes into consideration supportive training courses play an important role ensuring equality of opportunity in education and eradicating the negative effects of closing of private courses. Enabling consolidating of most topics by students supportive training courses continue to serve with ever increasing demand each day (Akbaba, 2019).

Although it is a matter of importance to ensure equal opportunity for students in need with the implementation of the courses, it is also as important how much the courses fulfill their objectives and how effective they are as the provision of these courses. One of the ways to understand how effective the courses are is to get feedback about them (Sönmez, 2003). In this respect, it is important that the deficiencies and the problems experienced in the courses be revealed in order to make them more effective and efficient. When the literature is examined, it can be said that there are not enough studies, although some studies have been revealed regarding the support and training courses. From these studies; Ünsal and Korkmaz (2016), in their studies on the functions of support and training courses, concluded that teachers and students welcomed the courses. In another study, Göksu and Gülcü (2016), teachers have stated their positive opinions about the courses as economic returns, eliminating incomplete learning and reinforcing learning, and stated that the most important problem was the lack of material. In addition to these, in the study conducted by Bozbdındır and Kara (2017), the problems experienced in the courses and solution suggestions have been presented according to the teachers' opinions, and in the study conducted by Aküzüm and Saraçoğlu (2018), the attitudes of secondary school teachers towards the courses have been determined.

Many students in the education system are affected by the exam system in transition to the next level. It is seen that students participate in support and training courses in order to get rid of the negative effects of this situation and to increase their academic success. In this study, it is aimed to reveal the views of social studies teachers who work in the courses. The emergence of the views of the teachers, one of the most important components of the courses, on the subject will make it possible to evaluate the process experienced in the social studies subject in the support and training courses. As a result, it is natural that this system, which doesn't have a long history, has its advantages as well as its deficiencies. For this reason, it is important to be able to identify the positive and negative sides of the system from the eyes of the teachers of the social studies/T.C. History of Revolution and Kemalism course and to produce solutions to problems.

The aim of this research is to examine the opinions of Social Studies teachers on support and training courses. For this purpose, answers to the following questions were sought:

- (1) What are his thoughts on supporting and training courses as a social studies teacher?
- (2) What are his thoughts on the effects of support and training courses on students as a social studies teacher?
- (3) What are his thoughts on the effects of support and training courses as a social studies teacher on teachers?
- (4) What are his thoughts on the problems encountered in terms of support and training courses as a social studies teacher?
- (5) What are the solution suggestions for the problems encountered in terms of support and training courses as a social studies teacher?

2. Methods

Qualitative research method has been adopted in this study, which aims to determine the opinions of Social Studies teachers on support and training courses. It is stated that qualitative research is an approach used to discover the meaning attributed to a social issue by individuals or groups (Creswell, 2015). One of the qualitative research methods is case study. Case studies are studies that aim to reveal how the factors related to a situation or phenomenon are investigated with a holistic approach and how they affect the situation or how they are affected by the relevant situation. These studies also present the results related to the situation (Yıldırım & Şimşek, 2016).

2.1 *Study group*

The participant of the research consists of 21 Social Studies teachers working in secondary schools affiliated to the center of Afyonkarahisar in the 2019-2020 academic year and working in support and training courses. For this reason, the sample group was chosen from among the teachers working in secondary schools with the criterion sampling method, which is one of the purposeful sampling methods, in accordance with the design of the research. The basic criteria of this research are to work in secondary schools affiliated with the Ministry of National Education and take part in supporting and training courses. Of the 21 teachers participating in the study, 9 are male and 12 are female.

2.2 *Data collection tool*

A semi-structured interview form was used to determine the opinions of Social Studies teachers about the support and training courses. In order for the interview form to be prepared, the relevant literature was scanned and an item pool was created in the light of the obtained information. While preparing the form, the opinions of three field experts were taken. After the form was prepared, pre-application was made to two teachers outside the study group. In the pre-application, it was determined that the questions were understood by the participants and the form was given its final form. The interview form consists of five questions in its final form and is answered in about 30 minutes.

The research was completed in accordance with the rules of publication ethics. Ethical permission was obtained from Afyonkocatepe University Scientific Research and Publication

Ethics Committee (Ethics Committee Decision Date 6 November 2020 and Issue 2020/194) within the framework of the research carried out.

2.3 Data collection and analysis

In this study, the data were obtained through a semi-structured interview form to determine the opinions of Social Studies teachers on support and training courses. Firstly, ethical permission was obtained from Afyonkocatepe University Scientific Research and Publication Ethics Committee. Then, social studies teachers who gave support and training courses were determined and interviewed about participation in the research. The teachers were informed about the purpose and scope of the research, and the informative text was read to the parties, and their voluntary participation was ensured. The interviews were held in September and October in the 2019-2020 academic year. The interviews were conducted during the breaks or during the teachers' empty lessons. Each meeting lasted approximately 20-30 minutes. The interview was conducted as a face-to-face meeting and the statements of the participants on the subject were written down. At the end of the interview, the data were re-read to the participant and it was made sure whether their thoughts were reflected correctly. The data obtained in the study were analyzed and interpreted by content analysis method, one of the qualitative data analysis methods. According to Yıldırım and Şimşek (2016), the main purpose of content analysis is to reveal the real facts in the collected data. For this, the operations performed in content analysis are to collect similar data under the determined themes and to organize and interpret them in a way that the reader can understand. The collected data were analyzed separately by two people and analysis results were compared. Teachers participating in the study were shown by coding as T1, T2, T3... The reliability of the research data was calculated using the formula of Consensus / (Consensus + Disagreement) * 100, which was put forward by Miles and Huberman (1994), and a consensus of 94% was achieved. The part with disagreement was evaluated together and a consensus was reached.

3. Findings

In this part of the study, in line with the research questions, the findings regarding the opinions obtained from the Social Studies teachers are presented in tables.

3.1 Social Studies teachers' views on support and training courses

The opinions of Social Studies teachers about the support and training courses are given in Table 1.

Table 1. Social Studies teachers' views on support and training courses

Social Studies teachers' views on support and training courses	Their views on education	Useful	Increases student success Supports lessons by repeating the topic Removes time shortage Leaves time to solve questions and take exams Provides the opportunity to explain the subjects not finished in the lessons

		<p>Provides equality of opportunity Provides the opportunity to prepare for central exams in the last year Helps increase school success</p>
	Useless	<p>Students don't care like lessons Teachers do not pay enough attention Weekday courses are inefficient Too much absenteeism</p>
Their views on personal effects		<p>Better in terms of additional service score Good financial return My performance increases as willing students come to the courses</p>

As seen in Table 1, Social Studies teachers' opinions on support and training courses; Opinions about education are gathered under two main themes as opinions about personal effects. On the other hand, teachers' views on education are grouped under two themes as useful and not useful.

Teachers who express their opinions about education as beneficial have stated that the courses increase student success, support the lessons by repeating the topic, take away the time hassle, leave time for solving questions and taking exams, provide the opportunity to explain the subjects not finished in the lessons, provide equal opportunity, provide the opportunity to prepare for the central exams in the final years and help to increase school success.

The teacher T1, who has the view that "It increases student success" regarding its usefulness, has expressed his opinion as follows:

"The courses have positive effects. I think student success has increased. It helps with lessons."

T5, who has the view that "Courses support the lessons by repeating the topic", has expressed his opinion as follows:

"Generally, we do not have the chance to repeat the topics we covered in the lesson because of the short time available. Thanks to the courses, we have time to repeat the topics and take tests on the subject, which affects the lessons."

Teachers who have stated their thoughts about education as useless have stated that students do not care about courses like their lessons, teachers do not pay enough attention, weekday courses are inefficient and there is too much absenteeism.

Regarding its uselessness issue the teacher T7, who has the view that "The students do not care about courses like their lessons" has expressed his opinion as follows:

"Because there are no issues like passing the class, grades etc. in courses, students don't care enough. They don't treat them the same as normal classes."

T12 coded teacher who has the view that "absenteeism is too much" has expressed his opinion as follows:

“Students are absent too much because there is no sanction for the courses. They go out of the house for courses but run after games instead.”

Regarding their personal effects, teachers have stated that they are good in terms of additional service points, bring good financial return and their performance is increasing because willing students come to the courses.

Regarding the personal effects the teacher coded as T3, who has the view that “it is better in terms of additional service points,” has expressed his opinion as follows:

“I think it is beneficial for the teacher as it is for the students. For example, we can get additional service points...”

The teacher coded as T17 who thinks “My performance increases because willing students come to the courses” has expressed his opinion as follows:

“Although it seems like there are a lot of students enrolling in the courses in general, as there is no sanction, generally the students who are conscious and good usually come and this causes an increase in my performance...”

3.2 Social Studies teachers’ views on the effects of support and training courses on students

The opinions of Social Studies teachers on the effects of support and training courses on students has been given in Table 2.

Table 2. Social Studies teachers’ views on the effects of support and training courses on students

Social Studies teachers’ views on the effects of support and training courses on students	Positive Effects	<p>Allows reinforcement by repeating what has been learned in the course Provides free courses for students who cannot afford Provides repetition of subjects that cannot be learned in the course. Provides the opportunity to solve a large number of questions on the subject Students find the opportunity to ask questions to the teacher Keeping the student away from negative environments Helps to learn permanently Increases course success</p>
	Negative Effects	<p>Inefficiency of weekday courses due to tiredness of students No time for social activity for the student Providing some students with an excuse to escape from home Loss of interest due to the need to eat after class on weekdays</p>

As seen in Table 2, Social Studies teachers’ views on the effects of support and training courses on students are grouped under 2 themes as positive effects and negative effects.

Regarding positive effects teachers have stated that the courses allow reinforcement by repeating what has been learned in the lesson, provide free courses for poor students, allow to repeat the topics not learned in the lesson, give students the opportunity to solve a large number of questions on the subject, give students the opportunity to ask questions to their teacher.

Regarding the positive effects, the teacher coded as T4, who has the opinion that “It provides free course opportunity to students who do not have the means”, has expressed his opinion as follows:

“Sometimes there is inequality of opportunity among students. Students who are not financially well, not able to take private lessons or private courses have the opportunity to take courses for free...”

The teacher coded as T8, who has the view that “It provides the opportunity to solve many questions about the subject”, has expressed his opinion as follows:

“Social Studies especially is a very intense field in terms of curriculum. For this reason, we cannot find enough time to do enough activities in lessons. Thanks to the courses, we can solve many questions about the subjects that we have to teach and pass in the lesson.”

Regarding the adverse effects, the teachers have stated that weekday courses are inefficient due to tiredness of students, there is no time for social activity for the student, provide an excuse for some students to escape from home and decrease the interest due to the need to eat after class on weekdays.

Regarding the negative effects, the teacher coded as T3, who has the view that “weekday courses are inefficient due to the tiredness of the students,” has expressed his opinion as follows:

“As most of the courses start after weekday lessons, students get tired by the evening. For this reason, students cannot be very active in the lessons, they do not want to participate in the lessons.”

Having the view that “there is no time for social activity for the student”, the teacher T18 has expressed his opinion as follows:

“The situation is since there are classes and courses on weekdays and courses at weekends, students do not have much time to play games and go to the movies etc. So, they don't have time to spare for social activities.”

3.3 Social Studies teachers’ views on the effects of support and training courses on teachers

The opinions of Social Studies teachers on the effects of support and training courses on teachers are given in Table 3.

Table 3. Social Studies teachers’ views on the effects of support and training courses on teachers

Social Studies teachers’ views on the effects of support and training courses on teachers	Positive Effects	Good financial return Handling subjects not covered in the course Being more efficient thanks to the preparations made Sparing more time for students Contribution to service score
	Negative Effects	Teacher’s getting more tired Inability to spare time for himself Not being able to spare time for family and environment

Efficiency decreases due to excessive workload
Reluctance due to constantly explaining the same topics

As seen in Table 3, the opinions of Social Studies teachers about the effects of support and training courses on teachers are grouped under 2 themes as positive effects and negative effects.

Regarding the positive effects, the teachers have stated their opinions as having a good financial return, handling the subjects that could not be completed in the course, being more productive thanks to the preparations, giving more time to the students and contributing to the service score.

Regarding the positive effects, the teacher T5, who has the view that “subjects that cannot be finished in the lesson should be taught” has expressed his opinion as follows:

“It is very difficult to complete the topics in social studies, especially in the History of Revolution, and we are making great efforts to finish them. Thanks to the courses, we can teach lessons more easily and compensate for the sections that are not trained.”

Having the view of “being more efficient thanks to the preparations made,” the teacher T13 has expressed his opinion as follows:

“These kinds of activities require teachers to be more active. It is necessary to prepare and prepare questions for both the lesson and the course. Therefore, the teacher is having a more efficient and effective lesson thanks to these preparations.”

Regarding the negative effects, the teachers have stated their opinions as being more tired, not being able to spare time for themselves, not being able to spare time for their family, decreased productivity due to excessive workload and reluctance to talk about the same subjects constantly.

Regarding the negative effects, the teacher T7, who has the view that “productivity decreases due to excessive workload” has expressed his opinion as follows:

“Some days are very intense, especially on weekdays, as the courses start immediately after the lesson the efficiency of the teacher decreases and when additional work such as shifts are added to these, the excess workload affects the efficiency.”

The teacher T18, who has the view of “not being able to spare time for himself” has expressed his opinion as follows:

“Especially after weekends courses were added to their life, teachers could not spare time for themselves. I think this decreases the efficiency of the teacher.”

3.4 Social Studies teachers’ views on the problems encountered in support and training courses

The opinions of Social Studies teachers on the problems encountered in the support and training courses are given in Table 4.

Table 4. Social Studies teachers' views on the problems encountered in support and training courses

Problems encountered in support and training courses	Student absenteeism Students', teachers' and families' lack of motivation Transportation and nutrition problem Insufficient and not well planned course hours The course is free for students Tiredness Administration problems Resource issue No problem Disciplinary issues No additional lesson fee for administrators
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As seen in Table 4, Social Studies teachers have stated their views on the problems encountered in the support and training courses as student absenteeism, lack of motivation of students, teachers and families, transportation and nutrition problems, insufficient and not well planned course hours, the course being free for students, fatigue, problems arising from administration, resource problem, no problem, disciplinary problems and not giving additional lesson fee to administrators.

Regarding the problems encountered in the support and training courses, the teacher T14, who has the view of "student absenteeism" has expressed his opinion as follows:

"The approach of the students to the courses is not like the lessons, the students act according to their moods as there is no sanction for continuation and due to this situation, the desired level of motivation cannot be achieved in the lesson, this situation affects the success. There should be sanctions for absenteeism..."

T21 coded teacher, who has the view of "transportation and nutrition problem," has expressed his opinion as follows:

"Since some of the students of our school come to the school by using the school service bus, they cannot attend the course after the lesson and they have to go. This situation causes inequality of opportunity. There is also a nutritional problem as the course begins after the lesson."

3.5 Social Studies teachers' views on solutions to problems encountered in support and training courses

The opinions of Social Studies teachers regarding the solution suggestions for the problems encountered in the support and training courses have been given in Table 5.

As can be seen in Table 5, Social Studies teachers have stated their views on the solution suggestions for the problems encountered in the support and training courses as: the resource problem for the courses should be eliminated, the solution should be found for the absenteeism problem, the courses should be paid, the time and duration of the courses should be planned well, groups should be formed according to student success, there should be a regular inspection system, the courses that students do not attend should be closed, the transportation problem of the students coming with the shuttle service should be eliminated, central trial exams should be held and course materials should be created to attract the attention of the student.

Table 5. Social Studies teachers' views on solutions to problems encountered in support and training courses

<p>Solution suggestions for the problems encountered in the support and training courses</p>	<p>The resource problem for the courses should be eliminated A solution should be found for the problem of absenteeism Courses must be paid The time and duration of the courses should be well planned Students should be able to take the course they want Groups should be formed according to student success. There must be a regular control system Courses that students do not attend should be closed The transportation problem of the students coming with the shuttle service should be resolved Distant education should be provided for students who cannot come over the weekend. Central trial exams should be held Lecture materials that will attract the attention of the student should be created</p>
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Regarding the solution suggestions for the problems encountered in the support and training courses, the teacher T9, who has the opinion that the courses should be paid, has expressed his opinion as follows:

“Students do not care too much since the courses are free. If the fees are taken from the courses, even if a little, the student both cares more because he pays money, and with this money materials and resources are provided to the courses. I think this situation will also affect the absenteeism problem.”

The teacher T20, who has the view that “the courses that students do not attend should be closed,” has expressed his opinion as follows:

“In schools, in order for every teacher to benefit from the courses, sometimes they can be opened from every subject, but the student may not be interested in these courses. For this reason, courses should be inspected regularly and the ones not attended by students should be closed. Thus, this way the money of the state will not be wasted.”

Having the view that “the student should be able to take the course he wants,” the teacher T21 has expressed his opinion as follows:

“The courses are generally based on the courses that the administration considers important. But the student should be able to take the course he wants and which course to open should be left to the student’s wish.”

4. Discussion and conclusions

In this study, it is aimed to reveal the views of Social Studies teachers regarding support and training courses. For this purpose, 21 teachers have been consulted in order to discuss their suggestions on social Studies teachers' thoughts about support and training courses, the effects of support and training courses on students, the effects of support and training courses on teachers, their thoughts on the problems encountered in terms of support and training courses, solutions to the problems encountered in terms of support and training courses.

Teachers have gathered their opinions about support and training courses under two themes: related to education and personal effects. Some of the teachers have stated their opinions about education as beneficial, while others stated it was not. Teachers who think that it is beneficial, have stated that these courses increase student success, support the lessons by repeating the subject, eliminate the time problem, leave time to solve questions and get more exams, provide the opportunity to explain the subjects that are not taught in classes, provide equality of opportunity, provide the opportunity to prepare for central exams in last grades and increase school success. Teachers who think that it is not useful stated that students do not care like lessons, teachers do not care enough, weekday courses are inefficient and absenteeism is high. Regarding their personal effects, the teachers stated that the additional service is good in terms of points, it has a good financial return, and their performance increases as willing students come to the courses. When the opinions of the teachers are evaluated in general, it is seen that they express positive opinions in terms of both education and personal effects, and their perspectives towards support and training courses are positive. This finding obtained from the data of the study is similar to the studies made by Nartgün and Dilekçi (2016), Ünsal and Korkmaz (2016), Canpolat and Köçer (2017), İncirci et al., (2017), Sarıca (2019), Topcu and Ersoy (2019). In their study with secondary school teachers, Topcu and Ersoy (2019) concluded that teachers found support courses useful. Likewise, in the study conducted by Sarıca (2019), it is understood that the opinions of the participants about the courses are generally positive. Additionally, the finding of the study conducted by Nartgün and Dilekçi (2016) is that teachers generally have a positive opinion regarding the support and training courses. Similarly, in the study conducted by Canpolat and Köçer (2017), it was concluded that Social Studies teachers found support and training courses useful.

Teachers gathered their views on the effects of support and training courses on students under two themes as positive effects and negative effects. Most of the teachers have stated that they have a positive effect on students. Teachers who express their opinions in the direction of their positive effects have stated that they allow them to reinforce the lessons learned in the course, provide free courses for students who do not have the opportunity, provide the opportunity to repeat the subjects that cannot be learned in the course, provide the opportunity to solve many questions about the subject, students find the opportunity to ask questions to the teacher, keep the student away from negative environments, help permanent learning and increases lesson success. These findings obtained from the study show similarity to the work done by Lauer et. al., (2006), Mazar (2012), Ünsal and Korkmaz (2016), Nartgün and Dilekçi (2016), Göksu and Gülcü (2016), Dönmez, Pekcan and Tekçe (2016), Bozbayındır and Kara (2017), Sarıca (2019), Topcu, and Ersoy (2019) and Timur et. al. (2020). Timur et al. (2020), in their study with middle school students, have concluded that the courses contribute to academic success. Additionally, Topcu and Ersoy (2019), in their study with middle school teachers, have concluded that activities that could not be done in the lessons were performed in these courses and thus the deficiencies of the students were eliminated. Sarıca (2019) also has stated that the biggest advantages of the courses for the student are: repeating and reinforcing what is learned in the course, the course being free of charge and providing equal opportunity, eliminating the lack of subjects, focusing on incomprehensible subjects. In the studies of Nartgün and Dilekçi (2016), it is emphasized that the courses organized, greatly increase motivation and performance. At the same time, Mazar (2012) states in his study that after-school courses increase the success.

Teachers have gathered their views on the effects of support and training courses on teachers under two themes as positive effects and negative effects. Teachers who express their opinions in direction of positive effects have stated views like having a good financial return, handling topics not covered in the course, being more efficient thanks to the preparations made, sparing more time for students and courses' contributing to the service score. Teachers who expressed their opinions in the direction negative effects have stated that the teacher gets more tired not being able to spare time for himself and for his family and his surroundings, gets

decreased efficiency due to excessive workload, and gets reluctant to talk about the same subjects constantly. Findings obtained from the study can be said that they are similar to the work done by Ünsal and Korkmaz (2016), Göksu and Gülcü (2016), Bozbayındır and Kara (2017), Demir Başaran and Narinalp Yıldız (2017), Sarıca (2019) and Yeşilyurt (2019). Yeşilyurt (2019), in his study with Social Studies teachers, has concluded that some of the teachers found the service score and additional course fees sufficient. Sarıca (2019), has described the situations that teachers perceive as advantageous for them: economic contribution, focusing on incomplete subjects, personal and professional development, getting to know the student, obtaining information about their prior knowledge, solving more tests and repetition. Demir Başaran and Narinalp Yıldız (2017), in their study with secondary school teachers, have concluded that the increase in teachers' income is one of the most important benefits of the courses. According to the study of Bozbayındır and Kara (2017), one of the contributions of support and training courses for teachers is the effect on the professional development of teachers. On the other hand, regarding its negative effects, Sarıca (2019) has reached results such as tiring courses, reduced rest and vacation time, and not being able to spare enough time for their families. Göksu and Gülcü (2016) have concluded in their study that teachers were tired due to the intensity and could not spend time with their families.

Regarding the problems encountered in the support and training courses, teachers have stated problems like student absenteeism, lack of motivation of students, teachers and families, transportation and nutrition problems, insufficient course hours, not well planned classes, the course being free for students, fatigue, administrative problems, resource problem, no problem, disciplinary problems and no additional lesson fees for administrators. These findings obtained from the study shows similarity to the work done by Göksu and Gülcü (2016), Ünsal and Korkmaz (2016), Canpolat and Köçer (2017), Bozbayındır and Kara (2017), Demir Başaran and Narinalp Yıldız (2017), Sarıca (2019), Topcu and Ersoy (2019) and Timur et al. (2020). In his study with secondary school students, Timur et al. (2020) has concluded that students were tired and that there were problems such as lack of books. In their study, Topcu and Ersoy (2019) have concluded that students' motivation was low and there was absenteeism problem. Sarıca (2019), on the other hand, has stated the problems encountered in the courses as: student absenteeism, lack of motivation, transportation and nutrition problems. Bozbayındır and Kara (2017) have stated the most common problems in courses in their study as absenteeism, lack of resources for the course, courses' being free of charge reducing the interest and students' not taking the course seriously. Demir Başaran and Narinalp Yıldız (2017) have stated in their study with secondary school teachers that the rate of absenteeism is high and the need for resources are important problems experienced in courses. In the study of Göksu and Gülcü (2016), it has been seen that the most important problem experienced in the courses is the lack of material.

The teachers have stated their opinions about the solution suggestions for problems encountered in support and training courses as the resource problem for courses should be eliminated, the problem of absenteeism must be solved, courses should be paid, the time and duration of the courses should be well planned, the student should be able to take the course he wants, groups should be formed according to student success, there should be a regular inspection system, courses that students do not attend should be closed, the transportation problem of the students coming with the shuttle service should be resolved, central trial exams should be held, interesting course materials should be created to attract the attention of the student. These findings obtained from the study show similarity to the studies done by Ünsal and Korkmaz (2016), Göksu and Gülcü (2016) Canpolat and Köçer (2017), Bozbayındır and Kara (2017), Demir Başaran and Narinalp Yıldız (2017), Sarıca (2019), Yeşilyurt (2019) and Topcu and Ersoy (2019). Yeşilyurt (2019) states in his study that teachers offer many suggestions for the courses to be more efficient. Among these, the removal of resource restrictions is the most emphasized issue. In the study conducted by Topcu and Ersoy (2019), it was stated that in order for these courses to be more efficient, it is necessary to raise awareness of students and parents about the courses and to eliminate the material deficiencies. Sarıca (2019), on the other hand, in his study, stated the

suggestions of teachers for solving the problems experienced in the courses as student attendance should be guaranteed, course hours should be planned well, more resources should be provided for lessons, transportation and nutrition problems should be solved, school lesson hours should be reduced, students should be guided about courses, students should pay a fee for the course, courses should be opened according to students' interests, sanction and reward system for students should be applied, student-centered education should be done. As a solution to the problems experienced in their study, Bozbdındır and Kara (2017) have concluded that resources for the course should be provided, cooperation with the family should be done, students should be informed about the importance of the course, and a small fee should be requested from families for the courses. In the study conducted by Demir Başaran and Narinalp Yıldız (2017), providing the necessary resources, conducting evaluation studies at regular intervals and including social activities were revealed as the primary suggestions and expectations of the teachers participating in the research.

Based on the results obtained in line with the opinions of the teachers, the following suggestions can be made:

- The transportation problem of the students who want to stay in the courses but come to the schools with service can be solved.
- The subjects to be opened in the courses can be determined by considering the wishes of the students.
- Various resources such as resource books, tests and activities can be prepared to be used in the courses and the resources can be given free of charge.
- The issue of absenteeism can be handled more effectively and sanctions can be applied.
- Since the curriculum of the teachers becomes very intense with the courses, the lesson programs can be prepared in a way that they can rest.
- Courses can be done remotely using EBA or different technologies in accordance with the developing technology.
- This study has been conducted with only Social Studies Teachers. Studies can also be conducted with other members of the education system.
- Experimental studies can be conducted on the effect of courses on success.

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References

- Akbaba, A. (2019). *Destekleme ve yetiştirme kurslarının eğitim paydaşlarının görüşlerine göre değerlendirilmesi*. Yayınlanmamış Yüksek Lisans Tezi. Ankara Üniversitesi, Ankara.
- Aküzüm, C., & Saraçoğlu, M. (2018). Ortaokul öğretmenlerinin destekleme ve yetiştirme kurslarına yönelik tutumlarının incelenmesi. *Turkish Journal of Educational Studies*, 5(2), 97-121.
- Bozbayındır, F., & Kara, M., (2017). Destekleme ve yetiştirme kurslarında (DYK) karşılaşılan sorunlar ve öğretmen görüşleri temelinde çözüm önerileri. *Sakarya University Journal of Education*, 7(2), 336-349.
- Canpolat, U., & Köçer, M. (2017). Destekleme ve yetiştirme kurslarının TEOG bağlamında sosyal bilgiler öğretmenlerinin görüşlerine dayalı olarak incelenmesi. *Anadolu Üniversitesi Eğitim Bilimleri Enstitüsü Dergisi*, 7(1), 123-154.
- Creswell, J. W. (2015). *Nitel araştırma yöntemleri. Beş yaklaşıma göre nitel araştırma ve araştırma deseni* (M. Bütün & S. B. Demir, Çev. Ed.). Ankara: Siyasal Kitabevi.
- Demir Başaran, S., & Narinalp Yıldız, N. (2017). Türkiye’de ortaokullarda uygulanan destekleme ve yetiştirme kurslarına ilişkin öğretmen görüşleri. *International Journal of Eurasia Social Sciences*, 8(29), 1152-1170.
- Dönmez, İ., Gürbüz, S., & Tekçe, M. (2018). Destekleme ve yetiştirme kurslarının yönetici, öğretmen ve öğrenci görüşlerine dayanarak fırsat eşitliği açısından değerlendirilmesi. *Eskişehir Osmangazi Üniversitesi Türk Dünyası Uygulama ve Araştırma Merkezi Eğitim Dergisi (ESTÜDAM Eğitim Dergisi)*, 3(2), 45-58.
- Dönmez, İ., Pekcan, N., & Tekçe, M. (2016). Destekleme ve yetiştirme kurslarının yönetici, öğretmen ve öğrenci görüşlerine göre değerlendirilmesi. 25. *Ulusal Eğitim Bilimleri Kongresi*. Antalya: İstanbul Kültür Üniversitesi, 21-24 April 2016, 168-169.
- Göksu, İ., & Gülcü, A. (2016). Ortaokul ve liselerde uygulanan destekleme kurslarıyla ilgili öğretmen görüşleri. *Bayburt Eğitim Fakültesi Dergisi*, 11(1), 153-171.
- İncirci, A., İlğan, A., Sirem, Ö., & Bozkurt, S. (2017). Ortaöğretim destekleme ve yetiştirme kurslarına ilişkin öğrenci görüşleri. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, (42), 50-68.
- Kayapınar, E. (2006). *Ortaöğretim kurumları öğrenci seçme ve yerleştirme sınavı’na (OKS) hazırlanan ilköğretim 8. sınıf öğrencilerinin kaygı düzeylerinin incelenmesi (Afyonkarahisar ili örneği)*. Yayınlanmamış Yüksek Lisans Tezi. Afyon Kocatepe Üniversitesi, Afyon.
- Lauer, P. A., Akiba, M., Wilkerson, S. B., Apthorp, H. S., Snow, D., & Martin-Glenn, M. L. (2006). Out-of-school time programs: A meta-analysis of effects for at-risk students. *Review of Educational Research*, 76, 275-313.
- Mazar, C. E. (2012). *An analysis of the effects of types of afterschool program participation on elementary student academic performance*. All Theses and Dissertations. Paper 3334.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded Sourcebook* (2nd ed). Thousand Oaks, CA: Sage.
- Ministry of National Education (MoNE) (2014). *Millî eğitim bakanlığı örgün ve yaygın eğitimi destekleme ve yetiştirme kursları yönergesi*. http://mevzuat.meb.gov.tr/html/orgundestek_1/orgundestek_1.html. Assessed: 10.09.2017.
- Ministry of National Education (MoNE) (2015). *Öğretmenlerin Atama ve Yer Değiştirme Yönetmeliği* <http://www.resmigazete.gov.tr/eskiler/2015/04/20150417-4.htm>. Assessed: 17.04.2019.

- Ministry of National Education (MoNE) (2016). *DYK tanıtım kitapçığı*. http://odsgm.meb.gov.tr/meb_iys_dosyalar/2016_10/21045232_tanitim_kitapciği_dyk.pdf. Assessed: 08.05.2019.
- Nartgün, Ş. S., & Dilekçi, Ü. (2016). Eğitimi destekleme ve yetiştirme kurslarına ilişkin öğrenci ve öğretmen görüşleri. *Kuram ve Uygulamada Eğitim Yönetimi Dergisi*, 22(4), 537-564.
- Ocak, G., Akgül, A., & Yıldız, S. Ş. (2010). İlköğretim öğrencilerinin ortaöğretime geçiş sistemi'ne (OGES) yönelik görüşleri (Afyonkarahisar örneği). *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 11(1), 37-55
- Sarıca, R. (2019). Destekleme ve yetiştirme kurslarına (DYK) yönelik öğretmen görüşleri. *Millî Eğitim*, 48(221), 91-122.
- Sönmez, V. (2003). *Program geliştirmede öğretmen elkitabı*. Ankara: Anı Yayıncılık.
- Timur, S., Kahraman, S., Timur, B., & İşseven, A. (2020) Destekleme ve yetiştirme kurslarına (DYK) ilişkin ortaokul öğrencilerinin görüşleri. *Trakya Eğitim Dergisi*, 10(1), 194-206.
- Topcu, İ., & Ersoy, M. (2019). MEB destekleme ve yetiştirme kurslarının öğretmen görüşleri kapsamında değerlendirilmesi, *E-International Journal of Educational Research*, 10(3) 61-75.
- Ünsal, S., & Korkmaz, F. (2016). Destekleme ve yetiştirme kurslarının işlevlerine ilişkin öğretmen görüşlerinin incelenmesi. *Kahramanmaraş Sütçü İmam Üniversitesi Sosyal Bilimler Dergisi*, 13(2), 87-118.
- Yeşilyurt, A. G. (2019). *Sosyal bilgiler öğretmenlerinin algıları doğrultusunda destekleme ve yetiştirme kurslarının değerlendirilmesi*. Yayınlanmamış Yüksek Lisans Tezi. İnönü Üniversitesi, Malatya.
- Yıldırım, A., & Şimşek, H. (2016). *Sosyal bilimlerde nitel araştırma yöntemleri (10. Baskı)*. Ankara: Seçkin Yayıncılık.
- Yıldırım, A., Ünal, A., & Çelik, M. (2011). Öğretmen kavramına ilişkin öğretmen, yönetici ve müfettiş algılarının analizi. *Uluslararası İnsan Bilimleri Dergisi*, 8(2), 92-109.
- Yıldırım, H. H., Yıldırım, S., & Ceylan, E. (2017). *Türkiye perspektifinden TIMSS 2015 sonuçları (TEDMEM Analiz Dizisi 4)*. Ankara: Türk Eğitim Derneği Yayınları.





Writing Motivation Sources of Teacher Candidates: A Phenomenological Study

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Abstract

Writing motivation is effective on writing behavior and writing habits. The aim of this study is to determine the factors that motivate pre-service teachers to write and thus support their writing habits. For this purpose, the research was designed in accordance with the phenomenological pattern from qualitative research designs. In the research, interviews were conducted with pre-service teachers through the semi-structured interview form prepared by the researcher. The data obtained from these interviews were analyzed by content analysis technique. Research findings showed that there were internal (internal) and external (external) factors motivating teacher candidates to write. According the findings, the main internal factors that motivated pre-service teachers to write were positive thoughts and beliefs about writing and writing skills, goals expected to be achieved by writing, and lastly, interest and desire for writing. Requirements and environmental expectations for writing, appreciation and support from family and readers, and the environment which is a positive role model in writing were external factors that motivated pre-service teachers to write. In the study, these factors and student views under these factors were discussed and what could be done to increase their motivation for writing was evaluated.

Keywords: writing, writing skill, writing motivation, writing habit, teacher candidates.

1. Introduction

Writing is one of the most important discoveries of mankind, which has played a role in the change and development of civilizations from past to present. Schmandt-Besserat and Erard (2008: 8) stated that people form two basic systems consisting of visual symbols for expressing themselves and communicating with others, these are art and writing. Although writing is a powerful tool to influence others, it is also an indispensable part of learning (Graham, Gillespie & McKeown, 2013: 2-5). Göçer (2014: 8) emphasized that writing is important in the transfer of nations and culture between past and future generations. He also mentioned that the writing is used by humanity to transfer the events of the past to future generations.

Unlike speaking skill, writing skill stands out with its permanence. Writing skill is a skill that can be effective in many different areas of human beings from education life to psychological state. Pajares (2003: 141-142) stated that researchers in the field of writing focused on the processes involved in creating a text, and later on, researchers also began to focus on affective factors for writing. McLeod (1987) noted that affective factors can be effective in all stages of the writing process. McLeod proposed that one of these affective factors that affect the writing

process is writing motivation. For this reason, it is necessary to know the factors that affect students' motivation to write, in other words, the factors that motivate them to write. Because acting with this awareness is important in terms of providing motivation for writing and gaining the habit of writing.

1.1 Literature review

Motivation includes the forces that influence an individual's decision to engage in and persist through tasks (Wright, Hodges & McTigue, 2019). Writing motivation emerges as a concept that expresses the interests, desires and motives of the authors for the act of writing. Ülper and Çeliktürk Sezgin (2019) stated that it is not possible to say with certainty that an individual can write a qualified text when he/she has the necessary knowledge and skills to write, that the person should be willing to write text. Bruning and Horn (2000) states that the writers who are motivated to write do not only see writing as a beneficial action, but are willing to participate in the writing processes and their writing anxiety is low. Therefore, in order to achieve a successful writing performance, students should be interested in and willing to write. Otherwise, writing activities can become boring, unnecessary, and stressing, unless there is demand and interest for it.

The relationship between writing motivation and writing success and performance has been mentioned by many researchers (Akyol & Aktas, 2018; Pajares, 2003; Graham, Berninger & Fan, 2007; Lam & Law, 2007; Troia, Harbaugh, Shankland, Wolbers & Lawrence, 2013). For example, Hidi and Boscolo (2006: 148) stated that there are differences in the perception of writing self-efficacy of students who have differences in their interest in writing; and explained that students with low interest in writing see writing as a boring and painful act, while students who are interested in writing see it as a fun thing. Accordingly, researchers (Akyol, 2013; Tok & Ünlü, 2014) stated that low motivation and unwillingness to write were problems encountered in the writing process and education. On the other hand, Balta (2018: 234) noted that although writing is a cognitive process, writing competence is related to writing motivation. Therefore, can be predicted that individuals with high writing motivation will be more willing in the writing processes than those with low motivation, and thus, will be more active in these processes.

Writing is a complex problem-solving task in which motivation is important but it is difficult to provide and maintain motivation (Bruning & Horn, 2000: 34). Lack of motivation and reluctance to write emerges as a problem expressed by many groups, including families, teachers and students. In cases where writing motivation is low, determining the writing goal first will be beneficial to increase motivation. Goals can make a job meaningful, increase the interest and motivation for the job. Indeed, Bruning and Horn (2000: 27-28) stated that encouraging students through authentic writing goals can be effective in increasing writing motivation. In order to increase the motivation for writing, it is also important to choose writing topics suitable for the field of interest. Topic selection in personal interest of the writer may increase the interest and motivation for write (Bruning & Horn, 2000: 28). For this reason, student preferences should be considered in the selection of topics as much as possible. Süğümlü (2016) found that writing practices implemented by adopting student autonomy can increase writing motivation. Also, Bruning and Horn (2000: 27-28) stated that encouraging students to write about topics that are of personal interest can increase their motivation to write.

It is important to complete the writing process successfully by setting achievable writing goals in providing writing motivation. Goal setting promotes motivation (Bandura, 1986). Bruning and Horn (2000: 27-28) stated that breaking down complex writing tasks and setting very simple writing goals may help to increase writing motivation. However, sharing the writings and providing constructive feedback on the writing are practices that can motivate students to write. Bruning and Horn (2000: 27-28) stated that constructive feedback provided to students can

increase their motivation to write. Providing a suitable and comfortable writing environment can also be helpful in motivating writing.

Tok, Rachim, and Kuş (2014) found that psychological factors, personal curiosity, family encouragement, reading habits, competitions and teachers' attitudes and behaviors were effective on writing habits of 6th, 7th, and 8th grade students. Ülper and Çeliktürk Sezgin (2019) revealed that students feel the need to write for relaxation, liking, expressing themselves, not forgetting, giving information, communicating and producing. On the other hand, Özdemir (2011) concluded that Turkish teacher candidates generally have writing competence, but do not have the habits of using writing as a literary genre and as a communication tool at the desired level. Similarly, Bağcı and Dilek (2018) stated that teacher candidates' writing habits were not at the expected level.

1.2 Research question

Tağa and Ünlü (2013) stated that the lack of regular writing habit negatively affects the development of students' writing skills. However, Demirel and Şahinel (2006) stated that the writing skill can only be improved by writing. All these reveal that students' writing habits should be improved. In order to improve their writing habits, students should be motivated to write. Person not only has different levels of motivation; they also have different motivation sources. That is, not only the level of motivation varies, but also the sources of motivation vary (Ryan & Deci, 2000). When the literature is reviewed, there is no study that reveals the factors that motivate teacher candidates to write. For this reason, it was aimed to reveal the factors that motivate teachers to write and support their writing habits. As a result, this study aims to answer the following research question: "What are the factors that motivate teacher candidates to write?"

2. Method

2.1 Research design

In this study, it was aimed to reveal the motivation factors of pre-service teachers for writing. For this purpose, the research was carried out in accordance with the phenomenology pattern, which is one of the qualitative research designs. The phenomenological pattern aims to reveal experiences and meanings by focusing on phenomena that we are aware of but do not have an in-depth and detailed understanding (Yıldırım & Şimşek, 2018).

2.2 Participants

In determining the participants of the study, the habit of writing in free time and the frequency of writing were taken into account. For this reason, 65 pre-service teachers studying at Nevşehir Hacı Bektaş Veli University and Aksaray University were asked about their writing habits and frequency of writing. Among these candidates, 36 candidates with writing habits were selected as the study group. Therefore, in this study, simulated sampling, which aims to define a distinct subgroup by creating a small, similar sample (Yıldırım & Şimşek, 2018), was used in sample selection. Demographic information of the participants is presented in Table 1.

Table 1. Demographic variables related to the participants

Variables		N
Gender	Woman	26
	Male	10
Age	21	14
	22	18
	23	2
	24	2
University	Nevsehir Haci Bektas Veli University	22
	Aksaray University	14
Writing Frequency	Often	21
	Sometimes	15

2.3 Instruments

In the present study, two research tools were used. The first is the semi-structured interview form prepared by the researcher to reveal the factors that motivate the participants to write. First of all, the first draft of the semi-structured interview form was prepared. The first draft was sent to two field experts to take their opinions and required corrections were done in accordance with their opinions. The interview form consists of three open-ended that allow to determine questions the factors that motivate the participants to write. The other data collection tool is the personal information form prepared for the purpose of obtaining demographic information of the participants. This form contains questions prepared to determine the demographic variables of the participants.

2.4 Data collection and analysis

In the data collection process, semi-structured interviews were conducted because the aim was to systematically learn and understand the factors that influenced the students' writing motivation. Semi-structured interviews allow researchers to get both fixed-option answers and in-depth information in an area of interest (Büyüköztürk, Kiliç Çakmak, Akgün, Karadeniz & Demirel, 2016) and to obtain rich data. The data were analyzed using content analysis technique. Content analysis is used to study the trends and patterns in documents (Stemler, 2001). MAXQDA program was used to analyze the data. During the content analysis, the data were coded by two different coders and in this process, the themes, categories and codes were created. Pre-service teachers were identified by a letter and number coding system in order to conceal their true identities as P1, P2, P3 in which P stands for participant. The code book has been prepared in order to ensure compliance in the coding process. At the end of the process, compatibility between coders was calculated for the coding made by two different encoders. The formula suggested by Miles and Huberman (1994) was used to calculate the fit between coders. As a result, it was seen that the agreement between coders (the inter-rater reliability was found to be .92) was .92. Miles, Huberman and Saldana (2014) state that depending on the size and range of the code scheme, the agreement between coders should be between %85 and %90. Therefore, it can be said that a sufficient level of agreement between coders was achieved in the study.

3. Results

Themes, categories, codes and sub-codes were created as a result of analyzing the obtained data with the content analysis technique. Accordingly, the factors that motivate teacher candidates to write are divided into two categories as intrinsic motivation and extrinsic motivation

factors. Intrinsic motivation factors and extrinsic motivation factors and the codes under them are as follows:

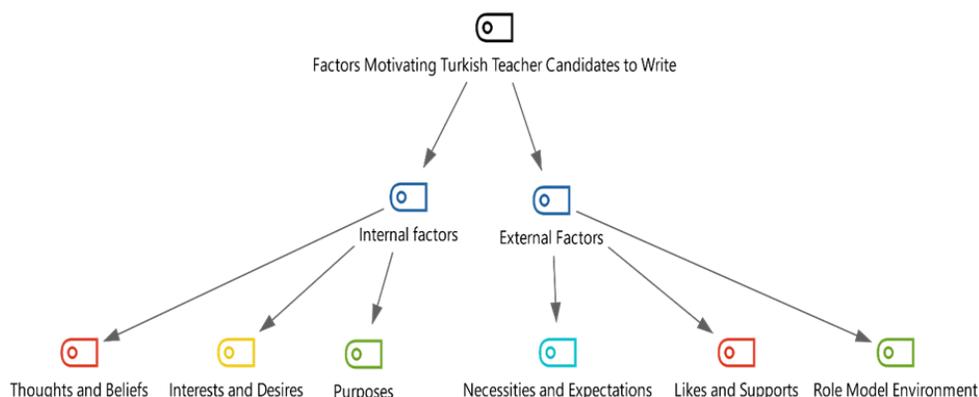


Figure 1.

When the figure above is examined, it is seen that the factors that motivate teacher candidates to write are divided into two categories: internal factors and external factors. The codes under the internal factors category are: “Thoughts and beliefs”, “interests and desires” and “goals”. In the category of external factors, there are “requirements and expectations”, “likes and supports” and finally “role model environment” codes. Below, internal and external factors are considered one by one and the codes related to these factors and the sub-codes under these codes are discussed and interpretations are made by including the direct statements taken from the participants when necessary.

3.1 Internal factors motivating teacher candidates to write

The codes and subcodes that are among the internal factors that motivate teacher candidates to write and thus support their writing habits are as follows:

Table 2. Internal factors motivating teacher candidates to write

Codes	Sub Codes	f
Thoughts and Beliefs	The thought of being able to express more easily by writing	17
	The belief that writing will lead to personal growth	17
	The idea that writing improves thinking skills	17
	The belief that writing will improve other language skills	16
	The idea that writing will improve the imagination	12
	The belief to express yourself better by writing	11
	The belief that writing provides insight	9
	The belief that writing will improve vocabulary	7
	The thought that writing will improve writing skills	7
	The thought that writing contributes to knowledge	6
Interests and Desires	The thought that writing is permanent and effective	5
	Willingness to be useful by writing	13
	Desire to be a role model by writing	9
Purposes	Feels fun to write	2
	Psychological and emotional relief by writing	26
	The purpose of socializing by writing	5
	The purpose of success in education life	5
	Purpose of success in professional life	3

In the table above, it is seen that the internal factors motivating teacher candidates to write are grouped under the titles of “thoughts and beliefs”, “interests and desires” and “purposes”. Accordingly, the thoughts and beliefs that motivate teacher candidates to write are given below.

3.2 *Thoughts and beliefs that motivate writing*

One of the factors that motivate teacher candidates to write is thoughts and beliefs. Some of these thoughts and beliefs are presented below.

“I think writing is one of the most comfortable ways to be understood. Being able to write is, in my opinion, proof of freedom of thought. You write down what they cannot speak or shout. You empty all your insides and regain strength. As you write, you rethink what you have written and maybe see that you want to draw a new route for yourself, and you go that way. Human exceeds the limits of writing in my opinion” (P26).

“When I write, I think I express what I want to tell better and the people who read it understand me better. That’s why I’m writing” (P3).

“I can express my thoughts in a more beautiful and comfortable way. I can hardly do this verbally. But I can express it well in writing” (P28).

“I think writing improves people personally. It gives different perspectives. It enables critical thinking. It provides to be prepared and planned” (P6).

“Just as teachers and academicians improve themselves when they write an article, I can improve myself by writing. That’s why I write often” (P7).

“It is nice to express one’s feelings and thoughts in writing, because the person who writes is also the person who reads and improves himself. It sheds light on both itself and its surroundings” (P29).

“Writing improves the writing skill of the person as well as positively affects reading and thinking skills” (P29).

Beliefs and thoughts that are among the internal factors motivating teacher candidates to write are listed above. The thoughts and beliefs that motivate participants to write are as follows: The thought of expressing themselves more comfortably by writing, the thought that writing contributes to knowledge, the thought that writing gives insight, the idea that writing will improve their thinking skills, the idea that writing will improve their imagination, and the thought of expressing themselves better by writing. Apart from thoughts and beliefs, one of the internal factors that motivate the participants to write is interest and desire. The interests and wishes that motivate prospective teachers to write are discussed below.

3.3 *The interests and desires that motivate to write*

One of the factors that motivates pre-service language teachers to write is their interests and desires. Some of these interests and desires are presented below:

“It is a very big event for me to be affected other people by what I write. There are lives that change with a single sentence and I would like to be a writer who creates those life-changing sentences” (P13).

“Writing allows people around us to be influenced by us and create the same feelings and be willing to write” (P6).

“For example, if I write poetry, if I have my brother read it, he will see it and write poetry and he may be affected. I write a poem and set an example for them” (P1).

“Writing enables people around us to be influenced by us, and they also have the same feelings and are willing to write” (P6).

“Writing and imagination keeps life from being monotonous and boring. It is a platform that has everything you want. You decide everything in that world. That’s why this duo makes me” (P15).

“Writing is something that I believe is very helpful to myself. When I write what I could not tell anyone, there is a I happier” (P21).

“Because sometimes a person wants to talk to someone, needs this and there is no one to talk to. At such times, it will be good for every person to sit down and write. Most of us do this anyway” (P9).

The aims, which are among the internal factors that motivate pre-service teachers to write, are listed above. According to the findings, it is seen that psychological and emotional relaxation, socialization, being successful in education life and being successful in professional life are goals that motivate participants to write. Apart from the intrinsic (intrinsic) motivation factors that motivate prospective teachers to write, there are also external motivation factors. These external factors motivating the participants to write are discussed below.

3.4 External factors motivating teacher candidates to write

The codes and sub-codes that are among the external factors that motivate teacher candidates to write and support their writing habits are as follows:

Table 3. External factors motivating teacher candidates to write

Codes	Sub Codes	f
Necessities and Expectations	Teacher expectations	6
	Environmental expectations	3
	Communication requirement	4
	Assignments, reports, presentations, etc. tasks	7
Likes and Supports	Readers’ likes and support	5
	Likes and support of the immediate environment	3
Role Model	Role model family members	4
	Role model friends	5

In the table above, it is seen that the external (external) factors that motivate teacher candidates to write are grouped under the titles of “necessities and expectations”, “likes and supports” and “role model environment”. These topics are discussed one by one below:

3.5 Necessities and expectations

Some of the participants stated that they have requirements and expectations for writing. This is one of the factors that motivates them to write. These requirements and expectations are teacher expectations, environmental expectations, communication necessity and homework, reports, presentations, etc. are collected under the headings of preparation requirement. Some of the statements of the preservice teachers regarding these are as follows:

“I think that when I write, I express what I want to tell better and the people who read it understand me better. That's why I have to write” (P3).

“A person improves himself in expressing his feelings and thoughts by writing. Writing helps me express my feelings and thoughts more accurately. That's why it is necessary to write” (P5).

As can be understood from the statements above, the participants stated that it is necessary to write and that there are expectations from them in this regard. These expectations and requirements expressed by the participants are among the external factors that motivate them to write. Apart from these, another factor that motivates teacher candidates to write is the liking and support. Based on the expressions of the participants, the likes and supports that are understood to motivate them to write are given below.

3.6 Likes and supports

Participants state that readers' appreciation and support is one of the factors that motivate them to write. These likes and supports are grouped under the subtitles of appreciation and support of the reader and close circle. Some of his expressions about likes and supports that motivate the participants to write are as follows:

“We share what we have written with those around us. Even a positive feedback from them can motivate us to write” (P17).

“When an article is written about a topic, there is a transfer of information. Readers, on the other hand, can benefit from reading this or make their criticism to the person who wrote it. Thus, both the reader and the writer can improve themselves” (P30).

“My brother had read it and liked it very much and then he started to read such articles. This motivated me” (P6).

Based on the statements above, it can be said that the likes and supports expressed especially by the reader and the close environment are among the external factors that motivate the participants to write. Apart from likes and supports, one of the external sources that motivates participants to write is the role model environment. Based on the expressions of the participants, role models, which are one of the external sources that motivate them to write, are given below.

3.7 Role model environment

Participants stated that role model family members and friends are one of the external factors that motivate them to write. According to the participants, the role model friendship and family members are factors that motivate them to write. Some of the expressions of the participants about the role models that motivated them to write are as follows:

“My friend was telling that I am writing constantly, and then I was impressed. This habit has gradually developed, and my friends set an example for me” (P1).

“When I have emotional intensity, I write my feelings on paper. I got this habit from my friend. I read the article he wrote. I was impressed and I wrote too” (P5).

Based on the statements above, it is understood that one of the external factors motivating the participants to write is role models. It is seen that especially role model friends and family members are one of the factors that motivate writing.

4. Discussion

The aim of the present study was to determine the factors that motivate pre-service teachers to write and support their writing habits. The study showed that the factors motivating pre-service teachers to write can be divided into two as intrinsic and extrinsic factors. This findings is in line with the previous findings. For example, McLeod (1987: 429) emphasized intrinsic and extrinsic motivation factors in writing motivation and stated that these factors affect the writing process. Similarly, Bruning and Horn (2000) also emphasized intrinsic and extrinsic factors in this writing motivation and talked about their development.

This study showed that prospective teachers' positive thoughts and beliefs about writing, as well as their interests and desires, as well as their writing goals, appeared to be internal factors that motivated them to write in general. This findings is in line with the previous findings. For example, Bruning and Horn (2000) found that in order to improve the intrinsic motivation of writing, it is necessary to form student beliefs about the nature and potential of writing. In addition, Troia, Shankland and Wolbers (2012) emphasized the importance of personal and situational interests on writing motivation.

This study showed that the necessity of writing and their expectations for writing, the admiration and support obtained from writing, and the role model environment that sets an example for them to write are the main external factors that motivate pre-service teachers to write. This findings is in line with the previous findings. For example, Tok, Rachım, and Kuş (2014), in their study on students who have acquired the habit of writing, concluded that the verbal feedback given by the teachers were effective in gaining a writing habit and motivation. The findings of Baker, Scher, and Mackler (1997) showed that family and environment have an effect on reading motivation. This finding supports the importance of the role models in terms of motivation.

According to the findings of the research, positive thoughts and beliefs about writing are the leading factors that motivate prospective teachers to write. Thinking that you can express yourself more comfortably by writing, thinking that writing will provide personal development, the idea of developing thinking skills by writing, the belief that writing will improve other language skills, the thought that writing will improve their imagination and expression are the main thoughts and beliefs that motivate teacher candidates to write. Bruning and Horn (2000: 34) stated that in order to develop intrinsic motivation for writing, student beliefs should be formed about the nature and potential of writing. These findings reveal that developing positive feelings and thoughts for writing is important for increasing writing motivation.

Research findings show that another motivation source is interest and desire for writing. Hidi and Boscolo (2006: 148) stated that the interest in writing is related to motivation and stated that students who are interested in writing see writing as an entertaining job. Being a role model for other people by writing, being useful for them and shows interests and desires for writing. This finding reveals the importance of gaining writing interest and desire in terms of providing motivation for writing and gaining writing fluidity. Latif (2020) emphasized the relationship between writing interest and writing motivation, and even mentioned that these concepts can be used interchangeably. Writing interest and desire can be developed with fun writing activities and suggestions.

According to the findings, another intrinsic motivation source that motivates participants to write is goals. The goals of relaxation, socialization, and achievement through writing are the main internal factors that motivate pre-service teachers to write. Bruning and Horn (2000: 34) also stated the importance of original writing goals in terms of writing motivation. However, Ülper and Çeliktürk Sezgin (2019) stated in their study that one of the writing purposes of students in the faculty of education is relaxation. Tok, Rachım, and Kuş (2014) stated in their study on writing habits that psychological factors are effective on writing habits. In addition,

Singer and Singer (2010) emphasized that writing is a skill that can be used for physical and emotional healing and its effectiveness is also revealed in clinical research.

In this study, it was seen that requirements and environmental expectations were the leading sources of external motivation for writing. Having responsibilities such as writing homework is one of the factors that motivate prospective teachers to write. Having responsibilities is one of the requirements and expectations that motivate pre-service teachers to write. These findings reveal the importance of giving students various responsibilities in order to gain motivation and habit of writing. Tok, Rachım and Kuş (2014) stated that family encouragement is effective on writing habits. Ülper and Çeliktürk Sezgin (2019) also stated that families, teachers and friends are among the people who direct education faculty students to write.

According to the findings of the present study, another motivation source that motivates teacher candidates to write is the appreciation and support expressed by the reader and the environment. The positive feedback made by the readers towards the writing process and the expressions of the likes and support of the writings and the writing process by the family and close friends motivate the teacher candidates to write and thus support their writing habits. Likes and supports may increase their motivation by affecting their author self-efficacy perceptions. As a matter of fact, author self-efficacy is related to motivation (Pajares, Valiante & Cheong, 2007).

According to the findings, another source of motivation is positive role models in terms of writing habits. In particular, the role model family members and the role model friends appear as factors that support the motivation and habit of writing. Graham (2006) emphasized that a teacher with writing skills and habits would be a good role model for his students. For this reason, that teachers and families have an exemplary attitude towards writing is important in terms of writing motivation and habits.

5. Conclusions

The results indicated that it is important for families and teachers to be role models in writing in terms of providing students' writing motivation. For this reason, teachers and families should be role models for students in writing in order to gain motivation and habit of writing. For this purpose, parents and teachers can set an example for them with activities that support regular writing habits such as keeping diaries and travel notes. Thoughts and beliefs about writing and its effects also affect writing motivation. Teachers and families should collaborate so that students develop positive thoughts and beliefs about writing in order to increase their motivation to write. For this reason, it is extremely important to make students aware of the importance of writing skills and the positive effects that writing can have on the environment and the individual. This will affect the value they give to writing. Akyol and Aktaş (2018) stated that one of the concepts related to writing motivation is task value. Task value is related to how much a student values him. In the addition another factor related that writing motivation, like and supports. As a matter of fact, feedbacks are instructional practices that can increase both skills and motivation (Duijnhouwer, Prins & Stokking, 2012). Therefore, encouraging students by parents and teachers and giving them constructive feedback is important in terms of gaining motivation for writing and supporting their writing habits. Setting a goal for writing also affects writing motivation. For this reason, teachers should guide their students in determining writing worth and achievable writing goals.

Research findings showed that teacher candidates have many different sources of motivation for writing. Nolen (2007: 221) states that reading and writing fields are rich areas for research on motivations because there are many reasons for reading and writing activities. This research provides guiding findings in increasing students' writing motivation and supporting their writing habits. In future studies, based on the motivational factors set forth in this study, what

practices can be used to support writing habits and the effectiveness of these practices will contribute to the support of students' writing interests and habits.

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References

- Akyol, H., & Aktas, N. (2018). The relationship between fourth-grade primary school students' story-writing skills and their motivation to write. *Universal Journal of Educational Research*, 6(12), 2772-2779. <https://www.doi.org/10.13189/ujer.2018.061211>
- Bağcı, H., & Dilek, B. A. Z. (2018). Türkçe öğretmen adaylarının yazma alışkanlıkları üzerine bir çalışma [A study on the writing habits of Turkish teacher candidates]. *Ana Dili Eğitimi Dergisi*, 6(4), 1138-1160.
- Baker, L., Scher, D., & Mackler, K. (1997). Home and family influences on motivations for reading. *Educational psychologist*, 32(2), 69-82. https://www.doi.org/10.1207/s15326985ep3202_2
- Balta, E. E. (2018). The relationships among writing skills, writing anxiety and metacognitive awareness. *Journal of Education and Learning*, 7(3), 233-241. <https://www.doi.org/10.5539/jel.v7n3p233>
- Bandura A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs (NJ): Prentice-Hall.
- Bruning, R., & Horn, C. (2000). Developing motivation to write. *Educational psychologist*, 35(1), 25-37. https://www.doi.org/10.1207/S15326985EP3501_4
- Büyüköztürk, Ş., Kiliç Çakmak, E., Akgün, O.E., Karadeniz, Ş., & Demirel, F. (2016). *Bilimsel araştırma yöntemleri* [Scientific research methods]. Ankara: Pegem Akademi.
- Demirel, Ö. ve Şahinel, M. (2006). *Türkçe ve sınıf öğretmenleri için Türkçe öğretimi* [Teaching Turkish for Turkish and classroom teachers]. Ankara: Pegem Akademi.
- Duijnhouwer, H., Prins, F. J., & Stokking, K. M. (2012). Feedback providing improvement strategies and reflection on feedback use: Effects on students' writing motivation, process, and performance. *Learning and Instruction*, 22(3), 171-184. <https://www.doi.org/10.1016/j.learninstruc.2011.10.003>
- Göçer, A. (2014). *Yazma eğitimi* [Writing training]. Ankara: Pegem Akademi.
- Graham, S. (2006). Strategy instruction and the teaching of writing. In C. MacArthur, S. Graham & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 187-207). New York: The Guilford Press.
- Graham, S., Berninger, V., & Fan, W. (2007). The structural relationship between writing attitude and writing achievement in first and third grade students. *Contemporary educational psychology*, 32(3), 516-536. <https://www.doi.org/10.1016/j.cedpsych.2007.01.002>
- Graham, S., Gillespie, A., & McKeown, D. (2013). Writing: Importance, development, and instruction. *Reading and Writing*, 26(1), 1-15. <https://www.doi.org/10.1007/s11145-012-9395-2>

- Hidi, S., & Boscolo, P. (2006). Motivation and writing. In C. A. MacArthur, S. Graham & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 144-157). New York, NY: Guilford Press.
- Lam, S. F., & Law, Y. K. (2007). The roles of instructional practices and motivation in writing performance. *The Journal of Experimental Education*, 75(2), 145-164.
<https://www.doi.org/10.3200/JEXE.75.2.145-164>
- Latif, M. M. A. (2020). *Writing motivation research, measurement and pedagogy*. New York, NY: Routledge.
- McLeod, S. (1987). Some thoughts about feelings: The affective domain and the writing process. *College Composition and Communication*, 38(4), 426-435. <https://www.doi.org/10.2307/357635>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Los Angeles: Sage.
- Nolen, S. B. (2007). Young children's motivation to read and write: Development in social contexts. *Cognition and instruction*, 25(2-3), 219-270.
<https://www.doi.org/10.1080/07370000701301174>
- Özdemir, N. H. (2011). *Türkçe öğretmeni adaylarının yazma alışkanlıkları üzerine bir araştırma* (Unpublished master's thesis) [A research on the writing habits of Turkish teacher candidates]. İnönü Üniversitesi Eğitim Bilimleri Enstitüsü, Malatya.
- Pajares, F. (2003). Self-efficacy beliefs, motivation, and achievement in writing: A review of the literature. *Reading & Writing Quarterly*, 19(2), 139-158.
<https://www.doi.org/10.1080/10573560308222>
- Pajares, F., Valiante, G., & Cheong, Y. F. (2007). Writing self-efficacy and its relation to gender, writing motivation and writing competence: A developmental perspective. In S. Hidi & P. Boscolo (Eds.), *Writing and motivation* (pp. 141-159). Oxford, England: Elsevier.
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary educational psychology*, 25(1), 54-67.
<https://www.doi.org/10.1006/ceps.1999.1020>
- Schmandt-Besserat, D., & Erard, M. (2008). Origins and forms of writing. In C. Bazerman (Ed.), *Handbook of research on writing: History, society, school, individual, text*. New York, NY: Routledge.
- Singer, J., & Singer, H. S. (2010). Writing as physical and emotional healing: Findings from clinical research. In C. Bazerman (Ed.), *Handbook of research on writing: History, society, school, individual, text* (pp. 485-498). New York, NY: Routledge.
- Stemler S. (2001). An overview of content analysis. Practical assessment. *Research & Evaluation*, 7(17), 137-146.
- Süğümlü, Ü. (2016). *Yazma becerisinde öğrenci özerkliğinin yazmaya yönelik tutum ve motivasyonla ilişkisi: Bir eylem araştırması* (Unpublished doctoral dissertation) [The relationship of student autonomy in writing skill with attitude and motivation towards writing: An action research]. Sakarya Üniversitesi Eğitim Bilimleri Enstitüsü, Sakarya.
- Tağa, T., & Ünlü, S. (2013). Yazma eğitiminde karşılaşılan sorunlar üzerine bir inceleme [A review on the problems encountered in writing education]. *Electronic Turkish Studies*, 8(8), 1285-1299.
- Tok, M. & Ünlü, S. (2014). Yazma becerisi sorunlarının ilkökul, ortaokul ve lise öğretmenlerinin görüşleri doğrultusunda karşılaştırılmalı olarak değerlendirilmesi [Comparative evaluation of writing skills problems in line with the opinions of primary, secondary and high school teachers]. *Elektronik Sosyal Bilimler Dergisi*, 13(50), 73-95.
<https://www.doi.org/10.17755/esosder.04506>
- Tok, M., Rachım, S., & Kuş, A. (2014). Yazma alışkanlığı kazanmış öğrencilerin yazma nedenlerinin incelenmesi [Examining the writing reasons of students who have acquired the habit of

- writing]. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi*, 34(2), 267-292. <https://www.doi.org/10.17152/gefd.36525>
- Troia, G. A., Harbaugh, A. G., Shankland, R. K., Wolbers, K. A., & Lawrence, A. M. (2013). Relationships between writing motivation, writing activity, and writing performance: Effects of grade, sex, and ability. *Reading and Writing*, 26(1), 17-44. <https://www.doi.org/10.1007/s11145-012-9379-2>
- Troia, G. A., Shankland, R. K., & Wolbers, K. A. (2012). Motivation research in writing: Theoretical and empirical considerations. *Reading & Writing Quarterly*, 28(1), 5-28. <https://www.doi.org/10.1080/10573569.2012.632729>
- Ülper, H., & Çeliktürk Sezgin, Z. (2019). Eğitim fakültesi öğrencilerinin yazma alışkanlığı Profillerinin Belirlenmesi [Determining the writing habit profiles of Education Faculty students]. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, (49), 166-170. <https://www.doi.org/10.21764/maeuefd.428605>
- Wright, K. L., Hodges, T. S., & McTigue, E. M. (2019). A validation program for the Self-Beliefs, Writing-Beliefs, and Attitude Survey: A measure of adolescents' motivation toward writing. *Assessing Writing*, (39), 64-78. <https://www.doi.org/10.1016/j.asw.2018.12.004>
- Yıldırım, A., & Şimşek, H. (2018). *Sosyal bilimlerde nitel araştırma yöntemleri* (11. Baskı) [Qualitative research methods in the social sciences]. Ankara: Seçkin Yayıncılık.



Development of Distance Education Attitude Scale for Teachers: A Study of Validity and Reliability

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Abstract

The purpose of this study is to examine the validity and reliability of the Distance Education Attitude Scale for Teachers, which was developed to reveal teachers' attitudes towards distance education during the COVID-19 outbreak. Statistical analyses were performed on 458 of the collected forms. The study group was randomly divided into two and the EFA process was conducted with 205 participants and the CFA process with 253 participants. KMO and Bartlett tests were performed to determine the suitability of the data for EFA. The KMO value was 0.0885 and the Bartlett test was statistically significant ($\chi^2=3141$, $df=703$, $p<0.001$). EFA results show that the DEASFT structure consists of 21 items and two factors, and these factors are named as "Benefits of Distance Education" and "Limitations of Distance Education". CFA was applied on the data of 253 different people to the factor structures obtained as a result of AFA Analyses. One item was dropped from the scale because p values (0.178) is bigger than 0.05. According to fit indices ($\chi^2/df < 1.5$, $CFI=0.953 > 0.9$, $TLI=0.942 > 0.9$, $SRMR=0.0735 < 0.8$, $RMSEA=0.0427 < 0.05$), the scale is validated. The final version of scale has two factors and 20 items. Cronbach Alpha and composite reliability coefficients were calculated for reliability. For factor 1 Cronbach $\alpha=0.847$ and McDonald's $\omega=0.836$. For factor 2 Cronbach $\alpha=0.815$ and McDonald's $\omega=0.845$. The results of the analysis show that the scale is a valid and reliable measurement tool for determining teachers' attitudes towards distance education.

Keywords: distance education, scale development, teachers' attitudes.

1. Introduction

The COVID-19 epidemic, which causes sudden and unpredictable changes globally in very serious dimensions, has led to problems in all countries in social, economic, psychological and many other areas. Even if it is called "the new normal", this epidemic, which causes the whole world to experience abnormal times and seriously changes the daily routine of people, has brought many necessary changes. Although the rhythm of the COVID-19 epidemic, which began in December 2019, has changed from time to time, it has shown its most devastating effect in the health sector and then in the education sector (Yamamoto & Altun, 2020). The epidemic, which cannot be controlled, has stopped the flow of life worldwide, caused millions of schools to be closed indefinitely and brought the education system of countries to a halt (Zhao, 2020). Strict

prohibitions such as curfews, travel restrictions, and the closure of social places where people come together to prevent the COVID-19 epidemic have been implemented in most countries. But the most serious and drastic measures have shown themselves in the field of education. During the mandatory isolation process, schools were closed in 191 countries at all levels around the world, and the educational life of about 1.6 billion students was disrupted (UNESCO, 2020). With 90% of the students in the world staying away from school and being closed to home, the serious deficiency in education caused by the epidemic has mobilized all countries of the world. In order to minimize the negative impact of the epidemic on all educational stages from first grade to higher education, each country has created strategies within its own capabilities, changed its educational policies and had to develop urgent practices (Belay, 2020; Fernando & Schleicher, 2020). For the purpose of avoiding further interruption of Education, various distance education activities have started to be used in all countries of the world (Yamamoto & Altun, 2020). Different tools, assignments, updated and structured contents and alternative training models were used in these programs to continue the interrupted training (Zhao, 2020). The increasing threat of the epidemic has required countries to take urgent decisions to prevent learning losses while trying to protect their students, teachers and staff from the virus (Hodges et al., 2020).

Although many experts have argued about the negative effects of distance education such as unhealthy graduates (Lau, Yang & Dasgupta, 2020) and changing in assessment (Cahapay, 2020), technical problems will reduce the effectiveness and efficiency of education (Anderson & Dron, 2011), students who are distant to technology will spend time on the use of educational tools rather than the course itself (Miltiadou & Yu, 1999), or the communication barriers between students and teachers that may occur during the course (Perreault et al., 2002), due to curfews and closed schools, distance education has become not an option but an obligation all over the world (Yamamoto & Altun, 2020).

Distance education programs, which have been used for many years especially in higher education throughout the world and in Turkey, have become a mandatory situation for students and teachers studying at all levels, from primary schools to universities with the outbreak of COVID-19 (Durak et al., 2020). This situation has radically changed the educational life not only for students who have been educated face-to-face for years, but also for teachers (Lall & Singh, 2020). These major changes have also raised concerns such as access inequality, communication problems, technical difficulties, increased workload and stress, difficulty assessing student participation, and poor work-life balance (Abu Talib et al., 2021). From the point of view of students and teachers, the idea emerged that education is not exactly the same as classical distance education, due to a lack of time and resources in accessing information about distance education, lack of necessary equipment and technological infrastructure, and the presence of negative psychological factors caused by the epidemic (Yıldırım, 2020). In various national and international sources, the new education process and the applied distance education model that emerged with the COVID-19 crisis have been described as “Emergency Remote Education” (Affouneh et al., 2020; Bozkurt & Sharma, 2020a; Hodges et al., 2020). This new definition has been described as an exceptional situation that cannot be considered as normal education for teachers, students and parents in the shadow of the epidemic (Aguilera & Nightengale-Lee, 2020; Milman, 2020). It has been emphasized in many sources that emergency distance education is different from known distance education. Emergency remote education includes not only physical distance, but also the concepts of interactional and psychological distance, is unplanned, is created quickly to be applied in the crisis process, is applied temporarily, brings problems such as technological infrastructure, participation, economic situation experienced by learners and teachers, and arises from necessity, not preference (Bozkurt, 2020; Bozkurt & Sharma, 2020b; Carter et al., 2020; Hodges et al., 2020).

According to the report of the Ministry of Education of Turkey (2019) with the outbreak of COVID-19, education was the most affected institution by the crisis with about 18

million students and 950 thousand teachers (Bakioğlu & Çevik, 2020). November 23 March 2020 in Turkey, the emergency distance education model first started to be implemented through 3 television channels and Educational Information Network (EBA) connected to TRT, the process continued with live lessons as it progressed, and from November it was decided to continue all official, private, formal and widespread educational activities through distance education. Considering that the transition to emergency distance education takes place quickly and unprepared, it cannot be said that teachers, students and parents are psychologically fully prepared for their technological and physical infrastructure needs. As a matter of fact, research has shown that students and teachers are weak in terms of digital skills and technological support needed to pass the distance education process effectively and efficiently (Alipio, 2020; Bozkurt, 2020; Başaran et al., 2020). However, it is known that in the epidemic process, the issue is not only technical, but also many pedagogical difficulties (Ali, 2020). It is also important that students and teachers have a positive perception of the program as well as having the necessary technological infrastructure and the knowledge and skills required by education for the successful and healthy implementation of distance education. Because it is important that this sudden digital transformation with the epidemic occurs simultaneously with not only a technological transformation, but rather a mental transformation (Bozkurt, 2020). In affective characteristics that are important for learning, the individual's attitudes have a great influence (Erden, 1995; Gardner, 1985; Tavşancıl, 2005), studies have revealed that attitude affects learning in virtual environments where distance education is carried out (Sanders & Morrison-Shetlar, 2001).

For a successful distance education application; considering that teachers' perceptions are of great importance (Tzivinikou et al., 2020), the attitude of the individual towards his / her job affects job performance (Kahramanoğlu et al., 2018), and teachers' attitudes are also reflected in students (Aydın & Sağlam, 2012), it is important to determine and evaluate teachers' attitudes towards distance education during the emergency distance education process. Teachers' interest in distance education, their thoughts and feelings about the program, and how they evaluate distance education greatly affect the implementation process of the program. It is known that successful distance education can only be achieved with teachers who can provide quality education (Tabata & Johnsrud, 2008) and individual beliefs about knowledge, learning and teaching are interconnected (Bay et al., 2015). For all these reasons, it has become a need to determine teachers' attitudes towards distance education, who have an important role as the practitioner of the program.

There are many studies that examine attitudes towards distance education in national and international fields. But most of the work done in Turkey has been done with students or academics in higher education (Eygü & Kahraman, 2013; Kışla, 2016; Arslan, et al., 2019; Çelik & Uzunboylu, 2020). A glimpse of research literature reveals that a little research studies on attitudes towards distance education have been carried out on primary, secondary and high school teachers working within the Ministry of education in Turkey (Ağır, 2007; Ayyıldız et al., 2006). None of the studies have been carried out in order to evaluate the perceptions of teachers for emergency distance education, which is enforced by teachers at all levels during a crisis like COVID-19, their preparation for distance teaching, the problems and needs they face in their teaching processes. It is necessary to analyze the current situation first in order to determine the functioning of the applied emergency distance education program, the problems experienced, the needs and the solution proposals. Determining the attitudes of teachers who are the practitioners of emergency distance education is of great importance in terms of conducting studies to reduce their existing negative attitudes, bringing to light the problems brought by the program and helping to solve them. This study was carried out in order to develop a valid and reliable scale to determine the attitudes of teachers working in schools affiliated to the Ministry of Education in Turkey and switching to urgent distance education within the scope of measures taken during the COVID-19 epidemic.

2. Methodology

This study is a valid and reliable scale development study to determine the attitudes of teachers towards immediate distance education implemented during the COVID-19 epidemic. This scale development study was carried out in the fall semester of the 2020-2021 academic year in Turkey.

2.1 Sample

The study's working group consists of 502 teachers working in private or public schools in the Ministry of National Education of Turkey. After the missing forms were eliminated, the remaining 458 data were analyzed. In scale development studies, the number of sample groups is important for validity and reliability studies. As well as the size of the sample, it is also important that it is diverse to represent the target audience (Tezbaşaran, 2008). It is stated in the literature that the number of participants should be five or ten times the number of items in the scale (Child, 2006; Nunnally, 1978). However, Nunnally (1978) found that a sample group of 300 people was sufficient in scale development studies, Comrey and Lee (1992) stated that 50 people are very poor, 100 people are low, 200 people are medium, 300 people are good, 500 people are very good and 1000 people are a perfect number. In the light of this information, it can be said that the total number of 458 participants in the study is a good number for the scale development study. The demographic variables of the study group are given in Table 1.

Table 1. Demographic variables of the sample

		Frequencies (f)	Percentage (%)
Gender	Female	298	65.1
	Male	160	34.9
Type of School	Public School	391	85.4
	Private School	67	14.6
Grade	Primary School	43	9.4
	Secondary School	134	29.3
	High School	281	61.4
Total		458	100

The study group of the research consists of a total of 458 teachers, 298 (65.1%) females and 160 (34.9%) males. 391 of the teachers in the study group are in public school and 67 are in private school; 43 of them are teachers working in primary school, 134 in middle school, 281 in high school.

2.2 Development process of attitude scale

This scale development work consists of five stages.

In the first stage; In order to determine the items of the distance education attitude scale and how to develop the attitude scale, national and international attitude scale studies towards distance education have been carefully examined (Çelik & Uzunboylu, 2020; Kışla, 2016; Eygü & Kahraman, 2013; Ayyıldız, at al., 2011; Tzivikov, at al., 2020; Kumari & Sood, 2018; Mahmoud Raba, 2013). In addition, written answers were obtained from 92 teachers by using a form consisting of open-ended questions prepared online in order to learn teachers' opinions and feelings about distance education. After reviewing the relevant literature and analyzing the teachers' opinions, an item pool of 46 items consisting of half positive and negative statements was created.

In the second stage; In order to ensure the validity of the content of the scale, the opinions of 4 experts in the field were consulted and they were asked to evaluate the clarity of the structure, the level of interest, the accuracy, the excess of the structure and the “suitability” of the structure. According to the feedbacks of the experts, after calculating the A-CVI and UA for each item, 8 items were removed from the scale and some items were edited (Yusoff, 2019; Polit, 2007).

In the third stage; The scale items were examined with a language expert in terms of spelling, grammar rules and expression disorders and re-evaluated individually. The scale was applied to 12 teachers in order to evaluate its intelligibility and no changes were made since there were no items that were not understood by the teachers. The prepared draft form is designed as a Likert type scale with 5 options. The degrees included in the scale are 1 (strongly disagree), 2 (strongly disagree), 3 (ambivalent), 4 (agree), 5 (strongly agree). As a result of the regulations, a draft form consisting of 20 negative and 18 positive items was obtained.

In the fourth stage; The final draft of the 38-item attitude scale was applied to 502 teachers to calculate the validity and reliability of the attitude scale. A total of 502 teachers working in private or public schools under the Ministry of Education of Turkey, in different schools, at different levels and in various branches, were applied online. After the missing forms were eliminated, the remaining 458 data were analyzed.

In the last stage; Jamovi (1.6.9) software was used in descriptive and deductive analyses at the stage of psychometric properties of the scale in the study. In scale development studies, it was emphasized that performing EFA and CFA studies with different groups would yield more effective results (Fabrigar et al., 1999; Worthington & Whittaker, 2006). In this scale development study, the 458-person study group was randomly divided into two, and Exploratory Factor Analysis (EFA) studies were conducted with 205 participants and Confirmatory Factor Analysis (CFA) studies with 253 participants. The validity and reliability analysis were carried out with the whole study group. Before conducting factor analysis, factorability was studied, which determines whether the data collected is sufficient to develop factors. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's test was checked. The KMO value varies between 0 and 1. An index above 0.50 suggests factor analysis (Williams, Brown & Onsmann, 2010). First, the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test were performed to determine the suitability of the data for factor analysis. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were applied to the scale, which is suitable for factor analysis. EFA is a multivariate statistical method that allows the researcher to create an accurate map of the factors and structures associated with the events studied (Edwards & Bagozzi, 2000; Watkins, 2018). Exploratory Factor Analysis, as factor rotation method, varimax with Kaiser normalization was used.

During scale development and validation, CFA is conducted to improve items while examining the nature and relationships of structures. Since the structural model is created with DFA, a definitive hypothesis can be created about the cases being studied (Jackson, Gillaspay & Purc-Stephenson, 2009). Confirmatory factor analysis was applied to examine the goodness of fit and construct validity of the 2-factor scale, which was formed as a result of the exploratory factor analysis applied to the scale. While performing CFA, indices such as Chi-square goodness of fit test, goodness of fit index (GFI), adjusted goodness of fit (AGFI), comparative fit index (CFI), normed fit index (NFI), standardized root mean square (SRMR) were analyzed and root mean square error of approximation (RMSEA) has been calculated. Secondly, Cronbach Alpha coefficient analysis and composite reliability calculations were performed to determine the reliability of the resulting scale. For a perfect reliability level, alpha values should be above 0.70 (Kline, 2011; Lavrakas, 2008) and should not exceed 0.94 (Taber, 2018).

3. Findings

The KMO value of the analysis was .885, which is considered very good and the Bartlett test was statistically significant ($\chi^2=3141$, $df=703$, $p<0.001$). Results of KMO and Bartlett's test appear to support the validity of the factor analysis usage for this study. After these analyses, Exploratory Factor Analysis and Confirmatory Factor Analysis were performed on the data obtained from the attitude scale.

3.1 Exploratory factor analysis of the scale

Exploratory Factor Analysis, as factor rotation method, varimax with Kaiser normalization was used. The exploratory factor analysis was administered the 38 items. Items with an eigenvalue of 1.00 were retained. In addition, substances (a) loaded into more than one factor, (b) loaded factor is not consistent with the meaning of other substances, and (c) <0.35 factor load is obtained substances were deleted (Deng, Wang, Guan & Wang, 2017; Asgharnezhad, et al., 2020). Eigenvalues and scree plots were examined to determine the number of factors. The results of EFA showed that the scale grouped under 2 factors with eigenvalues larger than 1. Fundamental axis factor analysis and Varimax rotation technique were used to make the factor structures stronger. After using varimax rotation, the factor loadings for each item were examined and loadings of less than 0.40 were eliminated. Since items 6, 8, 14, 21, 27, 30, 34, 35 and 36 had extraction values below 0.40, they were removed from the scale. Factor analysis was subsequently redone with 29 items. Later, items in multiple dimensions, that is, items with a factor load under both factors were examined. Item 5 with values below the critical value and items 1, 15, 16, 32 and 38 were present under multiple dimensions were also removed from the scale. KMO and Bartlett tests were performed again, as the irrelevant and overlapping materials were cleared. According to the analysis result, KMO value was calculated as 0.872, Bartlett test result as $\chi^2=1379$, $df=210$ and $p<0.001$. The results are very good, and EFA can be tested with data based on the remaining substances. Eigenvalues and scree graphs were examined to determine the number of factors. The results obtained from EFA made over 21 items; The scree graph is given in Figure 1, the eigenvalues table in Table 2, and the variances and total variance of the factors in Table 3.

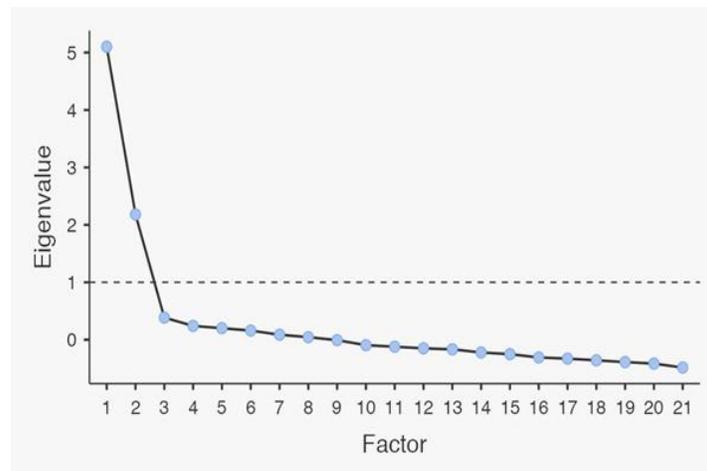


Figure 1. Scree plot of the scale

As can be seen in Figure 1, since there are two eigenvalues greater than 1, a two-factor structure has emerged.

Table 2. Table of eigenvalues of the scale

Factors	Eigenvalues
1	5.10235
2	2.18130
3	0.38539
4	0.24054
5	0.20098
6	0.15939
7	0.08734
8	0.04447
9	-0.00724
10	-0.09475
11	-0.12163
12	-0.15024
13	-0.16694
14	-0.22197
15	-0.25111
16	-0.30884
17	-0.32866
18	-0.35860
19	-0.38917
20	-0.41538
21	-0.48479

When the values in Table 2 were examined, the eigenvalue was calculated as 5.10 in the first factor and 2.18 in the second factor. The scree plot and the eigenvalues table of the scale also support that the scale consists of two factors.

Table 3. The variances and total variances of the factors

Factors	Total Load	Percentage of variances	Percentage of Total Variances
1	4.04	19.2	19.4
2	3.52	16.8	36.0

The scale consisting of 2 factors and 21 items describes 36% of the total variance when examining the factor structures given in Table 3. According to the correlation calculation between factors, these factors measure different structures. The correlation value is $r=0.0605$ and is not statistically significant.

Table 4. Factor structures and loadings of the 21 items

Number of Items		Factor 1	Factor 2	Uniqueness
17	It is easy for me to be able to teach from anywhere in distance education.	0.697		0.506
26	I enjoy my distance education lessons.	0.684		0.411
23	I enjoy teaching lessons by using the visual materials I want in distance education.	0.584		0.655
24	I am happy to learn new information about the use of technology in the distance learning process.	0.583		0.608
28	Distance education enables me to explain the subjects more fluently.	0.580		0.601

10	I would like to continue distance education when the normal process starts.	0.553		0.596
19	I like to research content for use in Distance Education.	0.552		0.695
7	Distance education saves me time and money.	0.522		0.702
18	It is important for me to reach many students at the same time with distance education.	0.516		0.733
37	I believe that distance education gives students the responsibility of learning.	0.512		0.687
13	It makes me happy to be able to reach my students, even from a distance.	0.454		0.791
4	It is easier to provide effective classroom management in distance education.	0.431		0.741
11	Not getting feedback from students in distance education courses bothers me.		0.708	0.488
20	I do not like being unable to identify the passive student in distance education courses		0.657	0.566
9	I don't like not being able to communicate one-on-one with students in distance education lessons.		0.649	0.570
29	I am afraid that my students do not understand the subject in distance education.		0.590	0.625
12	I don't like teaching lessons dependent on the screen.		0.583	0.519
3	I think that distance education is not as accepted as face-to-face education.		0.544	0.688
31	I don't like not knowing students in distance education.		0.500	0.731
22	I am disturbed by the technical problems I experience in distance education.		0.485	0.752
33	The uncertainty of the distance learning process makes it difficult for me to make a lesson plan.		0.447	0.776

As can be seen in the factor analysis results given in Table 4, it was concluded that the items were grouped under two factors, the factor load values were sufficient and each item represents the factor in which it is located. It is observed that the load values of substances vary between 0.431 and 0.708. As a result of the exploratory factor analysis, 21 items were distributed over 2 factors; factor 1 includes eleven items and factor 2 includes nine items. After the factor analysis, one of the important steps is to measure the common structure of the items collected in the same factor. In the scale we have obtained, items 4, 7, 10, 13, 17, 18, 19, 23, 24, 26, 28, and 37 in the first factor clearly measure teachers' attitudes towards the advantages and contributions of distance education. Therefore; this factor was named as “Benefits of Distance Education (BDE)”. The second factor, which consists of 3, 9, 11, 12, 20, 22, 29, 31, and 33 items, measures teachers' attitudes towards disadvantages of distance education, so the second factor is named as “Limitations of Distance Education (LDE)”. The items in the scale created were both structurally and semantically consistent.

3.2 Confirmatory factor analysis of the scale

When the first model fit indices are examined, it is seen that the CFI and TLI values are above 0.9, the SRMR value is lower than 0.08 and the RMSEA value is less than 0.05. Accordingly, the DFA value of the scale is acceptable.

Table 5. Model-1 parameter estimates of the scale

Factors	Items	Beta	SE	Z	p	Corrected Item-Total Correlation
Factor 1	17	0.6241	0.0703	8.88	< .001	0.628
	26	0.7573	0.0700	10.82	< .001	0.725
	23	0.5458	0.0685	7.97	< .001	0.577
	24	0.2559	0.0578	4.43	< .001	0.355
	28	0.5768	0.0677	8.52	< .001	0.596
	10	0.6472	0.0860	7.53	< .001	0.546
	19	0.4227	0.0641	6.59	< .001	0.482
	7	0.4331	0.0893	4.85	< .001	0.362
	18	0.5450	0.0680	8.02	< .001	0.588
	37	0.5219	0.0778	6.71	< .001	0.481
	13*	0.0741	0.0551	1.35	0.178	0.111
4	0.5331	0.0842	6.33	< .001	0.476	
Factor 2	11_T	0.5834	0.0566	10.30	< .001	0.666
	20_T	0.5907	0.0694	8.51	< .001	0.568
	9_T	0.6347	0.0543	11.69	< .001	0.755
	29_T	0.6976	0.0642	10.87	< .001	0.708
	12_T	0.6905	0.0652	10.60	< .001	0.680
	3_T	0.3780	0.0459	8.24	< .001	0.553
	31_T	0.5808	0.0658	8.83	< .001	0.585
	22_T	0.4541	0.0603	7.53	< .001	0.527
	33_T	0.6074	0.0764	7.95	< .001	0.552

*Not significant at the 0.05 level.

However, since the Z value between Factor 1 and item 13 was not at a statistically significant level, DFA was repeated by removing 13. Finally, in the analysis of the 20-item scale, the necessary modifications were made by taking the first analyses into account, and the final result was obtained. The model created for CFA analysis is given in Figure 2.

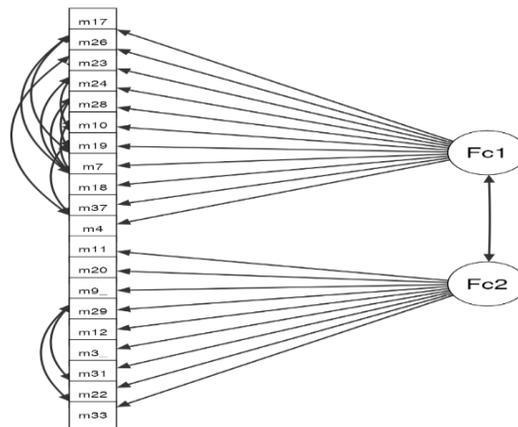


Figure 2. Item factor relationship

Table 6. Fit indices for the models

χ^2/df	CFI	TLI	SRMR	RMSEA	RMSEA 90% CI	
					Low	High
210/152<1.5	0.953	0.942	0.0735	0.0427	0.0273	0.0562

When the model fit indices are examined, it is seen that the CFI and TLI values are above 0.9, the SRMR value is lower than 0.08 and the RMSEA value is less than 0.05. According to these results, it is seen that all fit indices have acceptable values. It can be said that the model is compatible with factors and data when examining fit indices. Based on this, it was concluded that the model and scale items were appropriate.

Table 7. Parameter estimates of the scale

Factors	Items	Beta	SE	Z	p	Corrected Item-Total Correlation
Factor 1	17	0.626	0.0703	8.90	< .001	0.630
	26	0.756	0.0701	10.77	< .001	0.723
	23	0.550	0.0686	8.01	< .001	0.580
	24	0.246	0.0589	4.18	< .001	0.342
	28	0.573	0.0685	8.37	< .001	0.592
	10	0.644	0.0872	7.39	< .001	0.544
	19	0.436	0.0643	6.77	< .001	0.497
	7	0.433	0.0900	4.81	< .001	0.362
	18	0.549	0.0682	8.05	< .001	0.591
	37	0.529	0.0783	6.75	< .001	0.488
	4	0.533	0.0845	6.31	< .001	0.476
Factor 2	11	0.583	0.0567	10.28	< .001	0.665
	20	0.591	0.0694	8.53	< .001	0.568
	9	0.635	0.0544	11.67	< .001	0.755
	29	0.701	0.0641	10.93	< .001	0.712
	12	0.691	0.0652	10.59	< .001	0.680
	3	0.377	0.0459	8.22	< .001	0.552
	31	0.579	0.0658	8.80	< .001	0.584
	22	0.453	0.0604	7.50	< .001	0.525
	33	0.606	0.0764	7.92	< .001	0.551

As seen in Table 6, all Z values are at a statistically significant level of 0.05. So, all the items involved are related to the factors. The validity of the 2-factor scale structure revealed by confirmatory factor analysis and exploratory factor analysis was confirmed. Based on all these findings we obtained after the confirmatory factor analysis, it was concluded that the Attitude Scale towards Distance Education is a valid scale.

3.3 Reliability of the scale

For reliability calculations, Cronbach Alpha calculations based on EFA sample and also composite reliability (McDonald's ω) calculation based on CFA sample analysis was performed. Table 7 summarizes factor names, number of the items and reliability of each factor.

Table 8. Reliability calculations according to scale factors and total scores

Factors Name	Number of Items	Cronbach α	McDonald's ω
Benefits of Distance Education (BDE)	11	0.847	0.836
Limitations of Distance Education (LDE)	9	0.815	0.845
Total Scale	20	0.861	0.872

According to the results of the analysis, the scale consisted of two factors: the benefits and limitations of distance education. In both reliability calculations, it is considered sufficient to be above 0.7. As seen in table 7, it was determined that Cronbach alpha and McDonald's value of

each factor is above 0.7. Also, it was found that Cronbach alpha value of total scale is 0.861 and McDonald's value of the total scale is 0.872. According to these results, it can be said that Distance Education Attitude Scale is a valid and reliable scale.

4. Discussions and conclusions

In this study, a reliable and valid scale study was conducted to measure the attitudes of primary, secondary and high school teachers associated with the Ministry of Education in Turkey towards Distance Education during the COVID-19 crisis. The scale created is an easily applicable scale to measure teachers' attitudes towards distance education, which is carried out not only during the epidemic process, but also later for various reasons. It is obvious that distance education models, which became mandatory during the epidemic, made a sudden entrance into the lives of every teacher and student around the world and accelerated the digital transformation in education. It is anticipated that even if schools are opened, distance education practices can partially continue, and will be used as a second option to maintain education in times of regional or national problems. It is believed that the presence of a scale that evaluates teachers' attitudes towards distance education will be very useful for identifying deficiencies in distance education programs and organizing and developing existing programs. It is also believed that positive teacher attitudes will help improve the quality and efficiency of distance education.

When the relevant literature is examined, it is seen that scale studies have been carried out to evaluate the attitudes of especially university students or academicians towards distance education. There has not been enough work on a scale prepared for teachers at all levels for emergency distance education implemented during the COVID-19 outbreak.

The scale of attitude towards distance education was carried out in five stages. After the literature review and evaluation of the opinions of teachers received, an item pool was created. In order to determine the content validity of the measurement tool as a result of the expert evaluations, Item-Content Validity Index (I-CVI), Scale Level-Content Validity Index Average (S-CVI/Avg.) And Scale-Content Validity Index Universal Agreement (A-CVI/UA) was analyzed and items not I-CVI=1 were excluded from the scale (Yusoff, 2019). S-CVI/Avg. of the scale 0.967 and A-CVI / UA 0.870, so the results are above the acceptable level (Polit & Beck, 2006). As a result of expert evaluations, calculations were made for each item and a 38-item draft form of the scale was created. The scale was applied to 458 teachers working at different levels and schools. This number can be considered very good for scale development studies according to various sources (Child, 2006; Nunnally, 1978; Comrey & Lee, 1992). For the validity and reliability calculations of the scale, EFA and CFA were performed, respectively. As a result of EFA analysis, a two-factor attitude scale consisting of 21 items was obtained. The load values of the items range from 0.431 to 0.708. It has been concluded that the factor load values of items are sufficient and represent the factor in which each item is located. The factors of the scale are named as "Benefits of Distance Education (BDE)" and "Limitations of Distance Education (LDE)". Factors explain 36% of the total variance. According to the correlation calculation between factors, these factors measure different structures. Examining teacher attitudes regarding the benefits and challenges of distance education is particularly important for the development of programs.

CFA was applied to the factor structures obtained after EFA. An item was removed from the scale because p values (0.178) were greater than 0.05. The scale was verified according to calculated fit indices. Looking at the fit indices of the model; Chi-square statistic (χ^2/df)=1.5 value is less than 3; The RMSEA (0.0427) value is less than 0.06; SRMR (0.0735) value is less than 0.08; The CFI value of 0.953 showed an acceptable fit. After AFA and DFA analyses, a two-factor and 20-point scale was obtained. Cronbach Alpha and composite reliability coefficients were calculated for reliability. Cronbach α =0.847 and McDonald's ω =0.836 were found for the first factor and Cronbach α =0.815 and McDonald's ω =0.845 were found for the second factor and

these numbers represent a perfect reliability level (Kline, 2011; Lavrakas, 2008; Taber, 2018). While the high Cronbach Alpha internal consistency coefficient (0.861) of the scale shows that the items are consistent with each other, the results of EFA and CFA have also proven the validity of the scale. As a result of the study, considering the validity and reliability calculations, it can be said that the attitude scale towards distance education can be used in studies to determine teachers' attitudes. The attitude scale developed in this study will fill the gap in the literature related to determining teachers' attitudes towards distance education.

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References

- Abu Talib, M., Bettayeb, A. M., & Omer, R. I. (2021). Analytical study on the impact of technology in higher education during the age of COVID-19: Systematic literature review. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-021-10507-1>
- Affouneh, S., Salha, S., & Khlaif, Z. N. (2020). Designing quality e-learning environments for emergency remote teaching in Coronavirus crisis. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 11(2), 1-3. <https://doi.org/10.30476/ijvlms.2020.86120.1033>
- Aguliera, E., & Nightengale-Lee, B. (2020). Emergency remote teaching across urban and rural contexts: perspectives on educational equity. *Information and Learning Science*, 121(5-6), 461-468. <https://doi.org/10.1108/ILS-04-2020-0100>
- Ağır, F. (2007). *Özel Okullarda Ve Devlet Okullarında Çalışan İlköğretim Öğretmenlerinin Uzaktan Eğitime Karşı Tutumlarının Belirlenmesi*. http://dspace.balikesir.edu.tr/xmlui/bitstream/handle/20.500.12462/1591/Fatma_Ağır.pdf?sequence=1&isAllowed=y.
- Ali, W. (2020). Online and remote learning in higher education institutes: A necessity in light of COVID-19 pandemic. *Higher Education Studies*, 10(3), 16. <https://doi.org/10.5539/hes.v10n3p16>
- Alipio, M. (2020). Education during COVID-19 era: Are learners in a less-economically developed country ready for e-learning? *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3586311>
- Anderson, T., & Dron, J. (2011). Three generations of distance education pedagogy. *International Review of Research in Open and Distance Learning*, 12(3), 80-97. <https://doi.org/10.19173/irrodl.v12i3.890>
- Arslan, R., Bircan, H., & Eleroğlu, H., (2019). Uzaktan Eğitime Yönelik Tutum Ölçeğinin Geliştirilmesi: Cumhuriyet Üniversitesi Örneği. *S.C.Ü. İktisadi ve İdari Bilimler Dergisi*, 20(2), 409-427. <https://dergipark.org.tr/en/pub/cumuiibf/issue/50375/530503>.
- Asgharnezhad, M., Joukar, F., Naghipour, M., Nikbakht, H. A., Hassanipour, S., Arab-Zozani, M., & Mansour-Ghanaei, F. (2020). Exploratory factor analysis of gender-based metabolic syndrome components: Results from the PERSIAN Guilan cohort study (PGCS). *Clinical Nutrition ESPEN*, 40, 252-256. <https://doi.org/10.1016/j.clnesp.2020.09.011>

- Aydın, R., & Sağlam, G. (2012). Öğretmen adaylarının öğretmenlik mesleğine yönelik tutumlarının belirlenmesi (Mehmet Akif Ersoy Üniversitesi Örneği). *Türk Eğitim Bilimleri Dergisi*, 10(2), 257-294. <https://dergipark.org.tr/en/pub/tebd/issue/26137/275280>
- Ayyıldız, S. Ü., Günlük, M., & Erbey, S. N. (2006). Muhasebe Öğretim Elemanlarının Uzaktan Eğitim ve Uzaktan Muhasebe Eğitimine Yönelik Tutumları Üzerine Bir Araştırma. *Muhasebe ve Finansman Dergisi*, 32, 1-14. <https://dergipark.org.tr/en/pub/mufad/issue/35601/395453>
- Bakioğlu, B., & Çevik, M. (2020). COVID-19 Pandemisi Sürecinde Fen Bilimleri Öğretmenlerinin Uzaktan Eğitime İlişkin Görüşleri. *Journal of Turkish Studies*, 15(4), 109-129. <https://doi.org/10.7827/turkishstudies.43502>
- Başaran, M., Doğan, E., Karaoğlu, E., & Şahin, E. (2020). Koronavirüs (COVID-19) Pandemi Sürecinin Getirisi Olan Uzaktan Eğitimin Etkililiği Üzerine Bir Çalışma. *Academia Eğitim Araştırmaları Dergisi*, 5(2), 368-397.
- Bay, E., Vural, O., Demir, S., & Bağceci, B. (2015). An analysis of the candidate teachers' beliefs related to knowledge, learning and teaching. *International Education Studies*, 8(6), 75-79. <https://doi.org/10.5539/ies.v8n6p75>
- Belay, D. G. (2020). COVID-19, Distance learning and educational inequality in rural Ethiopia. *Pedagogical Research*, 5(4). <https://doi.org/10.29333/pr/9133>
- Bozkurt, A. (2020). Koronavirüs (COVID-19) pandemi süreci ve pandemi sonrası dünyada eğitime yönelik değerlendirmeler: Yeni normal ve yeni eğitim paradigması. *Açıköğretim Uygulamaları ve Araştırmaları Dergisi*, 6(3), 112-142. <https://dergipark.org.tr/en/pub/auad/issue/56247/773769>.
- Bozkurt, A., & Sharma, R. C. (2020a). Education in normal, new normal, and next normal: Observations from the past, insights from the present and projections for the future. *Asian Journal of Distance Education*, 15(2), i-x. <https://www.asianjde.org/ojs/index.php/AsianJDE/article/view/512>.
- Bozkurt, A., & Sharma, R. C. (2020b). Emergency remote teaching in a time of global crisis due to CoronaVirus pandemic. *Asian Journal of Distance Education*, 15(1), 2020. <https://doi.org/10.5281/zenodo.3778083>
- Cahapay, M. B. (2020). Reshaping assessment practices in a Philippine teacher education institution during the Coronavirus disease 2019 Crisis. *Pedagogical Research*, 5(4). <https://doi.org/10.29333/pr/8535>
- Carter, R. A., Rice, M., Yang, S., & Jackson, H. A. (2020). Self-regulated learning in online learning environments: Strategies for remote learning. *Information and Learning Science*, 121(5-6), 311-319. <https://doi.org/10.1108/ILS-04-2020-0114>
- Child, D. (2006) *The essentials of factor analysis*. 3rd Edition, Continuum, London.
- Comrey, A. L., & Lee, H. B., (1992), *A first course in factor analysis*. Hillsdale, New Jersey: Erlbaum.
- Çelik, B., & Uzunboylu, H. (2020). Developing an attitude scale towards distance learning. *Behaviour & Information Technology*. Published online. <https://doi.org/10.1080/0144929X.2020.1832576>
- Deng, M., Wang, S., Guan, W., & Wang, Y. (2017). The development and initial validation of a questionnaire of inclusive teachers' competency for meeting special educational needs in regular classrooms in China. *International Journal of Inclusive Education*, 21(4), 416-427. <https://doi.org/10.1080/13603116.2016.1197326>
- Durak, G., Çankaya, S., & İzmirli, S. (2020). Examining the Turkish universities' distance education systems during the COVID-19 pandemic. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi (EFMED)*, 14(1), 787-809. <https://doi.org/10.17522/balikesirnef.743080>

- Edwards, J. R., & Bagozzi, R. P. (2000). On the nature and direction of relationships between constructs and measures. *Psychological Methods*, 5(2), 155-174. <https://doi.org/10.1037/1082-989X.5.2.155>
- Erden, M. (1995). Öğretmen adaylarının öğretmenlik sertifikası derslerine yönelik tutumları. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 11(11), 99-104.
- Eygü, H., & Karaman, S. (2015). Uzaktan Eğitim Öğrencilerinin Memnuniyet Algıları Üzerine Bir Araştırma. Kırıkkale Üniversitesi Sosyal Bilimler Dergisi, 3(1), 36-59. Retrieved from <https://dergipark.org.tr/tr/pub/kusbd/issue/19375/205547>.
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4(3), 272-299. <https://doi.org/10.1037/1082-989X.4.3.272>
- Fernando, M. R., & Schleicher, A. (2020). A framework to guide an education response to the COVID-19 Pandemic of 2020. *OECD*, 1-40.
- Gardner, R. C. (1985). *Social psychology and second language learning: The role of attitudes and motivation*. Arnold.
- Hodges, C. B., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>.
- Jackson, D. L., Gillaspay, J. A., & Purc-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological Methods*, 14, 6-23. <http://dx.doi.org/10.1037/a0014694>
- Kahramanoğlu, R., Yokuş, E., Cüçük, E., Vural, S., & Şiraz, F. (2018). Öğretmenlik Mesleğine Yönelik Tutum Ölçeği (ÖMYTÖ) Geçerlik ve Güvenirlik Çalışması. *Turkish Studies Educational Sciences*, 13(11), 1669–1686. <http://dx.doi.org/10.7827/TurkishStudies.13561>
- Kline, R. B. (2011). *Methodology in the Social Sciences. Principles and practice of structural equation modelling* (3rd ed.). Guilford Press.
- Kumari, S., & Sood, V. (2018). Attitude of college students towards open and distance education. *Conflux Journal of Education*, 5(12), 2-7.
- Lall, S., & Singh, N. (2020). COVID-19: Unmasking the new face of education. *International Journal of Research in Pharmaceutical Sciences*, 11(Special Issue 1), 48-53. <https://doi.org/10.26452/ijrps.v11iSPL1.2122>
- Lau, J., Yang, B., & Dasgupta, R. (2020). Will the coronavirus make online education go viral? Retrieved from <https://www.timeshighereducation.com/features/will-coronavirus-make-online-education-go-viral>
- Lavrakas, P. J. (2008) *Encyclopedia of survey research methods*. Sage Publications, Inc., Thousand Oaks.
- Mahmoud Raba, A. (2016). Students' attitude towards distance learning at Al-Quds Open University/ Tulkarem Educational Region. *International Journal of Science and Research (IJSR)*, 5, 1157-1164.
- Milman, N. (2020). This is emergency remote teaching, not just online teaching. *Education Week*, available at: www.edweek.org/ew/articles/2020/03/30/this-is-emergency-remote-teaching-not-just.html?cmp=SOC-SHR-FB (accessed 14 Dec. 2020).
- Miltiadou, M., & Yu, C. H. (1999). Validation of the online technologies self-efficacy scale (OTSSES). *ERIC Document Reproduction Service No: ED445672*, 480, 1-17. <http://creative-wisdom.com/pub/efficacy.pdf>.
- Nunnally, J. C. (1978). *Psychometric theory*. 2nd Edition, McGraw-Hill, New York.

- Perreault, H. et al. (2002). Overcoming barriers to successful delivery of distance courses. *Journal of Education for Business*, 77(6), 313-318. <https://doi.org/10.1080/08832320209599681>
- Polit, D. F., Tatano Beck, C., & Owen, S. V. (2007). Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Research in Nursing & Health*, 30(4), 459-467. <https://doi.org/10.1002/nur.20199>
- Sanders, D. W., & Morrison-Shetlar, A. I. (2001). Student attitudes toward web-enhanced instruction in an introductory biology course. *Journal of Research on Computing in Education*, 33(3), 251-262. <https://doi.org/10.1080/08886504.2001.10782313>
- Tabata, L. N., & Johnsrud, L. K. (2008). The impact of faculty attitudes toward technology, distance education, and innovation. *Research in Higher Education*, 49(7), 625-646. <https://doi.org/10.1007/s11162-008-9094-7>
- Taber, K. S. (2018). The use of Cronbach's Alpha when developing and reporting research instruments in science education. *Res Sci Edu*, 48, 1273-1296. <https://doi.org/10.1007/s11165-016-9602-2>
- Tavşancıl, E. (2002). *Tutumların ölçülmesi ve SPSS ile veri analizi*. Ankara: Nobel Yayın Dağıtım.
- Tezbaşaran, A. (2008). *Likert Tipi Ölçek Hazırlama Kılavuzu Likert Tipi Ölçek Hazırlama Kılavuzu*. Ankara: Türk Psikologlar Derneği Yayınları. ISBN: 975-9756-08-5
- Tzivinikou, S., Charitaki, G., & Kagkara, D. (2020). Distance education attitudes (DEAS) during COVID-19 crisis: Factor structure, reliability and construct validity of the brief DEA Scale in Greek-speaking SEND teachers. *Technology, Knowledge and Learning*. <https://doi.org/10.1007/s10758-020-09483-1>
- UNESCO (2020). UNESCO COVID-19 education response. In *UNESCO, United Nations Educational, Scientific and Cultural Organization*. <https://resourcecentre.savethechildren.net/node/17506/pdf/75890.pdf>.
- Watkins, M. W. (2018). Exploratory factor analysis: A guide to best practice. *Journal of Black Psychology*, 44(3), 219-246. <https://doi.org/10.1177/0095798418771807>
- Williams, B., Onsmann, A., & Brown, T. (2010). Australian paramedic graduate attributes: A pilot study using exploratory factor analysis. *Emergency Medicine Journal*, 27, 794-799. <https://doi.org/10.1136/emj.2010.091751>
- Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist*, 34(6), 806-838. <https://doi.org/10.1177/0011000006288127>
- Yamamoto, G. T., & Altun, D. (2020). Coronavirüs ve Çevrimiçi (Online) Eğitimin Önlenemeyen Yükselişi. *Üniversite Araştırmaları Dergisi*, 3(1), 25-34. <https://doi.org/10.26701/uad.711110>
- Yıldırım, K. (2020). İstisnai Bir Uzaktan Eğitim-Öğretim. *Eğitim Bilimleri Eleştirel İnceleme Dergisi*, 1(1), 7-15. <https://doi.org/10.22596/cresjournal.0101.7.16>
- Yusoff, Muhamad Saiful Bahri (2019). ABC of content validation and content validity index calculation. *Education in Medicine Journal*, 11(2), 49-54. <https://doi.org/10.21315/eimj2019.11.2.6>
- Zhao, Y. (2020). COVID-19 as a catalyst for educational change. *Prospects*, 49(1-2), 29-33. <https://doi.org/10.1007/s11125-020-09477-y>





According to Primary School Teachers' Views on S-STEM (Social Studies + STEM): A Phenomenological Research

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Abstract

STEM is the abbreviation of Science, Technology, Engineering and Mathematics, and S-STEM is with the addition of the Social Studies discipline. It is thought that getting the views of teachers who have made practical studies on STEM about S-STEM will shed light on both policy-makers and researchers. The aim of the research is to get the views of the primary teachers about S-STEM. This research is a phenomenological study within the scope of basic qualitative research method. Participants of this study are eight primary school teachers. Telephone interviews were used in the interview technique used in this phenomenological study. The data obtained in the research were evaluated by qualitative data analysis. Results were obtained such as the definition of STEM, STEM implementations, dimensions which integrate to STEM, suggestions on integrating social studies to STEM, values and skills which handled with STEM, suggestions for effective S-STEM implementations.

Keywords: STEM, S-STEM, Social Studies, primary school, teachers.

1. Introduction

Current education systems aim to provide effective teaching and learning approaches to deal with economic races, constantly growing technologies, abundance of information and other concerns of the 21st century (Wells, 2008). One of these approaches is STEM perception. STEM (Science, Technology, Engineering and Mathematics), which is the English abbreviation of Science, Technology, Engineering and Mathematics disciplines, was created in 2001 at the National Science Foundation of America (NSF) (Chute, 2009). NSF was the first institution to call the integration of science, technology, engineering and mathematics disciplines as STEM (Sanders, 2009). Since sustainable economic growth and a brighter future target are at stake, demand for STEM has gained momentum especially in recent years (Langdon, Mckittrick, Beede, Han & Doms, 2011). STEM education, which is an interdisciplinary field, has two main objectives. The first is to increase the number of students preparing for university to pursue a career in science, technology, engineering and mathematics, and the second is to increase the competence of all students in the basic STEM knowledge field. This aim is to develop the skills of students and employees to evaluate problems, use STEM concepts and apply creative solutions to their daily lives (Thomason & National Research Council, 2011: 11). Thus, students who become STEM literate individuals realize how science branches shape our material, intellectual and cultural world. In addition, these individuals, as responsible, effective and constructive citizens, find

solutions to STEM related problems through the ideas of science, technology, engineering and mathematics (Bybee, 2010: 31).

Developments in science, technology and economy have changed the way people work and live. In order to keep up with this pace in today’s world, individuals must have 21st century skills such as critical thinking, problem solving, teamwork, leadership, flexible thinking, adaptation, entrepreneurship, verbal-written communication, access to information, analysis and creativity (Wagner, 2008: 21-22). For this reason, different disciplines can be added to the STEM approach in order to reinforce the mentioned skills better. Approaches of STEAM with the addition of the Art discipline, E-STEM with the addition of the Entrepreneurship dimension and S-STEM with the addition of the Social Studies discipline are active in the literature. The contribution of STEM education in the context of understanding the transformative potentials of individuals to overcome social problems and structural inequalities (such as effective citizenship participation, social responsibility) is also considered important in raising effective citizens for a more democratic society. For this reason, STEM is directly related to the Social Studies course in terms of both the process and the resulting outputs (Garibay, 2015).

Social Studies, including disciplines such as history, political science, geography, and economy, are also directly related to anthropology and psychology. In the context of K-12, it can be said that hierarchically, it ranks lower among the courses in the primary school program, although it has a mission to prepare citizens to join a democratic society historically. It is also true that despite the Social Studies course aimed at ensuring democratic participation, many citizens either do not participate in civilian tasks such as national elections or global interaction, or are unaware that this is critical for the viability and continuation of a democratic state (Pryor & Kang, 2013). In this context, the National Research Council (NRC, 2011) stated the contribution of integrating the Social Studies course to STEM in terms of gaining citizenship skills and realizing democratic participation as follows:

“One of the main goals of STEM education is to equip new generation citizens with the knowledge and skills necessary to engage in public debates about science issues and policies and make informed personal and citizenship decisions.”

The National Council of Social Studies (NCSS, 2017) defines the Social Studies course as an integrated study of Social Studies and humanities to promote citizenship competence. In essence, it states that Social Studies realize the knowledge and participation regarding citizenship within the school curriculum by coordinating disciplines as anthropology, archeology, economics, geography, history, law, philosophy, political science, psychology, religion and sociology and by associating the appropriate content from humanities with mathematics and nature sciences with a systematic study. By adding one or more components of Social Studies (such as geography, history or economy) to the STEM approach, the S-STEM creates a contextual approach by linking courses to real life. Thus, by integrating the disciplines that emerge with the S-STEM approach, Social Studies are added to STEM, making the content logical, uninterrupted and effective (Awash in trash). In young children, implementations such as fairy tales and sports activities that will attract their attention can be realized during STEM studies. Literary products, fairy tales, or case studies can be given by relating them with the issues to be selected directly from students' homes or environments to address some phenomena and problems. One of the anecdotes that best demonstrated the role of the Social Studies course in the STEM integration was experienced in a STEM study as follows (Carrol & Scott, 2017):

“While discussing with children how people can be protected from the recent floods and hurricanes in the region as part of a STEM kit, a third grade student from a primary school expressed a possible solution for protection against flood as using large rice bags to keep water away from their homes. Stating that she learned this information in Social Studies course, she emphasized that the rice specific to his

region was used to keep water away from houses in the environment where he lived historically. He made suggestions for the use of rice as a possible flood solution.”

In this context, integrating the relevant achievements of the Social Studies curriculum into STEM offers students the opportunity to examine economic, political and social problems. It helps to activate the areas of reading, writing and speaking, which can affect design decisions directly or indirectly. Students build purposeful and useful links to math skills while developing and applying these skills. Authentic learning environments provide the student with a transparent view so that they can see the whole picture (Meyrick, 2011). Inquiry-based learning that stands out in STEM and place-based learning that stands out in Social Studies courses can be expressed as supporting approaches. In this context, with the Social Studies course that can be integrated into STEM, students can be included in the inquiry process, experience the value of asking questions and joy of finding solutions, associating studies with daily life, making problems and solutions more important and meaningful (Adams, Miller, Soul & Pegg, 2014). Maguth (2012) found as a result of his research that he thoroughly examined the integration of Social Studies into STEM based on the views of Social Studies teachers that Social Studies is a unifying and indispensable element for STEM, and in the context of many controversial decisions regarding science, technology, mathematics and engineering in STEM, the unifying aspect of Social Studies should be employed in the context of seeking the social benefit and meeting and revealing the needs, and solving problems.

Thus, teachers can transfer creativity in a traditional analytical curriculum with STEM disciplines, rather than approaching students from a narrow and one-disciplinary perspective to explain the multidisciplinary nature and complex structure of innovative thinking and scientific innovations (Manfra, 2013). In this context, elementary school programs in Turkey have a suitable structure to implement S-STEM. When the structure of the primary school curriculum is examined, key competencies and values, skills such as innovative thinking meet on a common ground, and engineering and design skills are supported by the science curriculum. The skills, values and learning areas mentioned in the primary school curriculum are emphasized in the curriculum of science and Social Studies courses as follows.

Table 1. General structure of Science and Social Studies curricula

	Social Studies curriculum	Science curriculum
Learning areas	Individual and Society	Living beings and life
	Culture and Heritage	Matter and transformation
	People Places and Environments	Physical events
	Production Distribution and Consumption	Earth and universe
	Science Technology and Society	
	Active Citizenship	
	Global Connections	

As seen in Table 1 there are seven learning areas in social studies curriculum and four learning areas in science curriculum.

Values in Science and Social Studies curricula as follows in Table 2.

Table 2. Values in the Science and Social Studies curricula

	Social Studies curriculum	Science curriculum
Values	Justice	Justice
	Care about family unity	Friendship
	Independence	Honesty
	Peace	Self-Control
	Scientificness	Responsibility

	Diligence	Respect
	Solidarity	Patience
	Sensitivity	Love
	Honesty	Helpfulness
	Aesthetic	Patriotism
	Freedom	
	Equality	
	Respect	
	Affection	
	Responsibility	
	Economy	
	Patriotism	
	Helpfulness	

As seen in Table 2 there are 18 values in social studies curriculum and there are 10 values in science curriculum.

Skills in the Science and Social Studies curricula as follows in Table 3.

Table 3. Skills in the Science and Social Studies curricula

Social Studies	Science
Research	Scientific process skills
Environmental literacy	Life skills
Perceiving change and continuity	Engineering and design skills
Digital literacy	
Critical thinking	
Empathy	
Financial literacy	
Entrepreneurship	
Observation	
Mapping literacy	
Communication	
Cooperation	
Noticing stereotypes and prejudices	
Decision making	
Location analysis	
Media literacy	
Perceiving place	
Self-regulatory	
Political literacy	
Problem solving	
Social participation	
Drawing table, graphic and diagram	
Using Turkish language effective	
Innovative thinking	
Perceiving time and chronology	

As seen in Table 3 there are 27 skills in Social Studies curriculum and there are three skills in Science curriculum.

There are different components in social studies and science curricula. In the context of technology career, including various engineering fields, standards include links to Science,

Mathematics, Social Studies, Language, Art and Communication. It also emphasizes problem solving, ethics and leadership (Carr, Bennet & Strobel, 2012).

The integrated structure that will emerge when all the related knowledge and skill achievements of all these programs are connected will also prepare the environment for the implementation of the S-STEM. Hartzler (2000), who examined 30 quantitative studies on the effects of integrated teaching with meta-analysis, reached the following conclusions:

- Students have higher success in interdisciplinary studies
- Compared to traditional classes, success is higher in classes where integrated programs are implemented
- It is an alternative to traditional subject-centered programs without fear of standard test scores
- Integrated program implementations are more successful, especially in four subject areas (Science, Mathematics, Social Studies and Arts).

Given these benefits of integrated teaching, it becomes evident that different disciplines need to be brought together. STEM integration refers to technology/engineering design-based learning approaches that systematically combine science and mathematics education concepts and practices with technology and engineering concepts and practices. STEM integration can be improved by integrating other subjects such as language education, Social Studies, Arts (Sanders & Wells, 2006). When the researches about STEM are examined, it is observed that there are many researches that take the views of both students and teachers and which are practical, while researches about S-STEM are very few. When especially the literature in Turkey is examined, no research in the S-STEM was found. It is thought that getting the views of teachers who have made practical studies on STEM about S-STEM will shed light on both policy-makers and researchers. In line with this requirement, the aim of the research is to get the views of the class teachers about S-STEM.

2. Method

2.1 *Research model*

This research is a phenomenological study within the scope of basic qualitative research method. Phenomenological research focuses on how people perceive, recall, and make sense of phenomena, as well as how they talk to others about this phenomenon. It would be important to understand these common experiences in order to develop practices or policies. (Creswell, 2007). In this context, obtaining qualitative data in research requires in-depth interviews with people who experience the phenomenon directly, unlike people who experience it indirectly (Patton, 2014; Sart, 2015). Within the scope of this research, interviews were made with teachers who were trained on STEM, which became a phenomenon in Turkey and in the whole world in the recent years, and who had opportunities to experience STEM in the learning environment.

2.2 *Participants*

Intensity sampling, which is one of the purposeful sampling types, was used in the selection of the participants of this research. Intensity sampling is “information-rich cases that manifest the phenomenon intensely but not extremely” (Miles & Huberman, 1994). This sampling includes an information-loaded status that shows the phenomenon of interest in an intense way.

Thus, people with extensive experience or views on the subject of research are selected in the study group (Schreiber & Asner-Self, 2011; Patton, 2014).

Participants of the research are primary school teachers who have theoretical knowledge of STEM implementations and who have experienced STEM implementations directly and intensely in their classrooms. In addition, the participants graduated from the master's program with thesis in classroom teaching. It is thought that having theoretical knowledge and experience about STEM can increase the participants' interpretation power about the integration of extra disciplines (such as art, entrepreneurship, Social Studies) to STEM. In this context, the viewpoints of the participants about S-STEM, which arise with the integration of Social Studies into STEM, are considered to be important. The fact that the participants of the research are primary school teachers and they teach three of the S-STEM disciplines (Science, mathematics, Social Studies) themselves will increase the effectiveness of their interpretation about this phenomenon.

Of the eight participants in this study, four were female and three were male. Demographic information regarding the gender, professional experience and region of work of the participants are presented in Table 4. The names of the participants are given in the form of code names.

Table 4. Demographic information of the participants

<i>Participants</i>	<i>Gender</i>	<i>Seniority (years)</i>	<i>Region</i>
Şerife	Female	17	Center
Fatma	Female	4	District
İlknur	Female	3	District
Hatice	Female	3	District
Ümit	Male	9	District
Koray	Male	11	Center
Yusuf	Male	15	Center
Sezgin	Male	13	Center

2.3 Researchers of the study

In phenomenological studies, first personal experiences with the phenomenon are described under study. The researcher begins with a full description of his or her own experience of the phenomenon. This is an attempt to set aside the researcher's personal experiences so that the focus can be directed to the participants in the study (Creswell, 2007).

The researchers who conducted this study have a doctorate degree and conducted their doctoral theses in the form of action research. Also, most of their research has different types of qualitative research methods (narrative research, phenomenological research, different data collection techniques; focus group interviews, observations, document review). One of these researchers has a specialization in Social Studies education and the other in science education. In addition, the researchers had two years of experience as researchers of an E-STEM project. However, the researchers have international articles on STEM and STEAM and there are master's theses completed under their consultancy. In this context, it is evident that the researchers are

competent to conduct this study in the form of a phenomenological research on S-STEM, which occurs with the integration of social information into STEM.

2.4 Data collection

Telephone interviews were used in the interview technique used in this phenomenological study. One of the types of interviews made with the participants in the research is phone calls. These interviews have a wide range from open ended interviews to structured interviews (Creswell, 2007). During this research, telephone calls were preferred for data collection. While the telephone offers a useful substitute to face-to-face interviews, researchers should justify why they have chosen this mode of interviewing (Glogowska et al., 2011). The reason for preferring phone calls in this study is that the participants are teaching in different cities.

In this study, forms prepared to be used in a semi-structured interview were used during telephone calls. In qualitative researches internal validity or credibility, expert review or expert revision is one of the strategies used. Surely a good expert review should cover the examination of the raw data reviewed by another expert and should contain how reasonable and logical the findings are (Merriam, 2013). The interview form was developed by researchers then given to three experts to provide internal validity of the interview form, and the form took its final shape by being reviewed. After a student engaged in the pilot interview the sound recording was transcribed. The interview printout form was computerized in order to determine whether or not the questions were clear and comprehensible and the answers of the student reflected the answers of the questions. At the end of this study, the validity of the questions was determined.

In qualitative researches, reliability refers to the stability of multiple encoders' responses to the data set. Regarding the reliability, it is possible to use the inter-encoder consensus based on the use of multiple encoders to analyze the transcribed data (Creswell, 2015). Interview coding keys and interview transcripts were read separately by the researcher and an expert, and the necessary arrangements were made to the topics with an "agreement" and "disagreement". For the reliability calculation of the study, the reliability formula proposed by Miles and Huberman (1994) was used. As a result, the reliability of the research was calculated at 90%. The fact that reliability calculations exceeded 70% is considered reliable for research (Miles & Huberman, 1994). The result obtained here is considered reliable for research.

2.5 Data analysis

The data obtained in the research were evaluated by qualitative data analysis. This type of data analysis includes coding the data, separating the text into smaller units (expression, sentence, or paragraph), assigning labels to each one, and grouping the codes into themes. The code label can be derived from the words of the participants, from the explanations created by the researcher, or from concepts used in Social Studies (Creswell & Plano Clark, 2014). In the research, in the context of induction analysis, the interview transcripts were given a page and line number, then in the sentences mentioned in the transcripts, descriptive index, researcher comment sections were opened next to the explanations within the scope of the S-STEM and these sections were filled together by the researchers. After applying the same process in all transcripts, the process of coding data was started, the relevant codes were collected under the code heading, themes were created and codes related to themes were brought together and findings were presented under the relevant themes. Moreover, the findings obtained as a result of the research for the transferability of the work have also been directly supported by the quotations.

3. Results

In this part of the research, the findings obtained in the context of the primary school teachers’ views as follows in Table 5.

Table 5. The themes obtained from primary school teachers’ views on S-STEM

Primary school teachers’ views on the definition of STEM
STEM implementations which performed by primary school teachers
Primary school teachers’ views on the dimensions which integrate to STEM
Primary school teachers’ views and suggestions on integrating social studies to STEM
Primary school teachers’ views on values which handled with STEM
Primary school teachers’ views on skills which handled with STEM
Primary school teachers’ suggestions for effective S-STEM implementations

As seen at Table 1 there are seven themes about S-STEM. Primary school teachers’ views on the definition of STEM are at Table 6.

Table 6. Primary school teachers’ views on the definition of STEM

Science, technology, engineering and mathematics
Multidisciplinary implementations
Association between courses

When the views of the primary school teachers in the context of the definition of STEM are examined, it is seen that the multidisciplinary structure and interdisciplinary association of the understanding of the disciplines that make up the STEM are included and the definitions of the primary school teachers are superficial.

Regarding the definition of STEM, the Doğa teacher said:

“I think of the merging of many branches of science. The combination of the fields of science, mathematics, engineering and technology.”

Regarding the definition of STEM, İlknur teacher used the expressions as:

“I think of the combination of interdisciplinary fields such as engineering and mathematics. I can say that this is an understanding that has been put forward with the unification of these disciplines.”

Yusuf teacher’s view on the definition of STEM is:

“An implementation in which the fields of science, mathematics and technology are implemented in an integrated manner, aiming to attract the attention of the student and also having different latent goals.”

Table 7. STEM implementations of primary school teachers in their classes

Car design
Catapult
Simple Machines
Force and Motion
Imaginary Amusement Park

Human and Environment
Economical use of resources
Push, Pull and change direction
Bridge construction
Charcoal portrait scaling study (STEAM)
Plant growth (supposed to be STEM)

Within the scope of STEM implementations carried out by the primary school teachers, it was revealed that simple machines and force and motion issues were included, and within the scope of STEM implementations, the protection of the natural environment, car, catapult, amusement park and bridge construction was used, and the scaling study of a portrait was made as a STEAM study. It can be thought that, since mechanical implementations provide ease in creating concrete examples, the subjects of force and motion and simple machines are more frequently used by teachers. Since there is not much theoretical detail in science subjects especially at primary school level, it can be considered natural that the implementation examples are simpler. The fact that simple activities related to pushing, pulling and changing direction are made within the scope of force and movement, and the study about plant growth is a simple science experiment shows that these implementations, which are considered as STEM, do not actually go beyond the basic science activities.

Şerife teacher, who carried out STEM practice in the activity for protection of the natural environment within the scope of the human and environmental unit, explained her work as follows:

“We had an activity on the environment before as STEM implementation. It was about environmental protection. We created a natural environmental area here. First, the children made mathematical calculations on an area we found, on it, they determined parks, natural environment, artificial environment activities and made everything on it. The children built a factory using the engineering field. Then, we talked about what can be done with fields such as environmental engineering and construction engineering. Here, using technology, we had an event on the benefits and harms of factories and technology.”

The fact that the details about the integration of disciplines could not be included in the example of STEM study on the economical use of resources, which is a common subject in science and Social Studies courses, suggests that teachers still cannot clarify this issue in their minds. Fatma teacher’s comment on this subject is as follows:

“A STEM study can be conducted on the economical use of resources. Because if a product is going to come out, I think there is a social problem, and I think that the students can develop a product about saving resources.”

Sezgin teacher explained the construction of the car by using the process effectively at primary school level and integrating the disciplines within the scope of STEM implementation with the following words:

“There can be nice activities related to STEM, and even very cost-effective and sample implementations that students will enjoy can be done. We did something like this: I applied this to the teachers at the time of the seminar and also to the students during the year. We designed a car using pet bottles, four caps, skewers, balloons. We designed a car with these materials and the kids liked it a lot. The

teachers I worked with (group) also liked it very much, they likewise made similar STEM practices. Then the students raced the cars.”

Koray teacher, who was asked to explain a STEM implementation in his classroom, described the implementation he carried out as follows:

“There was a subject in the science as “Let’s observe the growth of a plant”. There were visuals in the books, they explained the process, but I also wanted to ensure that students observe the effect of sunlight on the plant. We created an environment in the lab. The study took about two weeks. We have one dark room inside the lab. A group of students grew a plant there. Another group grew a plant in front of the glass that received the sun’s rays. We were growing beans in cotton. One of our groups raised and observed their beans in an area that saw the sun but we made a shadow area by placing obstacles. Each group had a paper in front of them and they made notes. They wrote the date, wrote down the changes they observed in plants. We definitely measured the height of the plants once a day. We especially left one bean without water and we saw what happened when it was dehydrated. The plant that did not receive sunlight grew white. Children were also very surprised by this. Considering the feedback I received, the students wanted to experiment again, it was a good work.”

As seen above, the example given by Koray teacher in the context of STEM implementation is a simple science experiment. It does not cover most of STEM’s dimensions. In this context, it would not be wrong to say that teachers have a superficial and sometimes wrong view towards STEM.

Table 8. Primary school teachers’ views on dimensions that can be integrated into STEM

Art	Art comes into play in STEAM implementations
Entrepreneurship	I heard there was entrepreneurship in E-STEM studies
	Risk taking
	Innovation
	Creativity
Social Studies	Architecturally examining the houses in the vicinity
	Environmental pollution
	Sociological issues
	Natural and human elements
	Solution to social problems
	Formation of landforms (aquarium arrangement)

When the views of the primary school teachers on the dimensions that can be integrated into STEM are examined, it is seen that they talk about STEAM practices that are carried out by including artistic dimension the most. This situation can be explained by the fact that many studies related to STEAM in the literature (Akbaba, 2017; Tüzün and Tüysüz, 2018; Maeda, 2013; Kelly and Guyotte, 2019; Pitikhate, Sakda, Anurak & Kitdakorn, 2016; Ghanbari, 2015) are found. In addition to art, entrepreneurship and Social Studies are also expressed as dimensions that can be integrated into STEM. E-STEM implementations have been mentioned by emphasizing risk taking, innovation and creativity dimensions regarding entrepreneurship. They

stated that the discipline of Social Studies can be integrated into STEM with architectural examination of houses in the vicinity, environmental pollution, sociological issues, natural and human elements, solution to social problems, formation of landforms (aquarium arrangement) dimensions.

Şerife teacher, who emphasizes the integration of art to STEM and explains its importance, expressed her views on STEAM with the following words:

“Art can be added, and activities made in terms of artistic perspective and aesthetic concern can turn into STEAM. If I give an example from the field calculations in engineering and mathematics, visual activity is also important for children when doing an activity related to this. At this point, children will appreciate artistic color harmony more. I think STEAM is important for the development of aesthetic sense.”

Ümit teacher stated that Social Studies and life science courses can be added to STEM:

“Social Studies can be added to STEM first. Geography is in social sciences. These can take place separately. It depends on the level. Life science course includes It in the primary school level, life sciences can be added in the level of 1st, 2nd and 3rd grades.”

Yusuf teacher, who emphasized that a needs analysis should be made in order to understand which disciplines have more deficiency to decide which discipline to be integrated in STEM, said he thought Social Studies were neglected in this context, stated that Social Studies can be integrated into STEM and explained an activity he carried out in his classroom as follows:

“To integrate a discipline to STEM, it should be decided which discipline needs it. For example, Social Studies are highly neglected, this can be integrated. We talked about this with our Social Studies teachers and thought if Social Studies could be integrated into STEM. We thought about such a thing: we could do something based on the social problems. We made this implementation to our students. We have kinex sets we use in the institution. There are type projects in these sets. For example, you build a tower, helicopter, car. These were all close ended. After making all of them, we wanted to make something else. We told the students about buses bought for Afyon recently. In these buses, the wheelchair ramp is manual. The driver gets off the bus in the station, goes to the rear door, opens the ramp, lets the citizen in and then he closes the ramp again manually. Students noticed this. They designed a system using kinex sets for the solution of this. STEM should be used for Social Studies. They should be allowed to solve daily problems.”

Hatice teacher, who includes entrepreneurship as a dimension that can be integrated into the S-STEM, explained her view as follows:

“I thought this for active citizenship unit. We can think it as producing a product and selling it. This sale can take place in the school for parents or other students. At the point of marketing, entrepreneurship is included in the study. Persuading, calculating cost, profit or loss can be included.”

The views and suggestions of the primary school teachers about integrating the Social Studies course into STEM are given in Table 9.

As it can be seen in Table 9, primary school teachers have four of the eight learning areas in the Social Studies curriculum (People, Places and Environments, Culture and Heritage, Production, Distribution, Consumption, Science, Technology and society) in their views regarding the subjects that can be included in the Social Studies in the context of S-STEM. The dimensions they associate these learning areas with STEM are listed as architectural structure, organic agriculture production, environmental pollution, solution of disability problems, and cultural values. For example, Fatma teacher expressed her examples from two learning areas with the following words:

“We can directly relate production distribution consumption contact to economic use of resources. There was also an achievement in the subject of science, technology and society: The student develops a design and an idea for the needs based on his/her own needs. I think they can put forward products in accordance with their own needs.”

Table 9. Views and suggestions of primary school teachers about Integrating Social Studies Course to STEM

People, Places and Environments	Working on maps
	Evaluating the houses in the immediate vicinity in artistic and architectural terms
	To conduct studies within the scope of natural and human elements
Culture and Heritage	Cultural elements of people who lived in the past
Production, Distribution, Consumption	Organic Production
Science, Technology and Society	Producing solutions for the solution of environmental pollution problem
Solution to social problems	Making wheelchair ramps for buses

Şerife teacher stated that S-STEM implementations can be made with the integration of different learning areas into STEM within the scope of Social Studies course with these words:

“Subjects related to science, technology and society can be added to STEM or building a factory related to the subjects of production distribution consumption and its phases are related to many areas of professions such as engineering. Collecting prices for these is related to math and trees are related in the part of distribution. Markets are related to technology. As I said, production, distribution and consumption unit is integrated to science, technology and society in many aspects. The unit of people, places and environments can also be added. We made an activity on environment. We can make integration in the protection of environment, natural environment and artificial environment.”

The view of Koray teacher, who thinks the subject of natural and human elements included in the learning area of people, places and environments can be integrated into STEM implementations, is as follows:

“I think that the formation of earth shapes, natural and human elements can be processed with STEM. These are formations, emerging mountains, seas, etc. I think these can be handled using STEM.”

Sezgin teacher stated that Social Studies can be carefully integrated into STEM regardless of learning area or unit:

“The STEM wheel (can be thought of as a pulley system) is mentioned. The important thing when describing STEM is how the fields are connected to each other. There is a STEM load at the bottom. The important thing is that the wheels are lifting that STEM load. But it is very important to connect the wheels. The point to be considered here is to connect the achievements of the Social Studies course with the other achievements. In other words, it is important to integrate Social Studies, science and mathematics appropriately and lift the load in a balanced way. Attention should be paid to this.”

In addition, teachers expressed views about the association of the solution of social problems and STEM practices in the context of Social Studies as a reflective study area from three basic concepts in Social Studies teaching. In the Social Studies curriculum, there are dimensions such as learning areas, key competencies, achievements, values and skills. Hatice teacher, who discusses obesity and unhealthy nutrition in the field of learning “production, distribution and consumption,” said:

“In the learning field of production, distribution, and consumption, it is possible to design projects for growing organic products by researching what is grown in which region.”

In Table 8, the views of the primary school teachers about the values that can be handled in S-STEM implementations are given as follows.

Table 10. Views of the primary school teachers about the values that can be handled in S-STEM implementations

Responsibility
Sensitivity
Being Scientific
Solidarity
Mutualization
Respect
Economy

As seen in Table 10, when the views of the class teachers about the values that can be handled in S-STEM implementations are examined, it is seen that they talk about responsibility, sensitivity, being scientific, solidarity, mutualism, respect and economy values. There are many studies (Yıldırım, 2018; Morrison, 2016) that emphasize the importance of group work in STEM implementations. Many values such as solidarity, mutualism and responsibility can be expressed as values that can be gained to students through group work. Since S-STEM implementations are also carried out in the form of group works, values such as economy, sensitivity, and being scientific can be gained through discussions on many issues and creative practices for finding solutions. The views of primary school teachers about the skills that can be handled in S-STEM implementations are given in Table 6 as follows.

Yusuf teacher exemplified how the economy value emerged in his STEM implementation as follows:

“When I made the students talk about economy, they said they could design a robotic arm. It would close the window when it remained open, it would measure the amount of oxygen outside and open the door when the indoor oxygen amount decreased with a voice.”

Stating that many values are already spontaneously included in the process within the scope of the S-STEM, Koray teacher emphasized the group works and expressed his view as follows:

“Since S-STEM implementations are conducted with small groups of students, cooperating, respecting, taking responsibility, mutualization, solidarity,

emphasizing being scientific by accessing the information in the first hand by making research are spontaneously included in the process.”

Table 11. Primary school teacher’ views on skills that can be addressed in S-STEM implementations

Environmental literacy
Digital literacy
Media literacy
Observation
Research
Communication
Entrepreneurship
Critical thinking
Decision making

As can be seen in Table 11, primary school teachers stated that 9 out of 27 skills included in the Social Studies curriculum can be gained to students through S-STEM implementations. They expressed these skills in the form of environmental literacy, digital literacy, media literacy, observation, research, communication, entrepreneurship, critical thinking and decision making. Considering that research and high-level thinking skills are inherent in STEM, it is thought that it is possible to provide these skills expressed by primary school teachers with S-STEM.

Ümit teacher made the following explanation about media literacy and digital literacy in the context of skills that can be gained with S-STEM implementations:

“In technology use, how a person should use technology or how media literacy should be for television, how safe internet should be, I think these are included in the Social Studies. We can integrate these for students in the Social Studies. We can integrate stem in Social Studies in this way, like safe use of internet. Other than that, if there is a work on a map regarding STEM and if the activity is to be carried out on this map and a technological product about maps is to be designed, the map part of Social Studies can be integrated.”

Hatice teacher’s point of view, which emphasizes environmental literacy skills within the scope of the S-STEM, is as follows:

“In achievements as ‘the student uses technological products without harming himself/herself and environment’ in the learning area of science, technology and society, developing environmental friendly products can be emphasized or the process can be conducted by real life problems based on gaining environmental literacy directly.”

The view of the Koray teacher, who emphasizes research skills within the scope of the S-STEM, is as follows:

“While students try to solve knowledge-based life problems in their S-STEM studies, they will determine the point they will act by using the data they have obtained by

making researches from different sources and using their decision making skills. Therefore, both research and decision making skills will be involved.”

The views of primary school teachers regarding the possible difficulties in Social Studies integration to STEM are given in Table 12 as follows.

Table 12. The views of primary school teachers regarding the possible difficulties in Social Studies integration to STEM

Integration of the Numerical-Verbal course may be challenging.
Science-Social complexity may be experienced
Brings excess workload
The teaching of different teachers in these courses at the secondary level can be challenging in terms of cooperation
Preparing S-STEM plans can be challenging
Determining the gains that can be associated with each other can be challenging
I do not think that there will be a problem because the subjects that can be associated with each other at the elementary school level can be handled by the classroom teacher on the same date.
STEM helps to embody Social Studies issues that appear more abstract than science
Problems may arise because teachers are closed to learning and innovation
Using technical materials (tools) in technology and engineering dimensions can be a problem

When the views of the primary school teachers regarding the difficulties in Social Studies integration to STEM are examined, the difficulties of numerical and verbal course integration, the increase in workload, the difficulties in determining the gains, and the deficiencies that may be experienced in the cooperation between the branch teachers in the second level are expressed. On the other hand, it is also stated that the teaching by primary school teachers in all courses will facilitate integration at primary school level and STEM will contribute in the context of embodying abstract topics in Social Studies course. It is thought that the lack of any research in Turkey related to the S-STEM implementation for primary school teachers and the fact that teachers and prospective teachers did not receive any training through pre-service or in-service training caused some dimensions to be perceived as a problem. It is hoped that as the experience of primary school teachers on STEM increases, they will be more open about the solution of the problems encountered and the integration of new areas.

In the context of possible problems, Şerife teacher stated that the integration of numerical-verbal courses can confuse teachers and cause them to stay away from the subject:

“The courses are divided as numerical and verbal, thus the teachers may think these two cannot be integrated and they may not want to act together. Primary school students do not think this discrimination much but older students may think themselves as more competent in one of verbal and numerical areas and if they think they are good at verbal courses they may not be open to science or math courses.”

Ümit teacher, who thinks that the teachers have problems in preparing course plans for STEM and that similar problems may be experienced in the S-STEM plans in parallel with this, explained a possible problem as follows:

“I think the biggest problem for teachers is to create the course plan. As there is not a defined frame for this, teachers have difficulties. Many difficulties are experienced in determining where to start, how to put forward etc. As I can see regarding the training given, everybody has a course plan of their own. There is no defined frame. Therefore, I think teachers are confused. Everybody starts from a different point of the subject. And there is no certain frame about STEM in writing the course plans and the same uncertainty will be experienced in S-STEM. There is no defined frame. Therefore, the teachers have difficulties in preparing these. Which one will be followed? To which side will we look? Or how can I prepare it if I am to prepare? Does the course plan I prepare comply with STEM? Will it be relevant to STEM? There is always a difficulty about these questions.”

Table 13. Primary school teachers’ suggestions for efficient S-STEM implementations

Number of studies on STEM and S-STEM can be increased
School administration and parents can be persuaded for the contributions of S-STEM
STEM and S-STEM dimensions can be taught in graduate education.
Studies such as STEM and S-STEM can be reported to the upper level practices can be encouraged
Platforms where STEM and S-STEM implementations are shared can be created
Institutions can prepare action plans (program, sample activity booklet)
Applied in-service trainings can be given by expert staff in STEM and S-STEM dimensions
STEM and S-STEM dimensions can be included in the pre-service level in teacher education
Sample courses can be prepared by academicians and S-STEM implementation videos can be shared on platforms which developed for S-STEM
Workshops can be organized on the preparation of STEM and S-STEM plan

As can be seen in Table 13, primary school teachers stated increasing the number of S-STEM and STEM researches, persuading administrators and parents for S-STEM and STEM, sharing sample practices and course plans by institutions, academicians and teachers via various platforms, including trainings in the pattern of workshops in pre-service and in-service training as suggestions for effective S-STEM implementations. In this context, it is seen that primary school teachers include suggestions in both implementation and research dimensions, and especially emphasize the databases where the implementation examples will be shared.

Fatma teacher explained her view that the students can be guided with sample practices in these words:

“I think teachers have the most difficulty in the system in practice. We can understand the theory but practice can be difficult. This can be their concern. I think sample practices can be made and teachers can adapt other achievements themselves.”

Among the participants who thought that in-service training should be applied on STEM and S-STEM subjects, Ümit teacher expressed his expectation regarding the content of the training with the following words:

“First, teachers should get STEM training in teacher training. This STEM training should be applied, it should not remain only in theory. The duration must be long.”

I think one week is not enough for STEM training. Implementations may be made in a time frame of one month in groups in certain time periods.”

4. Conclusion and discussion

When the views of the primary school teachers in the context of “definition of STEM” are examined, it is seen that the disciplines that make up the STEM, the multidisciplinary structure of the understanding and interdisciplinary association are included, and the definitions of the class teachers are superficial. Wang, Moore, Roehrig and Park (2011) stated in the literature that the two words frequently used to describe STEM are multidisciplinary and disciplinary and emphasized that most of the research focuses on how to integrate STEM disciplines and the degree of integration. In this context, the research results are compatible with each other.

Within the scope of STEM implementations carried out by class teachers, it was revealed that simple machines and force and motion issues were included, and within the scope of STEM implementations, the protection of the natural environment, car, catapult, amusement park and bridge construction were made, and the scale study of a portrait was carried out as a STEAM study. In the research conducted by Timur and İnançlı (2018), it was observed that similarly, catapult, bridge, and car construction were mentioned. In this context, it was determined that teachers’ STEM practices are parallel.

Class teachers included four of the eight learning areas (People, Places and Environments, Culture and Heritage, Production, Distribution, Consumption, Science, Technology and Society) in their views on the subjects that can be addressed in the Social Studies course in the context of the S-STEM. In addition, they stated that Social Studies can be integrated into STEM in the context of the solution of social problems. They emphasized that the dimensions of examining the houses in the vicinity in architectural terms, environmental pollution, sociological issues, natural and human elements, solution to social problems, formation of landforms (aquarium arrangement) dimensions that are included in the Social Studies course can be easily integrated into STEM. Dare Ellis and Roehrig (2018) stated integration as deepening students’ understanding of STEM disciplines, handling student understanding within socially and culturally relevant STEM contexts, and increasing interest in STEM disciplines as well as the integration of STEM disciplines. In this context, it can be said that the results obtained in the context of the relationship between the solution of social problems and integration are compatible.

When the views of the primary school teachers about the values that can be addressed in S-STEM implementations are examined, it is seen that they talk about responsibility, sensitivity, being scientific, solidarity, mutualism, respect and economy values. There are many studies (Yıldırım, 2018; Morrison, 2016) that emphasize the importance of group work in STEM implementations. Many values such as mutualism, solidarity and responsibility can be expressed as values that can be gained to students through group work. Since S-STEM implementations are also carried out in the form of group works, values such as economy, sensitivity, and being scientific can be gained through discussions on many issues and creative practices for finding solutions. Sejati, Firman and Kaniawati (2017) used observation tables about students’ responsibility profile from the beginning to the end of their practices with STEM and categorized their responsibility value in four different dimensions. Observation evaluation lists include students’ responsibilities in the context of self-control, with evidence that they do not harm others verbally or physically and work well with others. While group responsibilities such as settling conflicts of interest in an amicable way and making effort are emphasized, articles are included in the context that each student individually tried to achieve the given task, focused on development, worked both individually and with group, remained in task without direct instruction or monitoring while making decisions, directed himself/herself, did not follow bad examples around or peer pressure. As a result of the observations made, it was determined that there was an increase

in the observations regarding the responsibility values every implementation day until the end of the implementation.

When the views of the primary school teachers regarding the difficulties in Social Studies integration to STEM are examined, the difficulties in numerical and verbal course integration, the increase in workload, the difficulties in determining the achievements, and the difficulties that may be experienced in the cooperation between the branch teachers in the secondary level are expressed. On the other hand, it is also stated that the teaching by primary school teachers in all courses will facilitate integration at primary school level and STEM will contribute in the context of embodying abstract topics in Social Studies course. Dare, Ellis and Roehrig (2018) stated the three important factors affecting successful STEM integration as curriculum materials deficiencies and inability to associate goals in integration, insufficiency in students' STEM experiences, teachers' integrated STEM assessment needs (Brophy et al., 2008; Guzey, Moore, Harwell & Moreno, 2016; Moore et al., 2014; NRC, 2012; Roehrig et al., 2012; Wang, Moore, Roehrig, Gillian & Park, 2011).

It was seen that primary school teachers suggested increasing the number of S-STEM and STEM researches, persuading administrators and parents for S-STEM and STEM, sharing sample practices and course plans by institutions, academicians and teachers via various platforms, including trainings in the pattern of workshops in pre-service and in-service training for effective S-STEM implementations. In this context, it was seen that primary school teachers included suggestions in both implementation and research dimensions, and especially emphasized the databases where the implementation examples will be shared. In their research Çınar, Pırasa, Uzun and Erenler (2016) determined that before receiving STEM training pre-service teachers emphasized they would integrate science only with mathematics in their classrooms. However, after the STEM training, they gained an interdisciplinary point of view that they could integrate science, mathematics, engineering and technology in their classrooms and in addition, nearly all pre-service teachers stated that this integration was required for the individual and social development and education for the students. In this research, the dimension of qualifying teachers through teacher training and pre-service training on the S-STEM expressed by teachers is compatible with the results obtained with the research.

In the light of the results obtained, the following recommendations can be included:

- Theoretical and practical training can be given to teachers and prospective teachers to increase their S-STEM awareness through pre-service and in-service training.
- In order to eliminate the lack of literature in Turkey on S-STEM, different types of research, such as qualitative, quantitative, action research, can be carried out.
- Various seminars to inform school administrators and families about S-STEM can be carried out in cooperation with the Ministry of Education and Universities.
- In the second stage, common laboratory implementations can be made in the context of increasing interdisciplinary cooperation for S-STEM implementations and information can be provided on designing common activity plans.

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References

- Adams, A. E., Miller, B. G., Saul, M., & Pegg, J. (2014). Supporting elementary pre-service teachers to teach stem through place-based teaching and learning experiences. *Electronic Journal of Science Education, 18*(5), 1-22.
- Brophy, S., Klein, S., Portsmore, M., & Rogers, C. (2008). Advancing engineering education in P-12 classroom. *Journal of Engineering Education, 97*(3), 369-387.
- Bybee, R. W. (2010). Advancing STEM education: A 2020 vision. *Technology and Engineering Teacher, 70*(1), 30-35.
- Carol, K., & Scott, C. (2017). Creating STEM kits for the classroom. Retrieved from [http://digital.nsta.org/publication/?i=429899&article_id=2849756&view=articleBrowser&ver=html5#{"issue_id":429899,"view":"articleBrowser","publication_id":"13899","article_id":"2849756"}](http://digital.nsta.org/publication/?i=429899&article_id=2849756&view=articleBrowser&ver=html5#{).
- Carr, R. L., Bennett, L. D., & Strobel, J. (2012). Engineering in the K-12 stem standards of the 50 U.S. states: An analysis of presence and extent. *Journal of Engineering Education, 101*(3), 539-564.
- Chute, E. (2009). STEM education is branching out: Focus shifts from making science, math accessible to more than just brightest. *Pittsburg Post-Gazette*. Web: <http://www.post-gazette.com/news/education/2009/02/10/STEMeducation-is-branchingout/stories/200902100165adresinden16.02.2017tarihindeerişilmiştir>.
- Creswell, J. W. (2007). *Qualitative inquiry & research design, choosing among five approaches*. Second Ed. USA: Sage publications.
- Creswell, J. W., & Plano Clark, V. L. (2014). *Designing and conducting mixed methods research*. (Yüksel Dede, Selçuk Beşir Demir & A. Delice, Translation Ed.). Ankara, Türkiye: Anı Yayıncılık.
- Creswell, J. W. (2015). *Mixed research methods-qualitative and quantitative research design according five approaches*. (M. Bütün & S. B. Demir, Translation Ed.). Ankara: Siyasal Publishing.
- Çınar, S., Pırasa, N., Uzun, N., & Erenler, S. (2016). The effect of stem education on pre-service science teachers' perception of interdisciplinary education. *Journal of Turkish Science Education, 13*, 118-142.
- Dare, E. A., Ellis, J. A., & Roehrig, H. (2018). Understanding science teachers' implementations of integrated STEM curricular units through a phenomenological multiple case study. *International Journal of STEM Education, 5*(4), 1-19.

- Garibay, J. C. (2015). Stem students' social agency and views on working for social change: Are stem disciplines developing socially and civically responsible students? *Journal of Research in Science Teaching*, 52(5), 610-632.
- Ghanbari, S. (2015). Learning across disciplines: A collective case study of two university programs that integrate the arts with STEM. *International Journal of Education & the Arts*, 16(7). Retrieved from <http://www.ijea.org/v16n7/>.
- Glogowska, M., Young, P., & Lockyer, L. (2011). Propriety, process and purpose: Considerations of the use of the telephone interview methods in an educational research study. *Higher Education*, 62, 17-26.
- Guzey, S. S., Moore, T. J., Harwell, M., & Moreno, M. (2016). STEM Integration in middle school life science: Student learning and attitudes. *Journal of Science Education and Technology*, 25(4), 550-560. <https://doi.org/10.1007/s10956-016-9612-x>
- Hartzler, D. S. (2000). *A meta-analysis of studies conducted on integrated curriculum programs and their effects on student achievement* (Doctoral dissertation). Indiana University.
- Langdon, D., McKittrick, G., Beede, D., Khan, B., & Doms, M. (2011). *STEM: Good Jobs Now and For The Future*, Retrieved from http://www.esa.doc.gov/sites/default/files/stemfinaljuly14_1.pdf.
- Maeda, John (2013). STEM + Art = STEAM, *The STEAM Journal*, 1(1), <https://doi.org/10.5642/steam.201301.34>
- Maguth, B. (2012). In defense of the social studies: Social studies programs in STEM education. *Social Studies Research and Practice*, 7(2), 84.
- Merriam, S. B. (2013). *Qualitative research: A guide to design and implementation* (S. Turan, Translation Ed.). Ankara: Nobel Publishing.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. (2nd Edition). Calif.: SAGE Publications.
- Morrison, J. (2006). *TIES STEM education monograph series, attributes of STEM education*. Baltimore, MD: TIES.
- Kelly, W. G. (2019). Toward a philosophy of STEAM in the Anthropocene. *Educational Philosophy and Theory*, 0(0), 1-11.
- National Research Council (2011). *Reference manual on scientific evidence: Third Edition*. Washington, DC: The National Academies Press.
- Manfra, M. M. (2013). Social education. *National Council for the Social Studies*, 77(2), 95-98.
- Meyrick, K. M. (2011). How stem education improves student learning. *Meridian K-12 School Computer Technologies Journal*, 14(1), 1-5.
- Patton, M. Q. (2014). *Qualitative research and evaluation methods*, 1st Ed. (M. Bütün & S. B. Demir, Translation Ed.). Ankara: Pegem Publishing.

- Pitikhate, S., Sakda, S., Anurak, J., & Kitdakorn, K. (2016). *Tree robot: An innovation for STEAM education*. Real-time Computing and Robotics (RCAR) IEEE International Conference (pp. 338-341).
- Pryor, C. R., & Kang, R. (2013). Project-based learning: An interdisciplinary approach for integrating social studies with STEM. In R. M. Capraro, M. M. Capraro & J. Morgan (Eds.), *STEM Project-based learning: An integrated Science, Technology, Engineering, and Mathematics (STEM) Approach* (pp. 129-138).
- Roehrig, G. H., Moore J., T., Wang, H.-H., & Park, M. S. (2012). Is adding the E enough? Investigating the impact of K-12 engineering standards on the implementation of STEM integration. *School Science and Mathematics*, 112(1), 31-44.
- Sanders, M., & Wells, J. G. (2006). *Integrative STEM education*. Retrieved from <http://www.soe.vt.edu/istemed/>.
- Sanders, M. (2009). Stem, stem education, stemmania. *The Technology Teacher*, 68(4), 20-26.
- Sart, G. (2015). Fenomenoloji ve yorumlayıcı fenomenolojik analiz. In F. N. Seggie & Y. Bayyurt (Eds.), *Nitel araştırma yöntem, teknik, analiz ve yaklaşımları, ani yayıncılık*, pp. 70-82.
- Schreiber, J. B., & Asner-Self, K. (2011). *Educational research. The interrelationship of questions, sampling, design, and analysis*. NJ: John Wiley & Sons, Inc.
- Social Studies: The Original STEM* (NCSS Report) (2017). Retrieved from <https://www.socialstudies.org/getting-social/social-studies-original-stem>.
- Thomasian, J., & National Governors Association, C. P. (2011). *Building a science, technology, engineering, and math education agenda: An update of state actions*. Retrieved 10 June 2018, from <https://files.eric.ed.gov/fulltext/ED532528.pdf>.
- Wagner, T. (2008). Even our “best” schools are failing to prepare students for 21st century careers and citizenship. Retrieved 20 December 2018, from http://vanschools.org/UserFolders/CurriculumandInstruction/rigor_redefined05_3_2012.pdf.
- Wang, H.-H., Moore, T. J., Roehrig, G. H., & Park, M. S. (2011). STEM integration: Teacher perceptions and practice. *Journal of Pre-College Engineering Education Research (J-PEER)*, 1(2). <https://doi.org/10.5703/1288284314636>
- Wells, J. G. (2008, November). *STEM education: The potential of technology education*. In 95th Mississippi Valley Technology Teacher Education Conference, St. Louis, MO (Vol. 41).
- Yıldırım, B. (2018). STEM Uygulamalarına yönelik öğretmen görüşlerinin incelenmesi. *Eğitim Kuram ve Uygulama Araştırmaları Dergisi*, 4(1), 42-53.





Examining the Relation between Social Support Level, Family Indomitableness Level and Life Satisfaction Levels Perceived by Parents with Disabled Children

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Abstract

In the present study, the purpose was to examine the relation between the social support levels, family indomitableness levels and the life satisfaction levels perceived by parents of children with disabilities. The Descriptive-Correlational Research Model was used as the model in the study. The parents of 231 children with disabilities participated in the study. The Pearson Correlation Analysis and Multiple Linear Regression Analysis were made for the analyses of the data. According to the study results, a positive correlation was detected between the perceived social support levels, family indomitableness, and life satisfaction. It was determined that the perceived social support levels and family indomitableness explained 40% (R^2) of life satisfaction.

Keywords: perceived social support level, family indomitableness, life satisfaction, disability.

1. Introduction

Life satisfaction, which was described firstly by Neugarten in 1961, is defined as the positive perception of an individual about his/her entire life in line with the criteria set by him/her (Veenhoven, 1996). Life satisfaction is a subjective evaluation, and refers to a subjective well-being, which is the result of evaluation of an individual about his/her life both in cognitive and emotional terms (Diener, 1984). In other words, it is related with how much an individual loves life (Özdevecioğlu & Aktaş, 2007). According to Myers and Diener (1995), when the life satisfaction of individuals is higher, they approach emotional problems more positively, and resolve their problems faster and easily. However, when life satisfaction is low, when they face problems in life, they are not able to approach the problem in a positive manner, cannot resolve them, and show reactions like anxiety, depression and anger.

It is an expected and desirable situation that the life satisfaction levels of the parents of children who have disabilities are high. However, in a study conducted by Bilge et al. (2014) it was reported that 15% of the parents of individuals who had disabilities had psychological problems, and 60% had burnout. Because individuals who have disabilities have lifelong care requirements, and wear out their families with constant behavioral problems (Bilge et al., 2014;

Roach, Ormond & Barratt, 1999). In addition, the additional requirements of individuals who have disabilities like medical care needs, communication problems, special physical arrangements at home and special equipment based on the disability type of these individuals bring extra financial burdens to the family (Turnbull & Turnbull, 1995). In addition, they are more limited in social environments because the parents care more about their children (Roach, Ormond & Barratt, 1999). Based on all these, studies conducted in this respect show that the parents of children who have disabilities have anxiety, depression, emotional distress, low self-esteem, stress, and health problems compared to families with normal children (Hastings & Brown, 2002). The emotional state of an individual, which changes with anxiety, depression and stress, decreases the life satisfaction of the individual (Aysan & Özben, 2007). When we consider the life satisfaction levels of the families of individuals who have disabilities, it is seen that these levels are lower (Bilge et al., 2014). There are several variables affecting life satisfaction. In the context of the present study, the relations between family indomitableness and perceived social support levels will be examined.

- The life satisfaction of individuals is higher, they approach emotional problems more positively, and resolve their problems faster and easily.
- It was determined that there was a moderate correlation between perceived social support and life satisfaction.
- A correlation was detected between family indomitableness levels and life satisfaction levels.
- It was concluded that perceived social support level and family indomitableness were the predictors of life satisfaction.

Family indomitableness is defined as the ability of the family in enduring and coping with stress as a functional system (Walsh, 2003). In other words, when a family encounters a crisis, it is possible to argue that it is an adaptation to the problem by using internal and external resources, surviving, and solving the problem by returning the family back to its original state (Greeff, Vansteenwengen & Ide, 2006). Parents of children who have disabilities face many problems because of the inadequacy of their children (Ahmetoğlu & Aral, 2005). Children who have disabilities may need the help and support of their parents in any medium when compared to normally developing peers. This situation may cause that these parents experience more stress in their work and social lives compared to the parents that have children who develop normally because of the additional needs of the parents themselves and their children (Kaner, Bayraklı & Güzeller, 2011). Families that have higher indomitableness levels find appropriate ways to adapt to stress and trouble, both initially and in time (Hawley & DeHaan, 1996). Families that have high indomitableness levels use their individual powers, and the resources of their families to deal with these problems. In addition, families find not only the power of family members but also find the support from the family environment and social institutions easily (Simon et al., 2005).

In general, social support can be considered as a stressful and negative condition by providing services, which might improve adaptive competence via individuals and/or institutions (Kaner & Bayraklı, 2009). Social support is available in various types. For example, according to Edwards (2004), social support types might be material, informational or emotional. Barrera and Ainsley (1983), on the other hand, categorized social support types as financial support, behavioral support, intimate/close interaction support with individuals, guidance support, feedback and positive social interaction support. These social support types constitute the help given to us from our families, friends, and other people around (Edwards, 2004). Previous studies showed that the lack of social support for families that have individuals with disabilities causes stress for them and make them face unique challenges (Noojin & Wallander, 1996). Among the factors that affect the parenting roles of families, the lack of social support is the most prominent one (Tymchuk & Andron, 1990). However, previous studies also showed that parents who had children with

disabilities exhibited more positive parenting behaviors when they were provided with adequate social support (Ceballo & McLoyd, 2002). Because social support has a protective and supportive effect in the face of difficulties when s/he meets problems in life, and makes him/her feel that s/he is loved, valued, trusted, protected and belong to the society (Cobb, 1976). Especially for parents who have individuals with disabilities, social support will help parents feel more comfortable and make it easier for them to accept their children that have disabilities. Besides, it will also enable them to consider life in a more positive manner (Dönmez, Bayhan & Artan, 2001).

When review the literature, no studies were detected that examined the relations between social support, family indomitableness, and life satisfaction of parents who had children with disabilities. However, Migerode, Maes, Buysse and Brondeel (2012) conducted a study on the parents who had individuals with disabilities to determine whether social support and family indomitableness was the predictor of the quality of life. According to the results of this study, they concluded that social support and family indomitableness was the predictor of quality of life. There are also several studies that examined the relations between social support, indomitableness, and life satisfaction in different groups. In their study, Achour and Nor (2014) examined whether indomitableness levels and social support predicted life satisfaction in secondary school students. Yang, Xia, Han and Liang (2018) examined the relations between and social support, indomitableness, life satisfaction and stress in individuals that had substance use disorder. Kalka and Lockiewicz (2018) examined the relations between indomitableness, social support and life satisfaction in dyslexic students. In their study, they aimed to explain the relations between parental perceived social support levels, family indomitableness levels, and life satisfaction levels of the individuals who had disabilities, and to determine the predictive variables of these relations. For this purpose, the answers for the following questions were sought in the present study:

1. Is there a significant correlation between the social support levels, life satisfaction levels, and family indomitableness levels perceived by the parents of the individuals with disabilities?
2. Does the social support levels perceived by the parents of individuals with disabilities and their family indomitableness levels predict their life satisfaction levels?

2. Method

2.1 *Study model*

Since the relations between perceived social support levels, family indomitableness levels and life satisfaction of parents of individuals with disability were investigated in the present study, it had a descriptive-correlational design. Descriptive-correlational studies aim to determine the relations between two or more variables, and to determine the degree of the relations between these variables. The data in these studies do not provide us with a complete cause and effect relation. However, they give clues about the variables that are examined. In this way, it gives the researcher the opportunity to make predictions (Karasar, 2013).

2.2 *Data collection tool*

2.2.1 *Demographical data form*

The Demographical Data Form consists of two parts. In the first part, there is information on the parents; and in the second part, there is information on the individuals who have disabilities. In the first part, there is information on gender, age, income level, and education

level (Table 1). In the second part, information on age, gender and type of diagnosis of the child who has disability is given.

Table 1. Demographical data on the parents participating in the study

Age	N	%	Income	N	%
Below the age of 25	26	11.3	2501-3500	92	38.3
26-35 years of age	39	16.9	3500-4500	37	15.4
36-45 years of age	77	33.3	4501-5500	42	17.5
46-55 years of age	69	29.9	5501-6500	23	9.6
Above 55 years of age	20	8.7	At and above 6501	37	15.4
School	N	%	Gender	N	%
Primary school	63	26.3	Male	75	31.3
Secondary school	56	23.3	Female	156	65.0
High school	69	28.8			
University	43	17.9			

When Table 1 is examined, it is seen that 26 (11.3%) of the parents who participated in the study as the parents of the individuals who had disability were under 25 years old, 39 (16.9%) were between 26-35 years old, 77 (33.3%) were 36-45 years old, 69 (29.9%) were between the ages of 46-55, and 20 (8.7) were over 55 years of age. When the monthly income levels of the parents are considered, it is seen that 92 (38.3%) are between 2501-3500 Turkish Liras, 37 (15.4%) between 3500-4500 Turkish Liras, 42 (17.5) 4501-5500 Turkish Liras, 23 (9.6%) had income between 5501-6500 Turkish lira and 37 (15.4%) have income above 6501 Turkish Liras. A total of 63 (26.3%) of the parents were primary school graduates, 56 (23.3%) were secondary school graduates, 69 (28.8%) were high school graduates, and 43 (17.9%) were university graduates. A total of 75 (31.3%) of the parents were male, and 156 (65.0%) were female.

Table 2. Demographical data of the students with disabilities

Age	N	%	Gender	N	%
At and below 10 years of age	95	39.6	Male	139	57.9
11- 20 years of age	61	25.4	Female	92	38.3
21-30 years of age	45	18.8			
At and above 30 years of age	30	12.5			
Disability	N	%			
Autism	88	36.7			
Mental	74	30.8			
Other	69	28.8			

As it is seen in Table 2, 95 (39.6%) of the students who had disabilities were at and under the age of 10, 61 (25.4%) were between 11-20 years of age, 45 (18.8%) between 21-30 years of age, and 30 (12.5%) were 30 years or older. A total of 139 (57.9%) of the students were male, and 92 (38.3%) were female; and 88 (36.7%) of them were diagnosed with autism spectrum disorder, 74 (30.8%) were mentally disabled, and 69 (28.8%) were in the other disabilities group.

2.2.2 Renewed parents social support scale

The scale was developed by Kaner (2010) to determine the Perceived Social Support Levels (PSSL) and their Satisfaction Levels of the Social Support they received (SLSS). The scale consists of 28 items in 4-point Likert type. RPSSS items are scored in two different ways. Firstly,

the scores are in the form of: (1) “None”, (2) “Rarely Exists”, (3) “Sometimes Exists”, (4) “Always Exists” to determine what kind of support parents receive. The level of their satisfaction with the received social support are scored as: (1) “I am not satisfied at all”, (2) “I am a little satisfied”, (3) “I am satisfied”, (4) “I am very satisfied”. The lowest score that can be received from the scale is 28, and the highest score is 112. As the score received from the scale increases, the perceived social support and satisfaction levels of the parents also increase (Kaner, 2010).

The Exploratory Factor Analysis was carried out to determine the structural validity of the scale. As a result of the Exploratory Factor Analysis, the scale was given its final form consisting of four sub-factors. The sub-factors were social cooperation support, information support, emotional support, and care support. The Confirmatory Factor Analysis was applied to determine that this structure was valid for satisfaction levels, and it was determined that the same structure was kept. The Cronbach’s Alpha and Spearman Brown Two Half Reliability Analyzes were also made to determine the internal consistency of the scale. The alpha coefficients were between 0.83-0.95 for RPSSS-PSSL; and between 0.85-0.95 for RPSSS-SLSS. The Spearman Brown Two Half Reliability Coefficients ranged between 0.86-0.92 for RPSSS-PSSL, and 0.84-0.96 for RPSSS-SLSS (Kaner 2010).

2.2.3 Family Indomitableness Scale (FIS)

The scale was developed by Kaner and Bayraklı (2010), and consists of 37 items in 5-Point Likert-type. The scale was applied to the parents with 105 children in private educational institutions and 419 children with normal development during the development phase. The scale was scored as: (1) It does not define me at all, (2) It defines me a little, (3) It defines me at a moderate level, (4) It defines me well, (5) It defines me very well. The scale consists of four sub-factors. These factors are total and struggle, commitment to life, self-efficacy, and control. Validity studies like explanatory factor analysis, confirmatory factor analysis, item-total correlation, and correlations between subscales were applied to the scale. In addition, the correlations of the scale with Beck Depression Inventory, Learned Strength Scale and Parenting Competence Scale. The reliability of the scale was examined by using Cronbach’s Alpha, Spearman-Brown Two Half Reliability and Test-Retest Reliability Coefficients. The Cronbach’s Alpha coefficients of the FIS were 0.54-0.91; and the test-retest reliability values were between 0.33-0.80, and all were significant.

2.2.4 Life Satisfaction Scale

The Life Satisfaction Scale was developed by Diener, Emmons, Larsen and Griffin (1985), and was adapted into Turkish by Dağlı and Baysal (2016). The scale was originally in the form of 5-point Likert scale, and had only one dimension. As a result of the validity-reliability study, it consisted of five items, had one dimension, and was in the form of 5-point Likert type. The Cronbach Alpha coefficient of the scale was 0.88, and the test-retest reliability was 0.97.

2.3 Collection of the data

The data were collected from the parents of the individuals who had disabilities, who attended special education and rehabilitation centers in Edirne and Istanbul. Private special education and rehabilitation centers were visited individually. Some of the parents were interviewed face-to-face, and the scales were sent through the teachers or students. The aim of the present study was explained to the parents who were interviewed face-to-face. The parents who could not be interviewed face-to-face and who needed explanations were informed via telephone. A total of 400 scales were distributed to these parents. A total of 283 scales were returned. Only

231 of these scales were found to be proper for use, and the data were analyzed from the remaining 231 scales.

2.4 Analysis of the data

The data were analyzed by using the IBM SPSS 24.0 Software. Firstly, the normality test was applied to the data. It was determined that the data showed normal distribution. The Pearson Product Moment Correlation Coefficient was used. The Multiple Linear Regression Analysis was used to examine the predictor relation of the variables.

3. Findings

The Pearson Moments Product Correlation Coefficient and Multiple Linear Regression findings will be given in this part.

Table 3. Pearson moments multiplication correlation coefficient analysis

Variables	Life satisfaction	Social support	Family Indomitableness
Life satisfaction	1	.486**	.585**
Social support	.486**	1	.458
Family Indomitableness	.585	.458	1

N=231, **P < 0.05

As it is seen in Table 3, the Pearson Product Moment Correlation Coefficient Analysis was made to determine whether there were significant relations between life satisfaction, social support, and life satisfaction levels. According to Correlation Warner (2008), between 0 and 0.29 is considered as low, 0.30 and 0.69 is considered as moderate, and 70 and 1.0 is considered strong. According to the results of the analysis, there was a positive relation between life satisfaction and social support ($r=.486$, $p>050$), and life satisfaction and family indomitableness ($r=.585$, $p>050$).

Table 4. Multiple linear regression analysis

Variable	B	Standard error	β	t	P	Part r	Partial r
Constant	-.362	.286		-1.265	.207	.246	.303
Perceived Social support	.392	.082	.277	4.805	.000	.408	.467
Family Indomitableness	.609	.076	.459	7.968	.000	.246	.303

$R=.635$; $R^2=.403$; Adjusted; $R^2=.398$; $F_{(2-228)}=76,914$; $P=.000$

As it is seen in Table 4, it was determined that there was a moderate and significant relation between life satisfaction, perceived social support, and family indomitableness ($r=.635$; $r^2=.403$, $p<.001$). When Table 4 is examined, it is also seen that there were bilateral and partial correlations between perceived social support, family indomitableness and life satisfaction (predictor variable). It was also determined that there was a moderate correlation between perceived social support and life satisfaction ($r=.41$). when the perceived social support level was examined, it was determined that the correlation between the two variables was $r=.47$. There was a low-level relation between family indomitableness and life satisfaction ($r=.25$). When the family indomitableness levels were examined, it was determined that the correlation between the two variables was $r=.30$. As a result, it was determined that perceived social support levels and family indomitableness levels explained 40% (R^2) of life satisfaction of parents.

4. Discussion and interpretation

According to the results of the present study, it was determined that there was a moderate correlation between perceived social support and life satisfaction. When we reviewed the literature, we found results that were similar to these findings. In their study, Çattık and Aksoy (2018) reported a positive correlation between social support and life satisfaction of parents who had individuals with developmental disabilities. Migerode et al. (2012) conducted a study with parents of adults with disabilities, and reported a positive relation between social support and quality of life. In their study conducted with parents of children with intellectual disabilities, Kaner (2004) reported a positive correlation between social support. In their study conducted with mothers who had children with autism spectrum disorders, Smith, Greenberg, and Seltzer (2012) observed a positive correlation between social support and the welfare of the mothers. In the study conducted by Pakenham and Bursnall (2006) with children who had parents with Multiple Sclerosis and with children who had healthy parents, it was reported that social support affected life satisfaction, individual development, strengthening relationships, positive perspective, and health status in a positive way. As it may be estimated based on the findings of this study, as the amount of social support given to individuals increases, the level of individual happiness also increases. In other words, life satisfaction varies in direct proportion to the amount of social support given to the individual. Giving more types and amounts of social support will contribute more to the life satisfaction of the individual.

According to the results of the present study, a correlation was detected between family indomitableness levels and life satisfaction levels. When the literature was reviewed, it was determined that similar results were reported. In a study conducted by Palancı (2018) with parents of individuals with disability reported a positive correlation between family indomitableness and life satisfaction. In the study conducted by Openshaw (2011) with parents of individuals with disabilities, it was reported that there was a strong correlation between family indomitableness and life satisfaction. Akbar et al. (2014) reported a strong correlation between indomitableness level and life satisfaction scores of nomadic people. According to Rutter (2006), indomitableness definitions generally focus on two points. The first one is about being exposed to a significant threat or difficulty, and the second is about adapting to and surviving this threat or difficulty. It is possible that the parents who cope with the difficulties better are likely to deal with future challenges they might face. Parents who can resolve the problems they face easily will become happier parents because they will experience less stress.

According to the results of the present study, it was concluded that perceived social support level and family indomitableness were the predictors of life satisfaction. When the literature is reviewed, it is seen that the results reported are similar to the findings of the present study. Migerode et al. (2012) conducted a study with the parents of individuals who had disabilities, and concluded that social support and family indomitableness were the predictors of quality of life. Achour and Nor (2014) conducted a study with secondary school students and concluded that indomitableness level and social support had a strong relation with life satisfaction and predicted it. Yang et al. (2018) conducted a study conducted with individuals with substance use disorder, and reported that there was a positive relation between social support and indomitableness and life satisfaction. They also concluded that social support and indomitableness were the predictors of life satisfaction, and perceived social support and indomitableness had an important role in reducing stress. Gerson (2018) conducted a study with university students and concluded that perceived social support was the predictor of indomitableness and life satisfaction. In their study conducted with adults, Tatar, Nesayan and Asadi (2018) reported a positive relation between perceived social support, indomitableness and life satisfaction. They also observed that indomitableness was the predictor of life satisfaction. However, there are also some contradictory findings in the literature. Kalka and Lockiewicz (2018)

conducted a study with students with dyslexia and reported that neither life satisfaction nor indomitableness predicted life satisfaction.

According to the results of this study, it is possible to argue that perceived social support level and family indomitableness are variables that predict life satisfaction. According to the study results, perceived social support level predicts life satisfaction more than family indomitableness. According to these results, the social cooperation support, information support, emotional support and care support that were provided to the parents who had individuals with developmental disabilities made the lives of parents easier. In addition, the social support that was provided reduced the stresses of the individuals who had children with disabilities, and helped them to overcome the problems they faced more easily.

Further studies may be conducted with qualitative analysis methods. A longitudinal study might be conducted. It can be examined whether or not different variables (i.e., marital adjustment) predict life satisfaction. Studies may be conducted only with the parents of individuals in a certain disability group. Teachers who work in the field of special education and parents of individuals with disabilities may trained about where and how to receive social support. Such a training will naturally affect family indomitableness in a positive way. In this way, the life satisfaction levels of the parents may be increased. This study was limited with the parents who participated in this study. Another limitation of the study was that the number of the scales was more, and the number of the scales that were distributed was low.

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References

- Achour, M., & Nor, M. R. M. (2014). The effects of social support and resilience on life satisfaction of secondary school students. *Journal of Academic and Applied Studies*, 4(1),12-20.
- Ahmetoğlu, E., & Aral, N. (2005). Zihinsel engelli çocukların yaşlarına ve engellerinin tanındığı zamana göre anne kaygı düzeylerinin incelenmesi. *Çağdaş Eğitim Dergisi*, 32(1), 17-23.
- Akbar, M., Akram, M., Ahmed, M., Hussain, M. S., Lal, V., & Ijaz, S. (2014). Relationship between resilience and life satisfaction among Nomadic. *International Journal of Innovation and Applied Studies*, 6(3), 515-529.
- Aysan, F., & Özben, Ş. (2007). Engelli çocuğu olan anne babaların yaşam kalitelerine ilişkin değişkenlerin incelenmesi. *Dokuz Eylül Üniversitesi Buca Eğitim Fakültesi Dergisi*, 22, 1-6.
- Barrera, M.Jr., & Ainaly, S. L. (1983). The structure of social support: A conceptual and empirical analysis. *Journal of Community Psychology*, 11, 133-143. [https://doi.org/10.1002/1520-6629\(198304\)11:2<133::AID-JCO](https://doi.org/10.1002/1520-6629(198304)11:2<133::AID-JCO)
- Bilge, A., Buruntekin, Demiral, O., Özer, N. G., Keleş, B., Yalçın, E., Tavukçu, G. Kıray, A., & Siviloğlu, T. (2014). Engelli yakınlarına verilen stresle baş etme ve yaşam doyumlarını arttırma eğitiminin etkinliğinin belirlenmesi. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi*, 3(1), 611-618.

- Ceballo, R., & McLoyd, V. C. (2002). Social support and parenting in poor, dangerous neighborhoods. *Child Development, 73*(4), 1310-1321. <https://doi.org/10.1111/1467-8624.00473>
- Cobb, S. (1976). Social support as moderator of life stress. *Psychosomatic Medicine, 38*, 300-314.
- Crinic, K. A., Greenberg, M. T., Ragozin, A. S., Robinson, N. M., & Basham, R. B. (1983). Effects of stress and social support on mothers and premature and full-term infants. *Child Development, 54*, 209-217.
- Çattık, M., & Aksoy, V. (2018). Gelişimsel yetersizliği olan çocukların ebeveynlerinin sosyal destek, öz yeterlik ve yaşam doyum düzeyleri arasındaki ilişkinin incelenmesi. *Eğitim ve Bilim, 43*(195), 65-77. <http://dx.doi.org/10.15390/EB.2018.7246>
- Dağlı, A., & Baysal, N. (2016). Yaşam doyumunu ölçeğinin Türkçe 'ye uyarlanması: geçerlik ve güvenilirlik çalışması. *Elektronik Sosyal Bilimler Dergisi, 15*(59), 1250-1262. <https://doi.org/10.17755/esosder.263229>
- Damiani, B. V. (1999). Responsibility and adjustment in siblings of children with disabilities: Update and review. Families in society, *The Journal of Contemporary Human Services, 1*, 34-40. <https://doi.org/10.1606/1044-3894.637>
- Darling, C. A., Senatore, N., & Strachan, J. (2012). Fathers of children with disabilities: Stress and life satisfaction. *Stress and Health, 28*, 269-278. <https://doi.org/10.1002/smi.1427>
- Diener, E. (1984). Subjective well-being. *Psychological Buletin, 95*(3), 542-575.
- Dönmez, B., N., Bayhan, P., & Artan, İ. (2001). Engelli çocuğu olan ailelerin yaşam döngüsü içinde karşılaştıkları sorunların incelenmesi. *Hacettepe Üniversitesi Toplum ve Sosyal Hizmet Dergisi, 12*(2), 31-43.
- Edwards, L. (2004). Measuring perceived social support in Mexican American youth: Psychometric properties of the multidimensional scale of perceived social support. *Hispanic Journal of Behavioral Sciences, 26*, 187-194. <https://doi.org/10.1177/0739986304264374>
- Gerson, M. W. (2018). Spirituality, social support, pride, and contentment as differential predictors of resilience and life satisfaction in emerging adulthood. *Psychology, 9*, 485-517. <https://doi.org/10.4236/psych.2018.93030>
- Greeff, A. P., Vansteenwengen, M., & Ide, M. (2006). Resiliency in families with a member with a psychological disorder. *The American Journal of Family Therapy, 34*, 285-300. <https://doi.org/10.1080/01926180600637465>
- Hastings, R. P., & Brown, T. (2002). Behavior problems of children with autism, parental self-efficacy, and mental health. *American Journal on Mental Retardation, 3*(107), 222-232. [https://doi.org/10.1352/0895-8017\(2002\)107<0222:BPOCWA>2.0.CO;2](https://doi.org/10.1352/0895-8017(2002)107<0222:BPOCWA>2.0.CO;2)
- Kalka, D., & Lockiewicz, M. (2018). Happiness, life satisfaction, resiliency and social support in students with dyslexia. *International Journal of Disability, Development and Education, 65*(5), 493-508, <https://doi.org/10.1080/1034912X.2017.1411582>
- Kaner, S. (2004). Engelli çocukları olan anababaların algıladıkları stres, sosyal destek ve yaşam doyumlarının incelenmesi. Ankara University Rectorate Research Project, Project Number: 2001-0901-007.
- Kaner, S., & Bayraklı, H. (2009). Zihinsel engelli ve engelli olmayan çocuklu annelerde yılmazlık, sosyal destek ve başa çıkma becerileri. *Eğitim Bilimleri ve Uygulama, 8*(15), 115-133. <https://doi.org/10.21565/ozelegitimdergisi.467417>
- Kaner, S., & Bayraklı, H. (2010). Aile yılmazlık ölçeği: geliştirilmesi, geçerlik ve güvenilirliği. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Özel Eğitim Dergisi, 11*(2), 47-62. https://doi.org/10.1501/Ozlegt_0000000161
- Kaner, S., Bayraklı, H., & Güzeller, C. O. (2011). Anne-babaların yılmazlık algılarının bazı değişkenler açısından incelenmesi. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Özel Eğitim Dergisi, 12*(2), 63-78. https://doi.org/10.1501/Ozlegt_0000000161
- Karasar, N. (2013). *Bilimsel araştırma yöntemleri*. Ankara: Nobel Yayın Dağıtım.
- Migerode, F., Maes, B., Buysse, A., & Brondeel, R. (2012). Quality of life in adolescents with a disability and their parents: The mediating role of social support and resilience. *Journal of Developmental and Physical Disabilities, 24*, 87-503. <https://doi.org/10.1007/s10882-012-9285-1>

- Myers, D. G., & Diener, E. (1995). Who is happy? *Psychological Science*, 6(1), 10-19.
- Noojin, A. B., & Wallander, J. L. (1996). Development and evaluation of a measure of concern related to raising a child with a physical disability. *Journal of Pediatric Psychology*, 2(4), 483-498.
- Openshaw, K. P. (2011). The relationship between family functioning, family resilience, and quality of life among vocational rehabilitation clients. (Unpublished Doctoral Thesis), Utah State University Logan, Utah.
- Özdevecioğlu M., & Aktaş A. (2007). Kariyer bağlılığı, mesleki bağlılık ve örgütsel bağlılığın yaşam tatmini üzerindeki etkisi: İş-aile çatışmasının rolü. *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 28, 1-20.
- Pakenham, K. I., & Bursnall, S. (2006). Relations between social support, appraisal and coping and both positive and negative outcomes for children of a parent with multiple sclerosis and comparisons with children of healthy parents. *Clinical Rehabilitation*, 20, 709-723. <https://doi.org/10.1191/0269215506cre976oa>
- Palancı, M. (2018). Engelli çocuğa sahip anne babaların aile yılmazlığı, öznel iyi oluş ve evlilik uyumlarının psiko-sosyal yeterlikler ile yordanması. *Eğitim ve Bilim*, 43(1939), 217-236. <http://dx.doi.org/10.15390/EB.2017.4384>
- Roach, M. A., Ormond, G. I., & Barratt, M. S. (1999). Mothers and fathers of children with Down Syndrome: Parental stress and involvement in children. *American Journal of Mental Retardation*, 104, 422-436. [https://doi.org/10.1352/0895-8017\(1999\)104<0422:MAFOCW>2.0.CO;2](https://doi.org/10.1352/0895-8017(1999)104<0422:MAFOCW>2.0.CO;2)
- Rutter, M. (2006). Implications of resilience concepts for scientific understanding. *Annals of the New York Academy of Sciences*, 1094, 1-12. USA: Blackwell Publishing.
- Selçukoğlu, Z. (2001). Araştırma görevlilerinde tükenmişlik düzeyi ile yalnızlık düzeyi ve yaşam doyumu arasındaki ilişkinin bazı değişkenler açısından değerlendirilmesi (Unpublished Master's Thesis). Selçuk Üniversitesi, Sosyal Bilimler Enstitüsü, Konya.
- Simon, J. B., Murphy, J. J., & Smith, S. M. (2005). Understanding and fostering family resilience. *The Family Journal: Counselling and Therapy for Couples and Families*, 13(4), 427-436. <https://doi.org/10.1177/1066480705278724>
- Smith, L. E., Greenberg, J. S., & Seltzer, M. M. (2012). Social support and well-being at mid-life among mothers of adolescents and adults with autism spectrum disorders. *Journal of Autism and Developmental Disabilities*, 42, 1818-1826. <https://doi.org/10.1007/s10803-011-1420-9>
- Tatar, A. A., Nesayan, A., & Asadi Gandomani, R. (2018). Mediating role of resilience and hope in the relationship between perceived social support and life satisfaction in orphaned adolescents (Persian). *Contemporary Psychology*, 13(1), 40-49. <http://dx.doi.org/10.32598/bjcp.13.1.40>
- Turnbull, A. P., & Turnbull, H. R. (1995). *Families, professionals, and exceptionality*. New Jersey: Merrill.
- Tymchuk, A. J., & Andron, L. (1990). Mothers with mental retardation who do or do not abuse or neglect their children. *Child Abuse and Neglect*, 14, 313-323, [https://doi.org/10.1016/0145-2134\(90\)90003-C](https://doi.org/10.1016/0145-2134(90)90003-C)
- Veenhoven, R. (1991). Is happiness relative? *Social Indicators Research*, 24, 1-34.
- Walsh F. (2003). Family resilience: A framework for clinical practice. *Family Process*, 42(1), 1-18. <https://doi.org/10.1111/j.1545-5300.2003.00001.x>
- Warner, R. (2008). *Applied statistics from bivariate through multivariate techniques*. Los Angeles: SAGE Publications.
- Yang, C., Xia, M., Han, M., & Liang, Y. (2018). Social support and resilience as mediators between stress and life satisfaction among people with substance use disorder in China. *Front Psychiatry* 16(9), 436. <https://doi.org/10.3389/fpsy.2018.00436>





Creative Thinking Skills in Social Studies Written Exam Questions

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Abstract

In this study, Social Studies teachers tried to examine the questions in their exams according to their creative thinking skills. In the study document analysis and semi-structured interview methods were used for this purpose. A total of 2,065 questions were examined from the examinations prepared by 61 teachers working in 20 different schools in Ortahisar, which is in the central district of Trabzon. The exam questions were examined in terms of the question types commonly used in education, their class levels and their status for creative thinking skills according to their subjects. The SPSS program was used in the analysis of the questions and the findings were presented using frequency and percentage tables and graphs. Interviews with teachers were analyzed by descriptive analysis method. The themes were created from the data obtained from the interview answers. The themes were reflected on the tables according to the frequency of the teachers' answers. For better understanding of the findings, examples of the teachers' exam questions and direct quotations from teachers' answers are given under the tables and graphics. As a result of the research, it was determined that the exam questions prepared by the social studies teachers were inadequate to develop and measure the creative thinking skills of the students.

Keywords: Social Studies teaching, assessment and evaluation, creatively thinking, asking questions.

1. Introduction

Since humanity has existed, education has been the basis of progress in the development of every society. Throughout the ages people have been trained for various purposes by various powers in the direction of specific goals. Religions, philosophical movements and branches of science have always proposed an educational system. In short, education is the most important activity realized by humanity (Ulken, 2001). People must learn not only for the continuation of its existence on the earth but out of human curiosity. Education can be defined in different ways in terms of its functions. However, the definition of contemporary education, which

is shared by educational scientists, is the process of creating an individual behavior in the direction of an individual's goals (Ergun, 2015).

Education can take place anywhere in the world at any time in life, but it is officially carried out in educational schools (Fidan, 2012). The purpose of these institutions is to bring intentional changes in student behaviors or to intentionally induce new behaviors in students. Schools educate students, who are the input of the education system, through their curriculums in a healthy and qualified manner. The knowledge and skills of the students who are raised in schools can be developed as much as possible so that the students who come out from the schools can integrate with the society while improving the knowledge and skills of the society in social and business life (Sonmez, 1998). One of these skills that the curriculum aims to bring to students is creative thinking.

Creativity means that the individual has the courage to interrogate the status quo that he is in and to be able to separate from the current status quo when he or she is in place or to think differently from others (Boden, 1996; Saban, 2002). It is getting out of the ordinary, turning to the unknown, rejecting the imposed ideas and putting forth a new idea. It is to develop alternative solutions to the problems, to establish a new relationship with the problems, to develop an unknown technique and method and to develop a useful tool or device (Rıza, 2000). Creativity is a way of thinking and creativity is found in all the emotional, mental and physical activities of all human life. Creativity is the basis of man's existence and development in all its aspects. Creative thinking requires having a strong imagination and associating objects or views that are not related to each other before (Newell, Shaw & Simon, 1962; Ozden, 2014).

Creative thinking is a form of thinking that produces new and different solutions to problems, producing original thoughts which are out of the ordinary. There are four basic stages in producing a new and original thought. These are preparation, incubation, enlightenment and evaluation. The first two of these stages are about formation, and the last two are phase's concern implementation (Gunes, 2012). It is not compulsory to follow all these steps in the same order. Some steps can be skipped and some can be returned (Mumford & McIntosh, 2017; Ozden, 2014).

Individuals need to have some skills in order to be able to do this thinking. Today, the literatures that are considered as contributing to creativity are listed below (Ozden, 2014: 177-179).

Creative thinking:

Originality	Anthropological thinking
Fluency	Evaluation
Flexibility	Analysis
Dissection	Synthesis
Sensitivity to problems	Do not exceed boundaries
Define the problems	Conversion
Imagery	Guess
Being a child	Intuition
Logical thinking	Concentration
Establish	Do not leave halfway
Spontaneous	Not to be afraid of uncertainties
Autonomy	Extraordinary connections

As you can see, there must be a number of features expressing creative thinking skills, and it must be known that not every feature has to be in every imaginable individual (Ozdemir, 2006).

The social studies curriculum prepared in the constructivist approach is one of the important programs that can develop creative thinking skills. Social Studies aims to educate individuals who offer different solutions by making the right decisions in the face of the problems that can be encountered in everyday life by bringing the knowledge, skills and attitudes of the social studies community to the individuals. In this context, the acquisition and development of thinking skills in social studies class is of special importance.

In the 2017 curriculum prepared to keep pace with the developing and changing era, creative thinking is emphasized as innovative thinking as in the 2005 program. The basic skills students are to gain through the program include creative thinking. The philosophy of the program emphasized the importance of creative thinking as follows (Ministry of Education, 2018: 3-4):

“The ability to raise individuals who can play an active role in today's social and economic conditions is directly linked to the competitiveness of countries on the international scene. Given this situation, countries are looking for a model of education that will enable students to have responsibilities, solve problems, develop decision-making skills, and think critically and innovatively.”

“In general, what is important in the development of innovative thinking is the use of techniques to produce ideas, the introduction of different ideas, and the production of ideas, the development of imagination, and the development of thinking skills.”

Teachers are the most important people in bringing these skills to students. Teachers – who are inevitably part of the education system – should educate and develop both themselves and their students in a way that fulfills the requirements of the times. To ensure that students develop high-level thinking skills, teachers direct them to think and develop by directing qualified questions to them to produce different solutions to problems, to search for true truth, and to analyze old knowledge with new knowledge, taking advantage of their experience. Teachers will ask different types of questions, qualitative and supra-cognitive, will transmit cognitive skills such as creative thinking to the students (Aydemir & Ciftci, 2008; Kadir & Satriawati, 2017). The way you can achieve this is the measurement and evaluation of the curriculum. The creative thinking skills that can be developed during the course using various teaching methods can also be developed and measured by using correct measurement and evaluation methods and using the correct questions during the measurement and evaluation (Colak, 2008; Ozcan & Oluk, 2008; Selcuk, Kayili & Okut, 2004; Shaunessy, 2000; Wragg, 1998).

We can list the qualities of questions that require creative thinking skills and that develop these thinking skills with key words, question patterns, and sample questions as follows (Bloom, 1956; Fizzy, 2004; Ozden, 2014; Shaunessy, 2000; Dalton & Smith, 1986; Sensekerici & Bilgin, 2008; Tekin, 1993).

Table 1. Some sample questions aimed for creative thinking skills

Characteristics	Key Words
<p>If the student needs to bring an original product,</p> <ul style="list-style-type: none"> • You need to make predictions and solve problems, • If it is necessary to combine things according to certain relations and rules, • Innovation, originality, invention, inventiveness and creativity are the 	<p>To;</p> <ul style="list-style-type: none"> • Invent • compose • guess • plan • edit • imagine • design • formulate

Samples of Question

Question 1. Could you organize a meeting on the protection of consumer rights? Speak to the people at the meeting about protection of consumer rights.

Question 2. Can you see a possible solution to prevent immigration from your village to the city?

Question 3. A tablet consisting of Assyrian nails was found in Anatolia. Which of the following judgments can be reached accordingly?

- A. Agriculture is being carried out in Anatolia.
- B. Only the Assyrians used the nail script.
- C. The Assyrians are the most advanced civilization.
- D. The Assyrians are in interaction with Anatolia.

The purpose of this study is, from the point of view of creative thinking in education and the importance of creative thinking skills, to determine the effect of social studies teachers' written exam questions which they applied during the first semester of 2017-2018 academic year on creative thinking skills.

1.1 Problem

The question of this research is “What is the place of creative thinking skills in the exam questions prepared by social studies teachers?”

1.2 Sub problems

1. Where are the skills of asking creative questions in social studies teachers' exams?
2. Which question types do social studies teachers prefer to measure and encourage creative thinking skills?
3. At what class level and in which branches of social studies did the teachers of social studies prepare the questions for creative thinking skills?

2. Method

This study was designed as descriptive research by designing within the framework of qualitative research approach. Qualitative research is generally defined as research that reaches

findings without any quantification. The topics studied in these studies are described in detail, interpreted in depth and aimed to understand the viewpoints of the participants involved in the study (Ekiz, 2013; Creswell, 2016).

In this qualitatively designed research, document analysis and a semi-structured interview method prepared by the researcher were used as data collection tools.

The document review method is a research method that involves analyzing the whole of written audio-visual materials that contain traces of the information needed about the topic of research (Karasar, 2005). Document analysis can be used in qualitative research besides other methods such as interviewing and observation in order to increase the scope and validity of the research, but can also be used as a stand-alone method in cases where other methods are unable to be used directly (Cepni, 2014; Yin, 2015).

2.1 Participants

Participants of this study constitute 61 social studies teachers working in 20 different secondary schools affiliated to the Ministry of National Education in Trabzon. These teachers' questions were collected during the first semester of the academic year of 2017-2018 and a semi-structured interview was conducted with 16 of these teachers. A random sample method was used when selecting the sample. Using this method; it is likely that all of the participants involved in the study have equal likelihood of being selected. In the random sampling method, the amount of sample to be reached is determined by random selection from the list (Cohen, Manion & Morrison, 2013). In the random sample method, the sample that should be reached is chosen at random from the list taken from the Trabzon National Education Directorate consisting of 113 Social Science teachers.

2.2 Data sources and data collection

A total of 2065 written exam questions were used in the study as belonging to the 5th, 6th, 7th and 8th grades applied by the Social Studies teachers in the first semester of the academic year of 2017-2018.

2.3 Data analysis

The collected questions, documented according to class levels, subjects and question types, have been analyzed in terms of being appropriate to critical thinking skills. In this evaluation, the opinions of three experts in the field of assessment and evaluation were used (Ekiz, 2013; Yin, 2015). The collected data has been analyzed in terms of frequency (f) and percentage (%) by using SPSS packet program and the results have been presented in graphics or table. In order to ensure the reliability and validity of the study, some analyzed questions have been presented as examples under the graphics (Cohen, Manion & Morrison, 2013).

Data obtained from document review was supported by semi-structured interview. The interview questions were prepared by the researcher by taking the opinions of three experts after a detailed literature review. In order to ensure the validity and reliability of the interview questions, interviews were conducted with 3 different Social Studies teachers before sampling. After this pilot scheme, the interview questions were rearranged by taking the opinions of the experts. In semi-structured interviews with teachers, researchers obtained in-depth information by asking additional questions with answers to questions along with three main questions.

For each teacher, the answers recorded on a separate paper were transferred to a computer and analyzed by reading them carefully in order to follow the order of the questions in the interview form (Yildirim & Simsek, 2013; Yin, 2015). In order to provide a more in-depth examination of descriptively analyzed questions and to reach unrecognized concepts and relationships in the answers of the participants to the interview questions, the words they used in relation to the problem of the research were identified and firstly coded and the frequency of the codes was determined done with content analysis. Themes have been created from the resulting code and these themes are presented in tables (Cohen, Manion & Morrison, 2013). In the analysis of the interviews, quotations were made without changing from the answers of the participant teachers in order to indicate the attractiveness of the opinions and to ensure the reliability of the study (Creswell, 2016).

3. Results

In this section, the findings are presented in a way to examine each research problem separately. In this respect, the data obtained from different data collection techniques are not presented separately and are presented in a way to explain each sub-problem. Tables and graphs were used to make the findings more clear and understandable.

3.1 First sub-problem findings

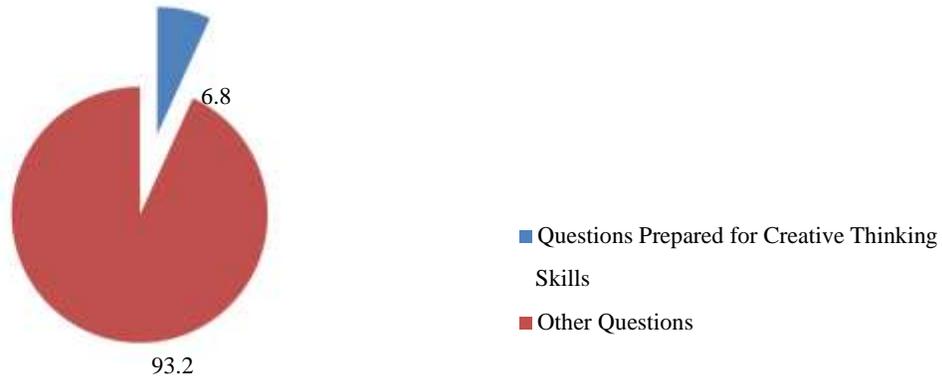


Figure 1. Questions for creative thinking skills

It has been determined that 141 (6.8%) of the social studies teachers examined in the first half of 2017-2018 academic year were prepared for creative thinking skills.

Table 2. Considerations considered by social studies teachers in preparing the exam questions

Considerations Considered	f	%
Learning outcome	7	26
Student Level	7	26
Review Questions	3	11
Scope Validity	5	18
Lectures	3	11
Using Images	2	7
Total	27	100

In the first question of the interview with teachers to determine the place of creative thinking skills in the exam questions of the Social Studies teachers, the questions which the teachers paid attention to during the preparation of the exam questions were determined. None

of the teachers gave an answer to the question of preparing creative questions. Only three teachers stated that students were careful to prepare questions that they could answer by thinking and interpreting. About:

Ö1W: *“According to the learning outcome of the student’s power of expression and thinking of the answer in order to explore the question to ask more questions.”*

The subjects that teachers pay attention to while preparing the exam questions are learnings outcome and student levels come. One of the seven teachers said they would pay attention to achievements in preparing the exam question:

T10M: *“I only take achievements into account when preparing the exam questions.”*

One of the 7 teachers among the subjects said that they pay attention to students' levels in preparing the exam questions:

T8M: *“I prepare my exams according to the level of the students, and I am careful to prepare exam questions which will be easy for hard working people, and hardly anyone can get good grades.”*

Another concern of the teachers was the scope of validity, 5 teachers stated that they pay attention to the scope validity when preparing the exam questions. For example:

T2M: *“When preparing my exam questions, I prepare questions according to student levels and in particular the scope of validity. I pay attention to the fact that the exam questions are distributed equally to my subjects.”*

In addition to these issues, other subjects that social studies teachers have taken into consideration have been the use of visual exams in the exams and their lectures. In the course of the preparation of the exam questions, the subject pays attention to lectures.

T5M: *“I don’t ask anything I haven’t said in class. I pay particular attention to the preparation of the exams.”*

The cases where social studies teachers take creative thinking skills into consideration are examined in Table 3.

Table 3. Situations of Social Studies teachers to consider creative thinking skills in exams

Reason for Not Considering	f	%	How to Consider	f	%
Exam Scores	6	46	With Open-Ended Questions	3	43
Student Achievement Level	3	23	Using Visual Aids	2	29
Course Content	2	15	With Different Question Types	1	14
Central Examination System	2	15	With Bloom Taxonomy	1	14
Total	13	100	Total	7	100

In a semi-structured interview to determine the ability of teachers to ask questions about creative thinking skills, it has been observed how teachers consider creative thinking skills in their exams. As a result of these examinations, 10 teachers stated that they did not consider creative thinking skills in their exams and 6 teachers considered them. The teachers who did not consider the creative thinking skills stated that they did not consider students because they would decrease their exam scores. In this regard:

T2M: *“Although I use open-ended questions in the exams, I use only creative thinking skills. The governance – parent and student triangle is an important factor for teachers. If the student’s grade falls, the parent and the administration are uncomfortable, so we have to ignore the students’ thinking skills in exams.”* The subject stated that student scores prevented them from asking creative questions.

5 of the teachers stated that student levels were not sufficient, 3 of the teachers did not have appropriate content for the Social Studies course thinking skills, and for 2 the success of the central exam system was an obstacle to asking creative questions.

Teachers who argue that student abilities are not sufficient for creative questions.

T5M: *“It is not enough to think and write about levels of students and skills. They can't write and think.”*

Teachers also noted the central examination system does not prepare creative questions:

T11M: *“The fact that the examination system is based on multiple-choice questions prevents the creative thinking skills from being taken into consideration. First, we have to change our understanding. As teachers, we can improve our exam questions.”*

Some teachers say that they had asked creative questions but for some reason they have given up creative questions, they indicated that they are restricted due to some reasons. For example:

T16M: *“While I prepare the exams, I am careful to think creatively, but I cannot say that I pay attention to it. Multiple choice questions are not the types of questions that will develop your thinking skills. Students are inadequate in these subjects, and although I do not want to, I'm still trying to make them think with qualified open-ended questions in my exams.”*

Teachers who stated that they asked questions about creative thinking skills in the exam questions stated that they had the most open-ended questions and different types of questions. Another teacher has prepared questions about creative thinking skills through visual use and another teacher has prepared his questions according to Bloom's Taxonomy and stated that he has achieved this goal. Teachers indicating that they consider creative thinking skills by asking open-ended questions:

T10M: *“While the objectivity makes me very difficult during the scoring, I ask for open-ended questions that students can think and comment on, and I use creative thinking skills in my exams.”*

Teachers who stated that they took creative thinking skills into consideration with different question types:

T7W: *“I consider creative thinking skills by asking all kinds of questions in exams.”*

The teacher of T13W, who gave one of the most important answers to the question, explained:

T13W: *“When I prepare my questions, I take Bloom's Taxonomy into consideration. I include questions in during the synthesis and evaluation phase. In addition, I try to develop thinking skills of students through animation and drama.”*

3.2 Findings related to the second sub-problem

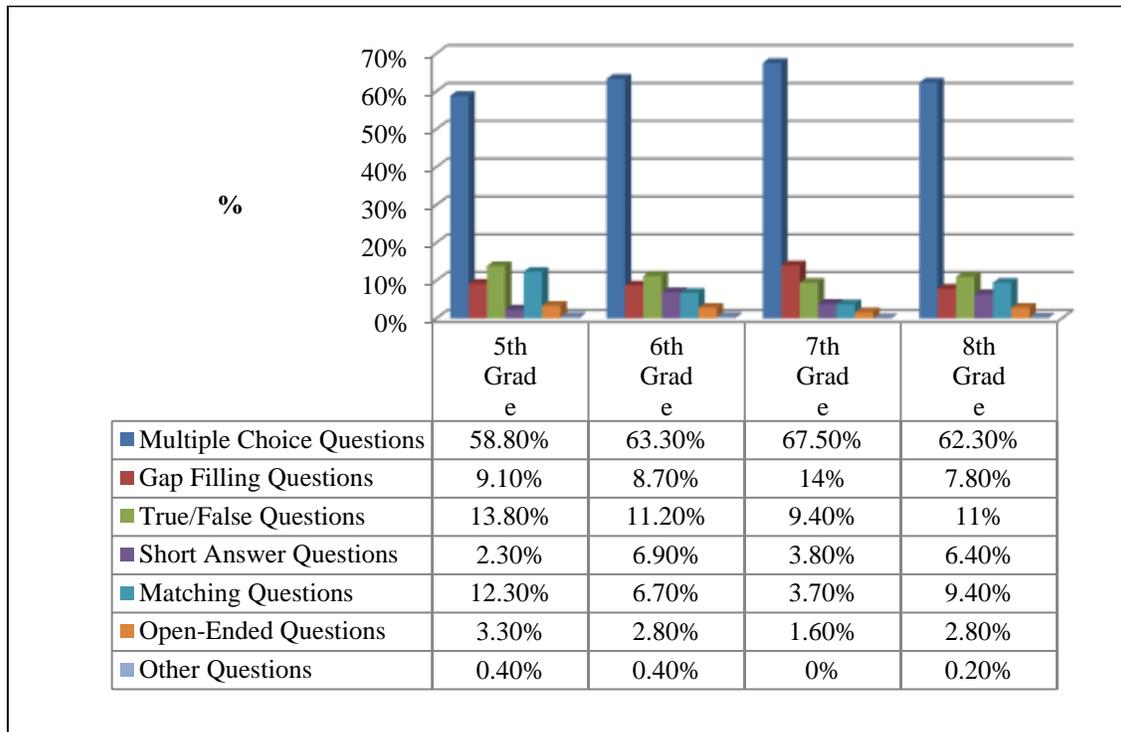


Figure 3. Distribution of question types used in exams according to grade levels

When the 2,065 questions examined by the Social Studies teachers were examined, it was found that the most preferred question type of teachers was multiple choice questions and the least preferred questions were open-ended questions. As a result of the examination, it is understood that multiple choice questions constitute more than half of the exam questions (63%). A total of 5 questions, other than these types of questions, are categorized under other categories and these questions constitute only 0.2% of the examinations of teachers. Since this study is carried out through the measurement and evaluation methods commonly used in education, the questions in the other category have been ignored. When the question types used in exam of social studies teachers were examined according to their grade levels, it was observed that the number of multiple-choice questions increased from the 5th grade (58.8%) to the 7th grade (67.5%) and it was found to decrease slightly in the 8th grade (62.3%). The questions of gap filling were mostly used in the exams of the 7th grade (14%). Although there is no significant difference between the true/false questions according to the grade levels, the most (13.8%) is used in the 5th grade exams. Short answer questions were mostly preferred in the 6th grade (6.9%) and least in the 5th grade (2.3%) by the teachers. Parallel to true/false questions, matching questions were used the most in 5th grade (12.3%) and least in 7th grade (3.7%). Finally, open-ended questions were used the most in the 5th grade exams (3.3%) and least in the 7th grade exams (1.4%).

Table 4. Reasons of the types of questions

Teacher Code	Ideal Question Type	Preferred Question Type	Reasons to Choose Question Type			
			Central Examination System	Preparation and Readability	Objective Measuring	Successful measurement
T1W	Mixed	Mixed				*
T2M	Open-ended	Multiple Choice		*		
T3W	Mixed	Multiple Choice	*	*		
T4M	Mixed	Mixed				*
T5M	Mixed	Multiple Choice	*		*	
T6M	Open-ended	Multiple Choice			*	
T7W	Open-ended	Multiple Choice	*			
T8M	Open-ended	Multiple Choice	*			
T9W	Mixed	Mixed		*		
T10M	Multiple choice	Mixed				*
T11M	Multiple choice	Multiple Choice	*			
T12W	Mixed	Multiple Choice		*		
T13W	Mixed	Mixed				*
T14M	Mixed	Multiple Choice	*			
T15W	Mixed	Mixed		*		
T16M	Mixed	Mixed	*			*
Total	-	-	7	5	2	5

In order to determine the reasons why the Social Studies teachers prefer the types of questions they use in their exams, the second question of the interview was the reasons why the teachers preferred the types of questions to be used in an ideal exam and the types of questions they used in their exams. In this direction, three titles emerged in the types of questions that the teachers found to be ideal. These are mixed, open-ended and multiple-choice questions. Ten of the teachers who were subject to the interview stated that the most ideal exam was the quizzes in which all question types classified as mixed were used in this study. While 4 of the teachers found open-ended questions to be ideal, 2 teachers stated that exams using multiple-choice questions were the ideal exams. It was determined that 7 of the teachers prepared the questions according to the exam form which they found ideal, and 11 of them prepared the exam questions which were different from the exam form which they thought ideal. One of the reasons behind these question types preferred by Social Studies teachers was the central examination system. In their exams, 6 teachers used multiple choice questions and 1 teacher who prepared mixed exams stated that they determined the type of question preferred by central exam system. One of these teachers expressed their opinions as follows:

T14M: *“Ideally, the exam system makes us choose multiple choice questions. I prepare only mixed the first exam but used multiple choice questions on the second exam.”*

Five of the teachers stated that the ease of preparing and reading had an effect in choosing question types. In this respect, the teachers mentioned this subject:

T3W: *“The ideal one is that it is mixed. I’ll only ask mixed test questions on the second exam. On the first exam because it’s easier to analyze the test questions.”*

The reason behind the types of questions that they use in their exams is found in the 5 teachers who have successfully carried out a measurement and evaluation:

T1W: *“The ideal is that the quiz is mixed and I use all types of questions because a good assessment is made by forcing the student to think multidimensionally.”*

3.3 Findings related to the third sub-problem

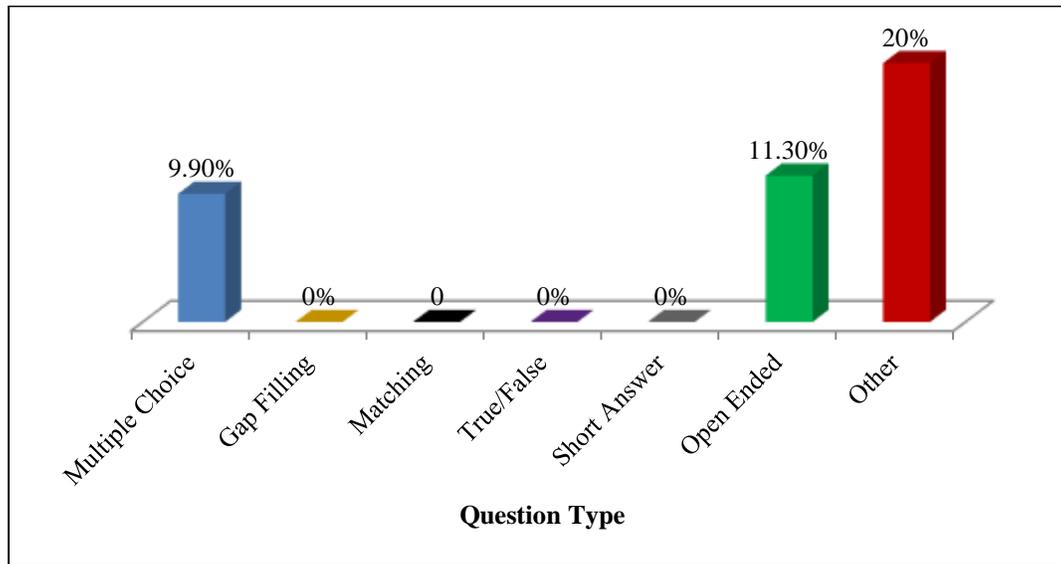


Figure 4. Types of questions used in exams for creative thinking skills

In this section where social studies teachers created exams to encourage creative thinking skills, it is determined that the most open-ended questions (11.3%) were prepared for creative thinking skills, ignoring other categories of the question types used by teachers.

Example:

Why is it that the Urartians give the tombs a stone room and that the person who is buried together with their daily belongings?

This question, which requires the student to predict and solve the problem with the data given in the question, to establish a relationship between the data and to unify the data and create a logical reason, is a question about creative thinking skills.

It was found that the second type of questions used by the teachers for creative thinking skills on their exams were multiple-choice questions (9.9%).

Example:

With the discovery of compasses, new continents were discovered and the discovery of new continents revealed new agricultural products. Which of the following cannot be said?

- a) *An event can cause another event.*
- b) *An event may have different consequences.*
- c) *Each event will have positive results.*
- d) *Events with negative consequences are not considered as events.*

This is a question which is prepared for the creative thinking skill because the student should analyze the given parts one by one and determine the effect of the parts on a whole and must make a new inference based on the parts.

It was found that none of the types of matching, true / false and short answer questions were questions about creative thinking. 20% of the questions under the other category were found to be questions about creative thinking skills.

Example:

You will hold a conference on global warming at your school. Prepare a poster and slogan for use in this conference.

This method requires creative thinking skills because the student is expected to present an original product by using the data given. As can be seen, the most open-ended questions asked by teachers are questions about creative thinking skills.

3.4 Findings related to the fourth sub-problem

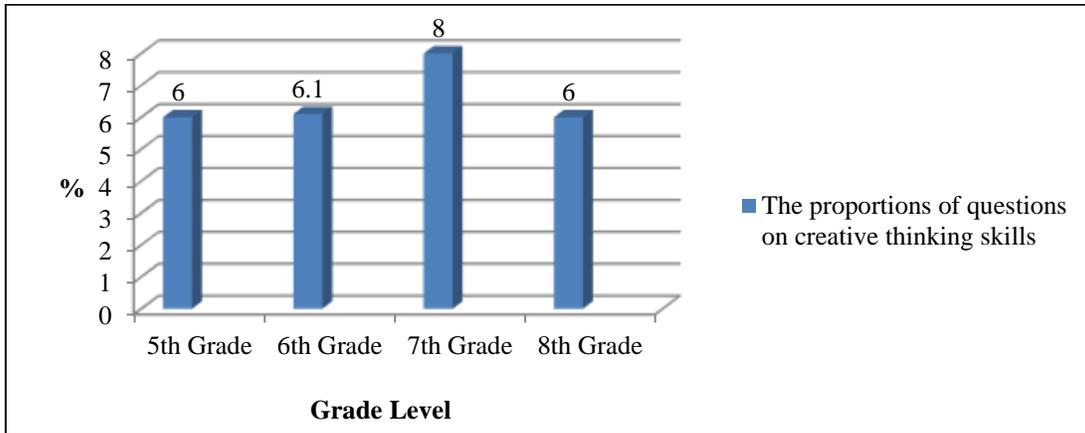


Figure 5. The situation of questions in class levels encouraging creative thinking skills

Creative thinking problems are very close together at all class levels (6-8%), but the most questions related to the creative thinking skills were found to be prepared in grade 7 (8%).

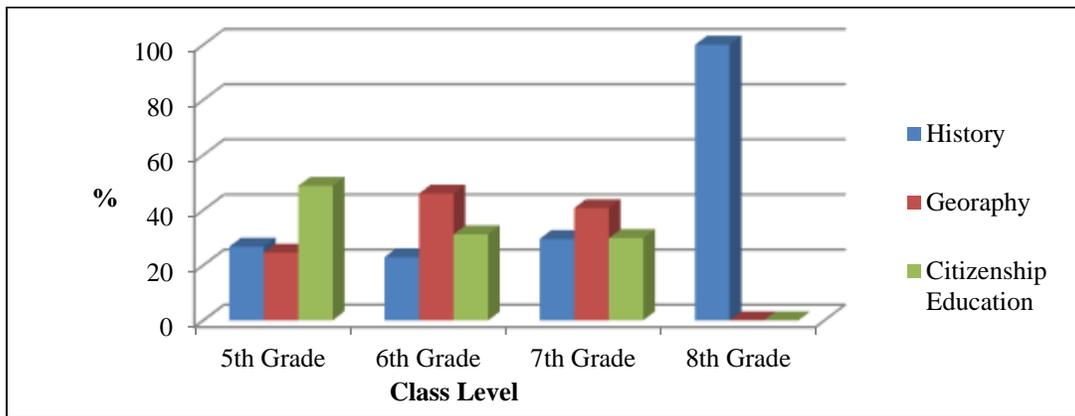


Figure 6. Distribution of questions according to topics in class levels

In this graph which examines the exam questions prepared by Social Studies teachers according to the subjects, it is seen that teachers prepare the most questions in 5th grade about citizenship education. In 6th and 7th grades the most questions are about geography. It is determined that the percentage of questions about citizenship has decreased gradually from 5th to 7th grade. 8th grade curriculum is the history of Atatürkism and Revolution in the Turkish Republic; all of the questions are prepared on the topics about history.

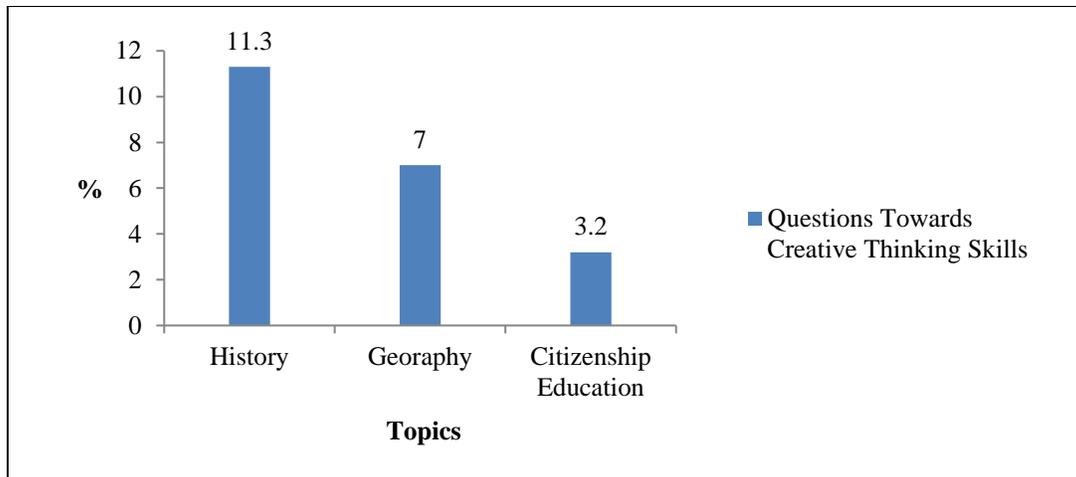


Figure 7. Exam questions for creative thinking skills by topic

According to the subjects, 11.3% of the questions (except the 8th grade) which are prepared for creative thinking skills are prepared in history and 7% of them are prepared for the creative thinking skills in georaphy. It was determined that 3.2% of the questions about citizenship issues, including the disciplines of social studies such as law, politics and economy, were prepared for creative thinking skills.

4. Discussion

In this section, the results obtained from the findings are discussed by making comparisons and interpretations under four headings, respectively, by considering the sub-problems of the research.

4.1 Discussion on the first sub-problem

An important part of the educational program which is practical face of education system is measurement and evaluation. As such, measurement and evaluation help students to reach the goals and to ensure that the program is questioned, as well as helping students develop many high-level thinking skills such as creative thinking skills when asked the right questions (Secolsky & Denison, 2017; Tekin, 1993). Ozdemir (2006) stated that one of the most preferred ways for teachers to develop their thinking skills is in their questions. Exactly at this point, teachers have an important job. Qualitative questions prepared by teachers can provide important contributions to creative thinking skills of students (Kadir & Satriawati, 2017; Ozmen & Karamustafaoglu, 2006; Ozden, 2014).

In this study, it was determined that only 6.8% of the exam questions prepared by Social Studies teachers were directed towards creative thinking skills. According to these results, it can be said that the effects of the questions of teachers on creative thinking skills are insufficient. The reason for this result is that teachers do not pay attention to the exam questions, and teachers may neglect the creative thinking skills of students.

In parallel with this result of the research; Akbulut (1999), Akpınar and Ergin (2006), Beskisiz (2009), Kilic (2010), Kilinc (2014) Koray et al. (2005), and Sanli & Pinar (2017) analyzed the questions that teachers used during their lectures and written exams and found that the questions were generally aimed at remembering from sub-level thinking skills. Considering the

results of the studies, it is clear that the Social Studies course exams hardly contribute to the creative thinking skills of students.

It has been concluded that the subjects that the teachers take most attention in preparing the exam questions are learning outcomes, student levels and content validity. Titrek (2005), Turan (2010) and Tokcan & Cevik (2013) stated that the questions the teachers used in the exams were not valid and the teachers' exams did not ask any questions about some achievements while concentrating on others. The reason for the difference in the results may be that the sample, study dates and methods are different.

It has been proven in many studies that there is a positive relationship between creative thinking skills and academic achievement (Kadir & Satriawati, 2017; Ozturk, 2007; Ozyurt, 2011; Reyhan Gozcu, 2018; Turan, 2010). Therefore, teachers need to consider improving student levels as well as supervising student levels. Parents' pressure on administration and private schools to keep students' grades high may be behind teachers' decisions (Yilmaz, 2011).

Teachers who take creative thinking skills into consideration in their exams stated that they carried out most of the questions by using all kinds of questions and with open-ended questions. Of teachers who say they ask open-ended questions, teachers T2M and T5M have short answer questions instead of open-ended questions. It was found that a teacher who said that should consider creative thinking skills in exams by using different question types is not directed to creative thinking skills of any questions. These results from the comparison of interviews and exam papers clearly show that Social Studies teachers have significant deficiencies in both measurement and evaluation and in creative thinking skills (Titrek, 2005). Palandokenliler (2008), His study found Social Studies teachers lacked creativity. In his study, Kuyubaşoğlu (2009) stated that teachers wanted in-service training about creative thinking.

4.2 Discussion on the second sub-problem

Another result reaching of the study is that in Social Studies the most used question types of teachers are multiple choice questions, true/false and fill-in-the-blank questions, respectively and least used questions are open-ended questions. Similar to the results of the study, Colak (2008), Kilic (2010), Tokcan and Cevik (2013) and Yilmaz (2017) found that teachers preferred multiple choice questions in their exams.

Teachers have argued that the use of multiple-choice questions is mostly due to the central examination system and the ease of preparation and evaluation. When the distribution of the question types according to class levels is examined, although the use rates were close to each other, the use of multiple-choice questions decreased slightly from grade fifth to seventh grade level. In Turkey, it is known that the transition to secondary education is carried out during all the years of all secondary education (SBS), although it is done in the last year of secondary education (Author2, 2011). This result proves that the central examination system affects teachers' choice of questions. Askar (2009) and Yalcinkaya (2009) also stated that the importance of the central examination system and central examination system by parents in their studies directly affected the type of question that the Social Studies teachers used in their exams. Parallel to this result of the study, Gelbal and Kelecioğlu (2007), Turan (2010) and Tokcan and Cevik (2013) stated that the teachers were easily able to prepare factors for determining the question types at the beginning. In addition, in the 5th grade, matching, blanks filling, true false and open-ended question types were used. The use of these question types decreased as the grade level increased. The reason for this result may be that true false, fill-in-the-blank and matching, depending on the student level, are more easily answered than other types of questions.

4.3 Discussion on the third sub-problem

Another result of this research is open-ended questions are mostly prepared for encouraging creative thinking skills. Open-ended questions are the least preferred questions. 11.3% of the open-ended questions examined in the study were found to be prepared to develop creative thinking skills (Kilic, 2010).

When we examine the situation of the other question types used by the teachers in terms of creative thinking skills, 9,9% of the multiple-choice questions were found to be about creative thinking skills. It was determined that no questions regarding creative thinking skills were asked in matching, true false and short answer question types. Similar to these results, Colak (2008), examined high school history teachers' exam questions in terms of Bloom taxonomy, finding that open-ended questions were least preferred.

4.4 Discussion on the fourth sub-problem

As a result of the study, it was found that the questions about the most creative thinking skills (8%) were prepared at the 7th grade level in the exams prepared by the Social Studies teachers. Although there is an increase in this ratio according to grade level, there is no significant difference. This result may be due to the fact that the teachers do not consider the mental development of the students in the preparation of the exam questions and the grade levels in the quality of the questions.

In the exam papers examined, most questions focused on creative thinking skills in grades 5, 6 and 7 were prepared on the topics of history. It is known that history subjects are composed of experiences and more concrete content than geography and citizenship education, there are various examples in their content and it allows the student to remove the boundaries in front of their thoughts, and it facilitates the development of thinking skills (Demircioglu, 2009; Koksall, 2002; Safran, 2006).

As a result, it has been determined that teachers have significant deficiencies in measurement and evaluation of creative thinking skills. It was revealed that teachers ignored creative thinking skills during the preparation of the exam questions and were negatively affected by external factors such as student scores and central exam systems. Although the least preferred type of question in the exam questions examined is open-ended questions, it was found that the most questions involving creative thinking skills were prepared in open-ended question type. It was determined that teachers prepared the questions about creative thinking skills in the subjects of history lesson at all grade levels and prepared them at the 7th grade level.

5. Suggestions

- The importance of creative thinking skills to the Social Studies teachers should be explained by the seminars and in-service courses organized by the Ministry of National Education and teachers should be forced to prepare creative questions by examining the exam questions of the teachers more detailed.
- Seminars and in-service courses should be organized by the Ministry of National Education on the issue of academic literacy so that the Social Studies teachers will be able to ask questions and how to use the assessment and evaluation methods, and to follow current developments.
- It should be ensured that academicians and Social Studies teachers are brought together to exchange ideas on assessment and evaluation and to raise teachers' awareness.

- Teacher candidates should be trained in a more qualified way in terms of creative thinking and questioning in university faculties.

5.1 Suggestions for future research

- In this research, only the questions that the teachers used in the exams were examined. In addition to the exam questions, questions asked by the teachers during the lesson can be examined.
- In this study, 2065 questions were examined, and a semi-structured interview was conducted with 16 teachers. More detailed results can be achieved by increasing these numbers.
- In this study, questions are analyzed at the 5, 6, 7 and 8th grade levels in terms of history, geography and citizenship. A single class and a single discipline or sub-disciplines can be used to achieve more in-depth findings.
- In addition to examining the exam questions in a new study, teachers and students creative thinking skills can be determined and prepared with various scales.

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References

- Akbulut, T. (1999). *Some variable types of questioning skills of teachers working in primary schools*.
- Akpınar, E., & Ergin, Ö. (2006). Evaluation of the written exam questions of science teachers. *Journal of National Education*, 172, 225-231.
- Akpınar, M. (2011). Investigation of the relationship with the primary education sixth grade Social Studies curriculum, its implementation and placement exam. Doctorate thesis, Atatürk University, Institute of Educational Sciences, Erzurum, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 6 April 2018.
- Altunışık, R., Coskun, R., Yildirim, E., & Bayraktaroglu, S. (2010). *Research methods in social sciences* (6th edition). Sakarya Bookstore.
- Askar, U. (2009). *Examining the measurement and evaluation practices of Social Studies teachers in terms of various variables*. Master's degree thesis, Abant İzzet Baysal University, Institute of Social Sciences, Bolu, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 7 April 2018.
- Author 2 (2011). *Investigation of the relationship with the primary education sixth grade Social Studies curriculum, its implementation and placement exam*. Doctorate thesis, Atatürk

- University, Institute of Educational Sciences, Erzurum, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 6 April 2018.
- Aydemir, Y., & Ciftci, Ö. (2008). A research on the questioning skills of prospective literature teachers (Gazi University Faculty of Education Sample). *Yüziüncü Yıl University Journal of Education*, 5(2), 103-115.
- Beskisiz, E. (2009). *Examination of the question types that fifth grade teachers asked in the Social Studies course according to their learning styles and their cognitive levels*. Master's thesis, Çukurova University, Institute of Social Sciences, Adana, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 26 March 2018.
- Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals, Handbook I: The cognitive domain*. David McKay Company Inc.
- Boden, M. A. (1996). Creativity. In *Artificial intelligence* (pp. 267-291). Academic Press.
- Cepni, S. (2014). *Introduction to research and project studies*. Celepler Printing House.
- Cohen, L., Manion, L., & Morrison, K. (2013). *Research methods in education* (6th ed.). Routledge.
- Colak, K. (2008). *Analysis of history course exam questions according to Bloom Taxonomy*. Master's thesis, Karadeniz Technical University, Institute of Social Sciences, Trabzon, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 17 March 2018.
- Creswell, J. W. (2016). *Qualitative research methods: Qualitative research and research design according to five approaches*. Siyasal Bookstore.
- Demircioglu, İ. H. (2009). History teachers' views on historical thinking skills. *Journal of National Education*, 184, 228-239.
- Ekiz, D. (2013). *Scientific research methods* (3rd ed.). Anı Publishing.
- Ergun, M. (2015). *Educational philosophy* (5th ed.). Pegem Academy Publishing.
- Fidan, N. (2012). *Learning and teaching at school* (3rd ed.). Pegem Academy Publishing.
- Gelbal, S., & Kelecioğlu, H. (2007). *Teachers' efficacy perceptions about measurement and evaluation methods and the problems they face*. Hacettepe University Journal of Education Faculty, 33(33), 135-147.
- Gozcu-Reyhan, O. (2018). *Examination of eighth grade students' creative thinking dispositions, problem solving perceptions and academic achievements*. Master's thesis, Cukurova University, Institute of Social Sciences, Adana, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 7 March 2018.
- Gunes, F. (2012). Developing students' thinking skills. *Turkishness Studies*, 32(32), 127-146.
- Kadir, L., & Satriawati, G. (2017). The implementation of open-inquiry approach to improve students' learning activities, responses, and mathematical creative thinking skills. *Journal on Mathematics Education*, 8(1), 103-114.
- Karasar, N. (2005). *Scientific research method*. Nobel Publication and Distribution.
- Kiliç, D. (2010). *Evaluation of social studies teachers' ability to ask questions about history subjects according to Bloom Taxonomy*. Master's thesis, Marmara University, Institute of Educational Sciences, Istanbul, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 3 March 2018.
- Kilinc, G. (2014). *Questioning skills of Social Studies teachers in the classroom teaching process: a case study*. Master's thesis, Sakarya University, Institute of Educational Sciences, Sakarya, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 3 March 2018.
- Koksal, H. (2002). Teaching history and developing critical thinking skills. *Journal of Turkish Dormitory*, 22(175), 87-90.

- Koray, O., Altuncekic, A., & Yaman, S. (2005). Evaluation of science teacher candidates' asking question skills according to Bloom's Taxonomy. *Journal of Pamukkale University Education*, 17(17), 33-39.
- Kuyubasoglu, B. (2009). *Teachers' and students' opinions on the acquisition of creative thinking skills in the Primary Education Social Studies course*. Master's thesis, Mersin University, Institute of Social Sciences, Mersin, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 3 May 2018.
- Ministry of Education (2018). *Social studies lesson (5th, 6th and 7th grades) curriculum*. Ministry of Education Publications.
- Mumford, M. D., & McIntosh, T. (2017). Creative thinking processes: The past and the future. *The Journal of Creative Behavior*, 51(4), 317-322.
- Newell, A., Shaw, J. C., & Simon, H. A. (1962). The processes of creative thinking. In *Contemporary Approaches to Creative Thinking, 1958, University of Colorado, CO, US; This paper was presented at the aforementioned symposium*. Atherton Press.
- Ozcan, S., & Oluk, S. (2008). Analysis of questions used in elementary science lessons according to Piaget and Bloom Taxonomy. *Journal of Dicle University Ziya Gökalp Education Faculty*, 8, 61-68.
- Ozdemir, D. (2006). *Teachers' views on the level of gaining thinking skills of the social studies course*.
- Ozden, Y. (2014). *Learning and teaching* (5th ed.). Pegem Academy Publications.
- Ozmen, H., & Karamustafaoglu, O. (2006). High School II. analysis of classroom physics-chemistry exam questions and students' achievement in energy, according to their cognitive development levels. *Journal of Kastamonu Education*, 14(1), 91-100.
- Ozturk, S. K. (2007). *The effect of creative thinking-based learning approach on students' creative thinking and problem-solving skills*. Master's thesis, Eskişehir Osmangazi University, Institute of Science, Eskişehir, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 3 May 2018.
- Ozyurt, M. (2011). *Investigation of the relationship between the creativity levels of eighth grade students attending private school and their success in SBS*. Master's thesis, Gaziantep University, Institute of Social Sciences, Gaziantep, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 1 May 2018.
- Palandokenliler, I. (2008). *Evaluation of the activities in the workbooks of the Primary Education Social Studies course in terms of creative thinking skills*. Master's thesis, Çukurova University, Institute of Social Sciences, Adana, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 1 May 2018.
- Riza, E. T. (2000). How to stimulate creativity in children and adults. *As We Live Journal of Education*, 68, 5-12.
- Saban, A. (2002). *Learning and teaching process, new theory and approaches*. Nobel Publishing and Distribution.
- Safran, M. (2006). *Articles and papers on history education*. Gazi Bookstore.
- Sanli, C., & Pinar, A. (2017). Examination of Social Studies course exam questions according to the renewed Bloom Taxonomy. *Elementary Education Online*, 16(3), 949-959.
- Secolsky, C., & Denison, D. B. (2017). *Handbook on measurement, assessment, and evaluation in higher education*. Routledge.
- Selcuk, Z., Kayili, H., & Okut, L. (2004). *Multiple intelligence applications*. Nobel Publishing and Distribution.
- Sensekerici, E., & Bilgin, A. (2008). Critical thinking and teaching. *Social Sciences Journal of Uludağ University Faculty of Literature and Sciences*, 6(14), 15-43.
- Shaunessy, E. (2000). Questioning techniques in the gifted classroom. *Gifted Child Today*, 23(5), 14-15.

- Sönmez, V. (1998). *Educational philosophy* (5th ed.). Anı Publishing.
- Tekin, H. (1993). *Measurement and evaluation in education* (8th edition). Yargı Publications.
- Titrek, A. D. (2005). *Qualitative features of measurement tools used by teachers in primary education Social Studies course*. Master's thesis, Marmara University, Institute of Educational Sciences, Istanbul, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 1 May 2018.
- Tokcan, H., & Cevik, E. (2013). Primary Education II. Examination of the written exam questions of grad Social Studies course teachers in accordance with the program. *Ondokuz Mayıs University Journal of Education Faculty*, 32(1), 339-372.
- Turan, E. (2010). *Evaluation of assessment and evaluation methods used in primary education social studies courses according to teachers' views*. Master's thesis, Gazi University, Institute of Educational Sciences, Ankara, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 11 April 2018.
- Turan, H. (2010). *The pattern of explanatory relationships between the constructivist characteristics of classroom teachers and their creative thinking, problem solving skills and critical thinking dispositions*. Master's thesis, Yıldız Technical University, Institute of Social Sciences, Istanbul, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 11 April 2018.
- Ulken, H. Z. (2001). *Educational philosophy* (2nd edition). Ulken Publications.
- Wragg, E. C. (1998). *Primary teaching skills*. Routledge.
- Yıldırım, A., & Simsek, H. (2013). *Qualitative research methods in the social sciences*. Seçkin Publishing.
- Yılmaz A. (2017). *Examining the questions used by social studies teachers in the process of learning-teaching and assessment according to Bloom Taxonomy*. Master's thesis, Afyon Kocatepe University, Institute of Social Sciences, Afyon Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 4 April 2018.
- Yılmaz, S. (2011). *Pre-service and in-service preschool teachers' views regarding creativity in early childhood education*. Master's thesis, Middle East Technical University, Institute of Social Sciences, Ankara, Turkey. <https://tez.yok.gov.tr/UlusalTezMerkezi/>. Accessed 4 April 2018.
- Yin, R. K. (2015). *Qualitative research from start to finish*. Guilford Publications.





Early Mathematics Learners' Numerical Errors: Consequence of Poor Learners' Comprehension and Teachers' Instructions

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Abstract

While the coronavirus disease 2019 (COVID-19) is still considered as a pandemic in recent human history, evidence from World Health Organization (2021) so far has recorded a total of 116,521,281 confirmed cases of COVID-19 with 2,589,548 as a total of deaths from over 215 countries or territories worldwide. Recognizing that COVID-19 is not only pandemic since March 11, 2020, but spreading worldwide at unprecedented rate, number of sectors including schools and universities as a measure to minimize person-to-person transmission closed their services. Such an uncertain closure warranted restructuring of services provided by schools and universities. The challenges therefore have necessitated the current research to investigate and alleviate challenges brought about by the COVID-19. In essence, the present research's aim was to report on early mathematics learners (foundation phase) numerical errors, which is as a consequence of poor learners' comprehension and teachers' instructions. Based on the aim, the study was positioned within a cognitive theory in order to examine processing of numerical competence among early mathematics learners. A case study via 80 grade 3 learners with ages 8 and 9 was sampled. A textual analysis was used in unpacking and de-contextualizing processing of numerical competence by early mathematics learners. The evidence revealed learners' mathematical mistakes were caused from limited reading skills and ill-presented problems via teachers. Due to the need to teach children at home (home school) due to the COVID-19, it is hoped that the findings thus assist audience, including non-academic and parents, who grapple with poor instructions coupled with poor learners' comprehension.

Keywords: numerical competence, foundation phase, computational competence, mathematical errors.

1. Introduction

While the coronavirus disease 2019 (COVID-19) is still considered as a pandemic in recent human history, evidence from World Health Organisation (2021) so far has recorded a total of 116,521,281 confirmed cases of COVID-19 with 2,589,548 as a total of deaths from over 215 countries or territories worldwide. Recognizing that COVID-19 is not only pandemic since March 11, 2020, but spreading worldwide at unprecedented rate, number of sectors including schools and universities as a measure to minimize person-to-person transmission closed their services. Such an uncertain closure warranted restructuring of services provided by schools and universities. Thus, the restructuring was fundamentally based upon either the nationwide or partial lockdowns of educational institutions, which included but not limited to schools, colleges, and universities. Such nationwide or partial lockdowns of educational institutions eventually mushroomed into challenges. While not an exhaustive account, many of such challenges were in the form of learning being interrupted, increased drop-out rates coupled with lowered academic achievement (UNESCO, 2020; Verschaffel, Depaepe & Mevarech, 2019). The challenges further encouraged remote learning. Effectively, the remote learning provided prospects for learners, teachers and even parents to be engaged with the content while concurrently studying or working from place of residence.

However, from both South Africa and international perspectives, while foundation phase learners' numerical errors have received increased attention, several other areas remain rife for further research, which are already exasperated by challenges of Covid 19 (Booth, McGinn, Barbieri & Young, 2017; Congdon, Kwon & Levine, 2018; Sethole, Gaba, Adler & Vithal, 2006; Yang, Sherman & Murdick, 2011; Özer & Göksun, 2020; Verschaffel et al., 2019). For instance, Yang et al. (2011) raised concern regarding error pattern analysis of elementary school aged students with limited English proficiency. A growing concern as alluded by Sethole et al. (2006) is the need to fine-tune language of description for mathematics items which incorporate the everyday activities. Unlike Sethole et al. (2006), Archibald (2009) suggests improving for instance spatial abilities to improve mathematics achievement. There have also been calls by Booth et al. (2017) to consider further investigation in misconceptions and learning of basic algebra. Yet, other areas remain widespread for further investigations. Example, the need to investigate how learning to measure through action and gesture could improve children's prior knowledge (Congdon et al., 2018) as well as investigating how visual-spatial and verbal abilities differentially affect processing of gestural vs. spoken expressions (Özer & Göksun, 2020).

Regardless of the ongoing need to examine the aforementioned, one common trend of thought as argued by Özer and Göksun (2020) and Verschaffel et al. (2019) is that such areas of research are as a consequence of poor comprehension by learners and ill-presented instructions from teachers, which tend to contribute to the already existing problems. Consequently, examining how to model the role of the learners' (1) understanding in the context of numerical processing as well as (2) misunderstandings sourced in weak information processing skills could assist in improving foundation phase learners' numerical error, which arguably is as a consequence of poor comprehension and instructions. Thus, the current research was built on extending the body of knowledge of previous studies such as Özer and Göksun (2020) and Verschaffel et al. (2019) in response to addressing the growing questions and fields of investigations.

2. Background to the study

Due in part to prevalence of foundation phase learners' mathematical errors born from weaknesses in reading and ill-presented problems, number of theoretical frameworks have been developed in order to account for their communicative and cognitive functions (Gordon & Ramani, 2021). In other words, mathematical errors born from weaknesses in reading and ill-presented

problems is predicated upon the understanding of cognition and information processing. In spite of the assessment of Gordon and Ramani (2021), various cognitive studies on mathematical errors instigated by weaknesses in reading and ill-presented problems have intensified and also taken various forms of investigations (Congdon, Novack, Goldin-Meadow & James, 2019; Ramani, Jaeggi, Daubert & Buschkuehl, 2017; Rhoads, Miller & Jaeger, 2018; Wakefield, Novack, Congdon, Franconeri & Goldin-Meadow, 2018; Wakefield, Özer & Göksun, 2020; Wiebe, Espy & Charak, 2008; Xenidou-Dervou, De Smedt, van der Schoot & van Lieshout, 2013; Zheng, Swanson & Marcoulides, 2011).

For instance, in the last decade, Zheng et al. (2011) in investigating working memory components suggested a relationship with children's mathematical word problem solving. During the same period, Xenidou-Dervou et al. (2013) suggested that math achievement could be linked with individual differences in kindergarten. Using confirmatory factor analysis, Wiebe et al. (2008) opined that preschool children could better be understood via their information processing. In recent times, it has also been revealed that gesture helps learners learn by guiding their visual attention (Wakefield et al., 2018). Other studies similar to aforementioned included the neural effects of gesture-based instruction in 8-year-old children (Wakefield et al. 2019), domain-specific and domain-general training to improve kindergarten children's mathematics (Ramani et al., 2017), gesturing improving preschoolers' executive function (Rhoads et al., 2018).

Irrespective of the extent literature, while we know one way to conceptualize how children solve mathematics problems and learn mathematics related content within the information processing approach as alluded by Özer and Göksun (2020), one thing stands out. That is, as opposed to single theory, rather an umbrella term has been advocated (Gordon & Ramani, 2021). Gordon and Ramani (2021) call the umbrella approach as embodied cognition (to be explained later). That is to say an integrating or embodied cognition responsible for information processing, which also means a combined model of the role of gesture in children's mathematical environments. While Booth, Barbieri, Eyer and Paré-Blagojev (2014) suggest that persistent and pernicious errors in problem-solving for instance could hamper the progress of learners, in contrast, and in support of the embodied cognition model, Adams, McLaren, Durkin, Mayer, Rittle-Johnson, Isotani and van Velsen (2014) have shown that using erroneous examples could improve mathematics learning. In support of Adams' et al. (2014) assertion, Jarvin (2009) suggests helping one's class to develop their knowledge and understanding of numbers with thought-provoking activities, which could eventually improve mathematics achievement of learners. Such advocacy as alluded by Jarvin (2009), Pardesi (2008) and Murray (2011) suggest a possibility of identifying errors in learners' mathematical thinking and methods of remediation.

Collectively, the evidence for further research points to Yang's et al. (2011) view that error pattern analysis of elementary school-aged learners with limited English proficiency requires further investigation. Against the backdrop of Yang et al. (2011), Gordon and Ramani (2021) suggest that information processing need not be focused only on visual mathematics specific input in order that we better understand how such inputs are relevant but equally for learners' mathematics environment. For instance, in using spatial abilities to improve mathematics achievement, it is important for information processing to consider the body itself (Archibald, 2009). However, Gordon and Ramani (2021) argue that while the information processing may describe the cognitive processes, it does not account for any co-occurring physical behaviors. This is because, Cotton (2010) argues that it could assist in understanding the teaching of primary mathematics. Accordingly, information processing model does not fully explain for instance gesture-specific benefits which sometimes tend to occur within a mathematics-related context or environment, hence need to use the embodied cognition as opposed to information processing approach (to be explained later). As a result, the questions remain unresolved as to how to satisfactorily understand the role of learner's (1) understanding in the context of numerical processing, as well as (2) misunderstandings sourced in weak information processing skills, and

(3) the different types of math stimuli (words and gestures) within the mathematics classroom from teachers’ instructions.

2.1 Implication thus far for current study

Implication for resolving such questions are based on number of claims. Gordon and Ramani (2021) claim that: First, because cognition is situated – meaning, cognitive processing tends to occur in conjunction with the task relevant inputs and outputs within specific mathematics environments, invariably, cognition should not be separated from specific mathematics environments in order that misunderstandings are clarified. The next claim indicates that cognition is time based. What this means is that cognitive processing does require real-time responses to the stimuli in order that errors and misunderstandings are corrected. Lastly, the specific mathematics environments or topics is an integral part of the cognitive system. This is because, given that input (the way we teach) stimuli, cognitive processes, as well as behavioural factors are recurrent or cyclical in nature, such factors may not be considered in isolation. For instance, using fingers in counting as an illustration, is an indication that such a gesture can be applied as a representation of relevant numeric information. That is being able to link number words to objects to keep track of quantity (Gordon & Ramani, 2021).

What could be drawn this far is that the presentation of both the parts of body and environment within which learning takes place are integral to cognition. Consequently, the argument that the specific mathematics environment or topics is an integral part of the cognitive system. Based on such integration, the current paper explores further a model combining central tenets from both information processing and embodied cognition.

2.2 Research questions

As a result of the introduction, background and lastly the implication, the question remains unresolved as to how to model the role of the learners’ (1) understanding in the context of numerical processing, as well as (2) misunderstandings sourced in weak information processing skills.

2.3 Research aims

To examine how to model the role of the learners’ (1) understanding in the context of numerical processing, as well as (2) misunderstandings sourced in weak information processing skills.

3. Theoretical framework – Embodied cognition

There has been growing concerns associated with foundation phase learners’ numerical error, which arguably has been attributed simultaneously to poor comprehension on the part of the learner and poor instructions from the teacher. As reflected in the background and because of such growing concerns, number of theories have been proposed to address similar questions. For instance, within Gordon and Ramani’s (2021: 3) work, embodied cognition is explained as “during a lesson on addition, math input could include a teacher’s speech and gestures in reference to an equation on the chalkboard, while the output could be children’s verbal and gestural response and explanations.” By implication, a comparable study based on embodied cognition by Gordon and Ramani (2021) revealed that by integrating both the embodied cognition and information processing theory, such combined model could explain the role of gesture in

learner's mathematical environments. It has also been showed that early mathematics learners' ability to count set of objects is predicated upon their math-input being the given instructions and countable objects as well as their output which could be the learners' pointing and counting out loud (Gordon & Ramani, 2021).

However, learner's mathematics output could be moderated given that Gordon and Ramani (2021) suggest learner's gesture and speech often contain different but complementary information. For example, recently, Wakefield et al. (2021) was able to show that it is possible to separate mathematics output by modality, based on the fact that both self-produced gestures as well as speech do not relate to learning and retention for learners in the same way that observed gestures do. In another study, Broaders, Cook, Mitchell and Goldin-Meadow (2007) were able to show that learners' gesture tend to bring out implicit knowledge and leads to learning.

Based on the analyses this far, it could be argued as did Chu, Meyer, Foulkes and Kita (2014) that individual differences in frequency and saliency of speech-accompanying gestures play a critical role in cognitive abilities. This as alluded by Chu et al. (1999) indicate the use of gesture and speech, could capture transitions in learning and that any mismatch between say gesture and speech could lead to transitional (intermediate) knowledge acquisition. In essence, learning through action is the foundation for any prior knowledge (Congdon et al., 2018).

A notable conclusion this far too is that simultaneous presentation of speech and gesture (as adaptive learning) in mathematics instruction supports generalization, retention and thus learning (Congdon, Novack, Brooks, Hemani-Lopez, O'Keefe & Goldin-Meadow, 2017). In effect, adaptive learning could lead to sustained enhancement of poor working memory in learners. Thus, there could be number of fields for applying the embodied cognition for further investigations by specifying the components (learner, input, and output) within a mathematics environment. For instance, Ping and Goldin-Meadow (2008) through embodied cognition have showed that using ungrounded iconic gestures (such as hands in the air) could teach learners conservation of quantity. Like Ping and Goldin-Meadow (2008), Rhoads et al. (2018) revealed that gesturing (put your hands up) improves early mathematics learners' executive function.

Notwithstanding the aforementioned studies, the embodied cognition theory does not explain nor do we currently understand for instance how to model the role of the learner's (1) understanding in the context of numerical processing, as well as (2) misunderstandings sourced in weak information processing skills.

4. Methodology

4.1 *Sampling and sample size*

Based on a case study and directed by the aim of the study, a total of 80 learners were selected to participate in this study. The sample size was determined so to be sufficient to hopefully provide a meaningful result, according to McMillan and Schumacher (2006). The researchers included 16 accessible schools. A simple random sample of five learners per school was selected, justifying the sample size of 80 learners. The participating learners' ages ranged from eight and nine. Participating learners were assured of their anonymity in the covering letters, and their confidentiality was maintained at all times. Permission was granted by the relevant school principals to distribute the questionnaires to the learners. Notably, the respective classroom teachers indicated that, of the 80 participating students, 20 (25%) had recognised difficulty reading English (the language of the mathematical instruction and questions) and 15 (19%) had significant weaknesses in reading.

4.2 Instrumentation

Teachers from the participating schools collaborated, developed, and used those same final exams for all the students in their respective schools. These finals were selected as the bases for research since: (A) the teachers could verify that, over the school year, instruction had covered the mathematical material; (B) the material in the final exams reflected mathematical concepts and topics which the teachers considered most important; (C) questions on the final exams were formulated in style consistent with what respective students had seen in their classrooms; and (D) in addition to covering many other topics in mathematics (e.g., algebra, space and shape, measurement, and data handling), they all had questions regarding the topics of this study (number sense, operation, relationships, and patterns). Some of the concepts that the questionnaire tested were - counting backwards and forwards; counting in the twenties, and showing calculations, multiplication and division as well as relationships and patterns. Using the final examination paper was an appropriate method for this study because all the learning outcomes had been taught by this time. Therefore, the learners were expected to be able to produce the outcome of what they had been taught, and they should have been able to extrapolate facts and concepts if required. It is also vital to note that the computational competence used in this study focused mainly on errors or mistakes and aimed to understand why they occurred in the foundation phase.

4.3 Data analysis

From the final exams, questions and responses regarding the mathematical topics of this study were selected. Discourse analysis was employed to investigate the questions and answers on the final exam questions regarding numbers sense and operations (Wertsch, 1990; Wertsch, Hagstrom & Kikas, 1995). Discourses analysis allowed the researchers to analyse the work of individual pupil and look for themes in the answers of many or all pupils. The themes (patterns) were then coded and used for analysis for the data to search for commonalities and differences among learners (Bogdan & Biklen, 2003; Creswell, 2003; Miles & Huberman, 1994; Strauss & Corbin, 1990). Findings from this investigation are provided below.

5. Results

The aim of the current research was to examine numerical processing and acquisition in the foundation phase. The instrument used test questions, for example, to count backwards and forwards, to count in the twenties, and to show calculations, multiplication, and division. For this research, and recall from the methodology section, the examinable questions included but were not limited to data handling (reading the calendar), word problems and measurements, evaluating, and interpreting figures and tables.

Question 1. “A car has four wheels and one in the boot. How many wheels of 12 cars?” The learners were expected to count the number of wheels of one car and thereafter count the wheels of 12 cars. Of the 80 learners included in the study, only 40 learners were able to count the wheels for 12 cars correctly; 18 learners only counted the wheels of the 12 cars, and neither counted the number of wheels for the first car nor the wheel in the boot, and 22 learners did not add the wheel in the boot. As exemplars to this question, Learner 1 responded “fourty (sic) eight” and Learner 2 responded “9”.

Analysis of responses: It is believed that Learner 1 simply multiplied $12 \times 4 = 48$ and simply forgot about the wheel in the boot. However, this pupil may have read the question as not caring about the wheel in the boot, but singularly about the wheels on the car. If so, his/her answer may not be incorrect. Learner 2 wrote a response of “9.” This may mean that the student was

merely guessing because it is difficult to imagine any mathematical reasoning which would produce this response.

However, it must be wondered how many pupil responses may have been in error due to the uncomfortable sentence structure of the question. It may have been difficult to interpret, “How many wheels of 12 cars?” This question could have been stated, “How many total wheels will the 12 cars have?” or some other form. It is difficult to assess student understanding of a question which is poorly written.

Question 2. Students were provided with the calendar in Table 1. They were asked, “How many days are there in May?” The learners were expected to say the last number shown in this Table, which was part of the data handling (reading the calendar), but only 70 learners were able to answer the question correctly; ten learners were not able to read the sentence and thus, could not comprehend the sentence. As exemplars of answers to this question, Learners 2, 39, 17 and 47 responded respectively, “4 day”, “13”, “5” and “30”.

Table 1. Analysis of Table, the calendar for May

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Analysis of responses: While 70 of 80 learners answered this question correctly, others struggled. Among others, Learners 2, 47, 17 and 39 gave the incorrect answers. However, again, from what might their errors have originated? Could the responses of Learners 2 and 17 have been a misreading of the question as, “How many weeks are there in May?” If so, they may have correctly answered the wrong question. Without more information, it is impossible to know why Learner 47 had a response of 30 rather than 31. It may be that s/he attempted to answer the question by the memory of the number of days in the month rather than look at the Table. Learner 39’s response of “13” may not be a mathematical error at all. S/he may have dyslexia or dyscalculia.

Question 3. From the same calendar, students were asked, “How many Sundays are there in May?” The learners were expected to count the number of Sundays in the calendar. Only 50 learners managed to count the four Sundays, whilst it is believed that 30 learners did not have sufficient reading skills to correctly interpret the question. The following Learners provided the respective responses: Learner 11 wrote “20”, Learner 4 wrote “5”, Learner 39 wrote “12”, and Learner 29 wrote “10”.

Analysis of responses: As reflected in the sample work, several learners (e.g., 11, 4, 39, and 29) struggled to correctly answer this question. While it is easy to simply state that their responses are incorrect, this does not do the learners’ work justice. The respective teachers reported that these students had difficulty reading numbers and words, specifically relating to mathematical language. Thus, the responses may not be mathematically erroneous as much as the result of poor reading skills. It is possible that Learner 4 simply miscounted the number of Sundays. However, it is unsure how the other students derived their responses. If their reading skills were sufficiently poor, their responses might have been little more than guesses.

Question 4. Again employing the previous calendar, this was the open-ended prompt, “June starts on _____?” The anticipated response was “Friday”. The participating learners were expected to recognise that June starts the first day after Thursday May 31. Only 40

learners were able to answer the question correctly, stating “Friday”, whilst 25 learners wrote “1” on which the month starts; due to limited reading skills, ten learners did not comprehend the question and could not provide a correct answer; and five learners decided not to answer the question, maybe also not being able to read or understand the question. The following responses were provided: Learners 30 and 2 wrote “7” and Learner 23 wrote “27”.

Analysis of responses: While 40 students provided incorrect responses, the question may again be asked why. For instance, it is conceivable that poor reading skills could lead a student to incorrectly respond that June starts on “1”, denoting the first day of the month. If so, this may not have been a mathematical error. However, the responses of “7” and “27” may have been the result of even poorer reading skills and guesses regarding the meaning of the question. These incorrect responses may not have been the result of lacking reasoning skills.

Question 5. As reflected in Figure 1, from the prompt “The number of netball players”, the participating learners were expected to count the number of players in the graph. Only 55 (68%) learners were able to answer the question correctly that there are seven players, whilst 15 learners were unable to respond correctly or to evaluate and interpret the Figure, since they could not comprehend the question. An additional ten (13%) did not learners did not answer the question. A sample of responses to this question includes: Learners 1 and 60 wrote “Nana” and Learner 19 wrote “120”.

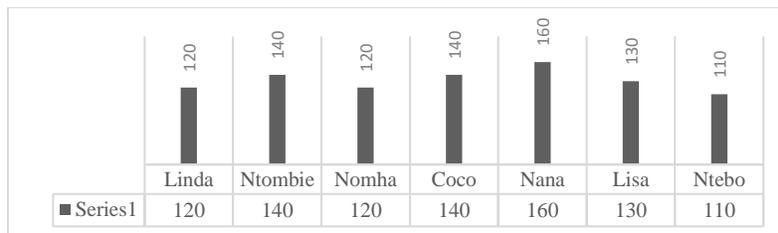


Figure 1. Number of Netball Players

Analysis of responses: Again, we see an example question which may be inadequately defined. It can be questioned how many ways students can interpret the prompt “The number of netball players”. The values for Series 1 may lead to even greater confusion than the ill-formed prompt. Thus, it remains mysterious precisely why 32% of the respondents provided incorrect responses. As in previous cases, it may be in part that some students lacked sufficient reading skill to decipher the question. However, since the ratio of students with incorrect answers is higher than for previous questions, it seems that the question stymied some students with adequate reading skills. This is more likely a product of the ill-posed prompt.

Question 6. Returning to Figure 1, the students were to respond to the prompt, “The tallest netball player?_____”. The learners were expected to read from the graph and interpret which player was taller than the other players by looking at the length of the players (each rectangular shape) or by the measurements provided. Only 60 (75%) learners managed to read from the graph that the tallest player was Nana. Even after the teacher provided some assistance, about 16 (20%) of learners did not understand the question and gave the wrong answer, and 4 (6%) learners did not answer the question. Some responses included: Learner 26, “140”; Learner 23, “Ntombie”; and Learner 71, “Lisa”.

Analysis of responses: The fact that 75% of the students correctly responded to this question may not be an indication that the question was understood. The prompt and Figure provide no indication that the numbers presented are to be interpreted as heights. Also, bar graphs are most often used as a representation of counting (cardinality). If students previously encountered similar looking bar graph representing the cardinality of represented sets, this Figure may have little meaning, particularly in association with a height (an ordinal number). In a similar

manner, pupils who produced an incorrect response may have made a mathematical error, may have made a reading error, or may simply have not been able to interpret the figure which appears to be a bar graph as an indication of height.

Question 7. Returning to Figure 1, the students are to respond to the prompt, “The length of Coco is _____ cm.” the anticipated response was “140” cm. Only 30 (38%) learners correctly responded to the prompt, whilst 43 (54%) learners were unable to answer the question – assumedly because they could not read and understand the question or the Table, and a further 7 (9%) learners did not answer the question. Some responses included: Learner 5 wrote “120” and Learner 7 wrote “7”.

Analysis of responses: This, again, is a poorly worded prompt. While, again, there is no indication on the figure that the numbers represent measurements, this may be even more problematic in that the students may confuse the meaning of length and height. The prompt should probably have been written, “The height of Coco is _____ cm.” This may have been less confusing. The fact that 62% of the student did not correctly answer this prompt and far less than that number were recognised as students who had notable reading difficulties, may indicate that the phrasing of the question is far more problematic than immediately recognized. However, it is hoped that students would recognize the connected context among questions 6-8.

Question 8. Returning to Figure 1, students are posed the prompt, “The player who has the same length/height as Coco is _____.” The expected response is “Ntombie”. Only 58 (73%) learners were able to correctly respond to this prompt. However, 13 (16%) learners were unable to give the correct answer and 9 (11%) learners decided not to answer the question and leave it blank. For a response, Learner 2 wrote “140”.

Analysis of responses: While Learner 2’s response of “140” may have more clearly indicated an inability to correctly interpret the prompt, the fact 27% provided incorrectly (or no) responses may not have been the result of reading skills alone. This prompt now uses the expression “length/height”. While this may help to clarify previous ideas, there yet remains no indication in Figure 1 that the numbers represent measurements.

Further analysis connecting questions 5-8: If students indeed had difficulty interpreting Figure 1, regardless of the reason for such (including poorly written prompts and a figure lacking sufficient explanation), having four questions all connected to the same poorly defined figure may not provide a good measurement of student understanding.

6. Discussion

The current section discuss’ among others the results taking in account the aim of the study which was to examine how to model the role of the learner’s (1) understanding in the context of numerical processing as well as (2) misunderstandings sourced in weak information processing skills and (3) the different types of math stimuli (words and gestures) within the mathematics classroom. At the beginning of the current paper, it was indicated that due to schools closing because of the COVID-19, learning generally and parents are taking on the role of teaching their children at home. Which suggests that parents ought to recognize mathematical errors made by their children during these uncertain times of default home-schooling caused by the COVID 19. From the findings above, shed light on the fact that many of these mathematical errors could be caused from reading difficulties and ill-posed problems. Such results may assist non-academics and parents.

In order to understand student skills in numerical processing and acquisition of arithmetic competence, it is essential to consider the mathematics in the form which they have been studying and being assessed, including word problems (Question 1), tables (Questions 2-4),

and graphs (Questions 5-8). However, in all these cases, some participants seemed to have more difficulty with reading and interpreting the table and graph and the prompt. Moreover, as seen in the findings, the assessment tools were questionably designed. In almost every case, the table, graph, and prompt itself was lacking sufficient detail to ensure that the student was answering the intended question. Thus, the assessment tasks lacked validity. Student weaknesses in reading together with problems and prompts which were difficult to interpret made a reliable assessment of student understanding difficult. While pattern recognition is an essential ability needed in understanding figures and shapes, most of the participants did not attempt to develop and record patterns to investigate. In almost all cases, responses were devoid of any accompanying work. Thus, there was no evidence of typical problem-solving strategies such as making a table of results, searching for a pattern among the data, or trying different approaches, or testing results.

In summary, the results of this study should remind the entire educational system of the need for mathematics instructions and questions to be posed correctly. Without such, it is difficult to determine the origin of student mathematical errors.

(1) understanding in the context of numerical processing

As with previous research (Zheng et al., 2011) and the embodied cognition theory, understanding in the context of numerical processing has been characterized as working memory being the predictor of learners' mathematical word problem solving. That is to say the development of executive functions and early mathematics tend to have dynamic relationship (Van der Ven et al., 2012). In current study, it was revealed that for instance, learning to measure through action enables learners to improve upon their prior knowledge matters. The results are consistent with the work of Congdon et al. (2018) as well as Broaders et al. (2007). The consistency hinges on the fact that, making learners use for instance gesture could bring out implicit knowledge thereby leading to learning as explained by the embodied cognition theory (Gordon & Ramani, 2021).

Number of implications could be drawn from the results and the previous studies. For instance, as with the work of Cotton (2010), it could be implied that understanding and teaching primary mathematics is predicated upon identifying and rectifying persistent and pernicious errors in in early mathematics learning (Booth et al., 2014). In effect, the use of erroneous examples for instance could improve mathematics learning as advocated by Adams et al. (2014). In support of the studies, another implication is directly linked with the idea that spatial abilities through adequately presented instructions improve mathematics achievement.

(2) misunderstandings sourced in weak information processing skills

On the other hand, and as reflected in the results, misunderstandings sourced in weak information processing skills could be improved by error pattern recognition of learners with limited English proficiency. As reflected by the results, this is rooted in number of activities such as ability to diagnose the misconceptions, it also includes being able to reveal changing type of knowledge applied by the learner and consequently the learning instruction. Durkin and Rittle-Johnson (2015) and Gordard (2005) thus suggest that learners' number difficulties could thus be improved through error analysis by identifying errors in learner's mathematical thinking and methods for remediation (Pardesi, 2008). Consequently, this could assist as suggested by Jarvin (2009) in developing knowledge and understanding of numbers characterized by thought-provoking activities, which defines learning to understand arithmetic. However, as demonstrated by the current study, fine-tuning a language of description for mathematics items which incorporate everyday activities as supported by Sethole et al. (2006) is not only key but as noted by Shalem and Sapire (2012), it simultaneously improves teachers' knowledge of error analysis.

6.1 Implication

In addressing foundation phase learners' numerical error, which is as consequence of poor comprehension and instructions, we narrowed our understanding to information processing but keenly on embodied cognition model. The model involved in mathematics learning though well-modelled by the information processing approach, however such a model is not able to fully explain the underlying mechanisms of how to model the role of the learner's (1) understanding in the context of numerical processing as well as (2) misunderstandings sourced in weak information processing skills. The main tenets as suggested from embodied cognition particularly is "...within the body, and by extending the surrounding of mathematics environment. The use of embodied cognition thus allows for the consideration of gestures as a form of mathematics input from the environment, as well as a form of mathematics-output from..." learners' (Gordon & Ramani, 2021). What is key too is that embodied cognition is primarily informed by instruction. The implication leads to future research within this domain for instance how individual differences in learners' embodied cognition impact their use of gestures during mathematics tasks. For instance, how learners' level of mathematics knowledge influences their embodied cognition or the interaction between the two remain to be established. For instance, it remains to be established as to how the nature of such relations change as learners' mathematics knowledge improves, and the specific content they are learning concurrently changes.

7. Conclusion

The evidence shows that mathematical errors is predicated upon weak reading skills or ill-presented problems. What that means is that assessing learners' understanding and errors is multidimensional. It is not simply determined by whether learners' responses to mathematical questions are correct. Keenly, the instructions associated with mathematics and tools for assessment need to be correctly provided. The need to be presented correctly in order to avoid errors. This is because, such errors may not necessarily be mathematical in nature. As a result, it is hoped that the current study could inform both educators and parents home-schooling their children due to the COVID-19 pandemic challenges as alluded in both the introductory as well as background of the study.

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References

- Adams, D. M., McLaren, B. M., Durkin, K., Mayer, R. E., Rittle-Johnson, B., Isotani, S., & van Velsen, M. (2014). Using erroneous examples to improve mathematics learning with a web-based tutoring system. *Computers in Human Behavior*, 36, 401-411. <https://doi.org/10.1016/j.chb.2014.03.053>.
- Archibald, S. (2009). Spatial abilities and mathematics achievement – A review. *Educational Studies in Mathematics*, 11, 257-269.

- Bogdan, K., & Biklen, H. (2003). *Qualitative research for education: An introduction to theories and methods* (4th ed.). Boston: Allyn and Bacon.
- Booth, J. L., Barbieri, C., Eyer, F., & Paré-Blagoev, E. J. (2014). Persistent and pernicious errors in algebraic problem-solving. *The Journal of Problem Solving*, 7(1), 3-15. <https://doi.org/10.7771/1932-6246.1161>
- Booth, J. L., McGinn, K. M., Barbieri, C., & Young, L. K. (2017). *Misconceptions and learning algebra*. In *and the rest is just algebra*, Ed., Sepideh Stewart, Springer Nature Switzerland AG. 235-238.
- Broaders, S. C., Cook, S. W., Mitchell, Z., & Goldin-Meadow, S. (2007). Making children gesture brings out implicit knowledge and leads to learning. *J. Exp. Psychol.* 136, 539-550. <https://doi.org/10.1037/0096-3445.136.4.539>
- Chu, M., Meyer, A., Foulkes, L., & Kita, S. (2014). Individual differences in frequency and saliency of speech-accompanying gestures: the role of cognitive abilities and empathy. *J. Exp. Psychol.* 143, 694-709. <https://doi.org/10.1037/a0033861>
- Congdon, E. L., Kwon, M. K., & Levine, S. C. (2018). Learning to measure through action and gesture: children's prior knowledge matters. *Cognition*, 180, 182-190. <https://doi.org/10.1016/j.cognition.2018.07.002>
- Congdon, E. L., Novack, M. A., Brooks, N., Hemani-Lopez, N., O'Keefe, L., & Goldin-Meadow, S. (2017). Better together: Simultaneous presentation of speech and gesture in math instruction supports generalization and retention. *Learn. Instr.* 50, 65-74. <https://doi.org/10.1016/j.learninstruc.2017.03.005>
- Cotton, T. (2010). *Understanding and teaching primary mathematics*. Retrieved on 12 Feb 2019. <http://www.pearsoned.co.uk/cotton>.
- Creswell, J. (2003). *Research design: Qualitative, quantitative and mixed methods approaches* (2nd ed.). London. Sage Publications.
- Durkin, K., & Rittle-Johnson, B. (2015). Diagnosing misconceptions: Revealing changing decimal fraction knowledge. *Learning and Instruction*, 37, 21-29. <https://doi.org/10.1016/j.learninstruc.2014.08.003>
- Gordon, R., & Ramani, G. B. (2021). Integrating embodied cognition and information processing: A combined model of the role of gesture in children's mathematical environments. *Front. Psychol.* 12:650286. <https://doi.org/10.3389/fpsyg.2021.650286>
- Gordard, F. (2005). *Children and number difficulties in learning mathematics*. Oxford: Blackwell Publishers.
- Jarvin, A. (2009). *Help your class to develop their knowledge and understanding of numbers with thought-provoking activities*. Retrieved on 20 July 2019. Available on www.scholastic.co.uk/juniorEdplus.
- McMillan, J. H., & Schumacher, S. (2006). *Research education: Evidence-based inquiry* (6th ed.). United States of America. Pearson Education, Inc.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage.
- Murray, F. (2011). Mathematics achievement of children in the United States. *Learner Dev*, 61(4), 25-26.
- Özer, D., & Göksun, T. (2020). Visual-spatial and verbal abilities differentially affect processing of gestural vs. spoken expressions. *Lang. Cogn. Neurosci.* 35, 896-914. <https://doi.org/10.1080/23273798.2019.1703016>
- Pardesi, T. (2008). *Identifying errors in children's mathematical thinking and methods of remediation*. University of South Africa. University Press.

- Ping, R. M., & Goldin-Meadow, S. (2008). Hands in the air: using ungrounded iconic gestures to teach children conservation of quantity. *Dev. Psychol.* 44, 1277-1287. <https://doi.org/10.1037/0012-1649.44.5.1277>
- Ramani, G. B., Jaeggi, S. M., Daubert, E. N., & Buschkuhl, M. (2017). Domain-specific and domain-general training to improve kindergarten children's mathematics. *J. Numerical Cogn.* 3, 468-495. <https://doi.org/10.5964/jnc.v3i2.31>
- Rhoads, C. L., Miller, P. H., & Jaeger, G. O. (2018). Put your hands up! Gesturing improves preschoolers' executive function. *J. Exp. Child Psychol.* 173, 41-58. <https://doi.org/10.1016/j.jecp.2018.03.010>
- Sethole, G., Gaba, B., Adler, A., & Vithal, R. (2006). *Fine-tuning a language of description for mathematics items which incorporate the everyday*. Cape Town. Brill Sense.
- Shalem, Y., & Sapire, I. (2012). *Teachers' knowledge of error analysis*. Johannesburg: Saide.
- Strauss, K., & Corbin, H. (1990). *Basics of grounded theory methods*. Beverly Hills, CA., Sage.
- UNESCO (2020). Empowering students with disabilities during the COVID-19 crisis. Glob. Educ. Coalition. <https://en.unesco.org/covid19/educationresponse/globalcoalition>.
- Van der Ven, S. H., Kroesbergen, E. H., Boom, J., & Leseman, P. P. (2012). The development of executive functions and early mathematics: a dynamic relationship. *Br. J. Educ. Psychol.* 82, 100-119. <https://doi.org/10.1111/j.2044-8279.2011.02035.x>
- Verschaffel, L., Depaepe, F., & Mevarech, Z. (2019). Learning mathematics in metacognitively oriented ICT-based learning environments: a systematic review of literature. *Educ. Res. Int.* 2019. Article 3402035.
- Wakefield, E. M., Congdon, E. L., Novack, M. A., Goldin-Meadow, S., & James, K. H. (2019). Learning math by hand: The neural effects of gesture-based instruction in 8-year-old children. *Attent. Percept. Psychophys.* 81, 2343-2353. <https://doi.org/10.3758/s13414-019-01755-y>
- Wakefield, E. M., Novack, M. A., Congdon, E. L., Franconeri, S., & Goldin-Meadow, S. (2018). Gesture helps learners learn, but not merely by guiding their visual attention. *Dev. Sci.* 21, e12664. <https://doi.org/10.1111/desc.12664>
- Wertsch, D. (1990). The voice of rationality in a sociocultural approach to mind. In L. C. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 175-205). New York, NY: Cambridge University Press.
- Wertsch, F., Hagstrom, H., & Kikas, G. (1995). Voices of thinking and speaking. In Martin, L., Nelson, K. & Tobach, E., (Eds.) *Sociocultural psychology: Theory and practice of doing and knowing* (pp. 276-292). New York, NY, Cambridge University Press.
- Wiebe, S. A., Espy, K. A., & Charak, D. (2008). Using confirmatory factor analysis to understand executive control in preschool children: I. latent structure. *Dev. Psychol.* 44, 575-587. <https://doi.org/10.1037/0012-1649.44.2.575>
- World Health Organisation (2021). Coronavirus Disease (COVID-19) Dashboard. WorldHealth Organisation. <https://covid19.who.int/table>.
- Xenidou-Dervou, I., De Smedt, B., van der Schoot, M., & van Lieshout, E. C. (2013). Individual differences in kindergarten math achievement: The integrative roles of approximation skills and working memory. *Learn. Individ. Differ.* 28, 119-129. <https://doi.org/10.1016/j.lindif.2013.09.012>
- Yang, C. W., Sherman, H., & Murdick, N. (2011). Error pattern analysis of elementary school aged students with limited English proficiency. *Investigations in Mathematics Learning*, 4(1), 50-67.
- Zheng, X., Swanson, H. L., & Marcoulides, G. A. (2011). Working memory components as predictors of children's mathematical word problem solving. *J. Exp. Child Psychol.* 110, 481-498. <https://doi.org/10.1016/j.jecp.2011.06.001>





The Effects of Educational Videos on Views and Attitudes of Engineering Undergraduate Students

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Abstract

The usage of videos in undergraduate students' engineering education has gained importance in recent years. Videos, which are used as a supportive tool in traditional engineering education, have become a source of information in online learning environments. The aim of this study is to examine the effects of educational videos on engineering undergraduate students' laboratory applications and its examination of opinions developed within the scope of e-learning. For this purpose, the sample consisting of 50 undergraduate students from the civil engineering department has been used for this research. Pre-test and post-test process conducted within the scope of in this research were resulted in a meaningful difference after the analyses of Paired Samples t-Test ($p=0.02$) was made. This result shows that online learning platforms in engineering education and educational videos positively affect the students' attitude. In addition, it is found out that educational videos affect the learning process as a useful educational source. Moreover, the instructors' educational videos, which are Digital Learning Materials, positively impact the students' motivation during the courses.

Keywords: videos, educational videos, laboratory, engineering education.

1. Introduction

The technological developments in higher education have also shown their effect on engineering education which is one of the disciplines in higher education. Engineering education in terms of its content and structure takes shape by supporting theoretical information with application studies (Iqbal, Zang, Zhu, Chen & Zhao, 2014). Technology stands in an important position in engineering education in conveying theoretical information with applicational studies (Zaneldin, Ahmed & El-Ariss, 2019). The use of developing technology has revealed alternative methods in the source of information about engineering and its transfer (Brame, 2016). One of the alternative methods that have been revealed is educational videos (Pedrotti & Nistor, 2014; Fernandez et al., 2011).

According to Mayer (2009), educational videos are instructional contents that present visual and auditory environments together. Fiorella and Mayer (2018) claim that educational videos emerge by combining the visual and auditory environments in order to reach information. Educational videos in engineering education have a supportive role for the instructors during definitions.

In addition to this, educational videos enable students to recognize and visualize the information (Shephard, 2003). According to Dharmadhikari (2011), the use of educational videos in engineering education has a positive effect on increasing the educational experience. In engineering education, the traditional ways to convey theoretical information into application studies may be limited. Figure 1 shows the limitations of traditional learning environments in engineering education (Domingues, Rocha, Dourado, Alves and Ferreira, 2010; Iqbal, Zang, Zhu, Chen & Zhao, 2014).

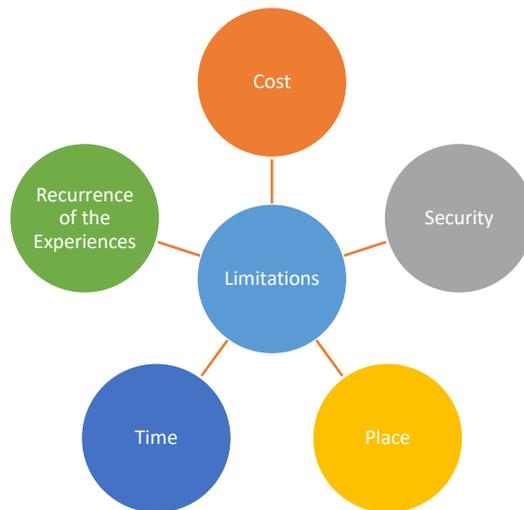


Figure 1. Limitations of traditional education settings in engineering education

The educational videos in engineering education combine visual and auditory environments to convey theoretical knowledge and applications and play an important role in removing limitations presented in Image 1. The structural characteristics of the educational videos enable them to be free from time and place and their reusability provides savings in terms of cost (Marques, Quintela, Restivo & Trigo, 2012).

Besides these, the use of educational videos in engineering education creates a safe environment by eliminating the risks that can be encountered during application studies (Jackson et al., 2013; Zanelidin, Ahmed & El-Arris, 2019). According to Simo et al. (2010), the use of educational videos in the engineering field makes contributions to the collaborative work, between the instructors and students. In the light of collaborative work there may be developments in engineering education and interdisciplinary studies.

The use of educational videos in engineering education also brings many advantages. These advantages were stated as follows (Dharmadhikari, 2011; Wagner, Laforge & Cripps, 2013; Violante & Vezzetti, 2014; Carbonell & Pons, 2014):

- i. The educational videos used in engineering education can be reused due to their structural nature.
- ii. The videos can be watched at any time.
- iii. The educational application videos give freedom of place to the individual.

iv. The use of video equipment has a positive effect on the students' motivation.

v. The educational videos in engineering education may have a positive impact on the student's motivation.

vi. With the use of educational videos, the instructional content can be transferred to much more students.

The studies about the use of educational videos in engineering education have reached a conclusion that educational videos provide freedom of place to the instructors and students (Ferreira, 2004; Toto & Nguyen, 2009; Dharmadhikari, 2011; Violante & Vezzetti, 2014; Carbonell & Pons, 2014; Saar, Kusmin, Laanpere, Prieto & Rütman, 2017). In the light of the studies, it was realized that the use of educational videos in engineering education is crucial for individual learning (Granio & Rasterio, 2018; Violante & Vezzetti, 2014; Carbonell & Pons, 2014; Chao, Chen & Chuang, 2015). The studies conducted with the engineering students about the educational videos have shown that they have an important impact on motivation and attitude (Månsson, Löfgreen & Warfvinge, 2017; Dharmadhikari, 2011; Kay & Kletskin, 2012; Rhema & Miliszewska, 2014; Chao, Chen & Chuang, 2015).

In engineering education, in order to develop an educational video, it is necessary to follow a five-staged roadmap. In a linear structure, these five stages are; planning, saving, editing, content production and sharing (Kybartaitė, Nousiainen & Malmivuo, 2013).

1.1 The importance and the purpose of the study

As a result of the analysis of the literature studies, it is seen that the use of educational videos and outside class works in engineering education is not sufficient. (Kerr, 2015; Herela, Knutas, Vanhala & Kasurinen, 2017; Maclaren, 2018). Moreover, more studies are needed to be done which will take students as a target audience (Yang & Pakala, 2017; Nguyen et al., 2017; Kleftodimos & Evangelidis, 2018).

The purpose of this study is to examine the effects of educational videos on engineering undergraduate students' laboratory applications and review their opinions. For this purpose, the answers to the questions below were sought:

(1) Do the educational videos which were developed within the scope of e-learning have an impact on the attitudes of engineering undergraduate students toward e-learning?

(2) How are the opinions of engineering undergraduate students toward educational videos which were developed within the scope of e-learning?

1.2 Developing a student-centered online learning environment for the laboratory applications in engineering education

In this study, it has been planned and aimed to contribute to a process of enriching an existing course with technology and integrate it into a ready curriculum. Therefore, the curriculum was reviewed again considering the instructional design steps, the needs have been updated, the necessary arrangements have been made in the design process and the materials have been developed. The developed materials were applied, and the assessments have been made. The development stages of the materials are shown in Figure 2.



Figure 2 The steps of developing educational video materials

1.2.1 *Preliminary*

In order to increase the visual effectiveness and have a more effective preparation for the materials, a technology that contains a green box set has been used. The green box, green curtain and green curtain legs to enable portability, light systems in the front and the sides to prevent shadows, video cameras to create quality video recording, foot brackets to fix the camera and microphone systems to improve sound quality were used.

The sets were established to the recording field therefore all the equipment was chosen carefully according to their characteristics. The positioning of the setups was adjusted by the professionals to ensure a quality recording.

All the portable equipment was carefully adjusted inside and outside of the studio to have a quality shooting. The application laboratory in which the experiments will be shot, the necessary permissions and the determination of the people on camera and behind the camera were all prepared by professionals in the preliminary step.

1.2.2 *Scenarios*

In creating the scenarios of the experiments, the application stages of the experiment were transferred into a text in accordance with the related Turkish Standards. The brainstorming technique was used in the creation process.

In the scripting stage, the professionals took care of all the visuals, implementation stages, sounds to be used, input and output videos, the effects, on-camera people and the materials that will be used in the experiment. After the scripting stage the created texts, the flow and visual works were prepared by experts.

1.2.3 *Shooting*

The shooting process was carried out by using the prepared experiment scenarios and sticking to the experiment shooting plan. During the shooting, suitable shooting angles were determined, and light adjustments were made by using the portable light set. The experiment took place in the Ege University Engineering Faculty, in the Application Laboratory of Civil Engineering. There were also professionals behind the camera.

The person on camera who was performing the experiment was selected as an expert. During the shooting of the experiment occupational safety measures were followed. It was ensured that the shooting laboratory will be empty during the shooting period.

The next stage after the shooting is editing the videos. At this stage, video editing was performed in accordance with the scenario. The video editing processes include cutting, mounting, green screen wiping, sound adding, visual adding and creating input and output videos. After the approval of 3 academic members, the edited videos were rendered.

1.2.4 Pilot trial

In the 2018-2019 Academic Year Spring Semester, in the Ege University Engineering Faculty, the experiments in the curriculum were shared via videos with the students who take the Materials of Constructions course. In this context, 5 trial videos which were prepared as Image 4 were uploaded to Web 2.0 which is an interactive video preparation tool and which keeps rating statistics.

Prepared videos were shared with the students with the Learning Management System. The trial process took seven weeks and necessary adjustments were made to create the final version of the video materials.

2. Method

In this study, the Mixed Method Pattern was used among the scientific research methods. The Mixed Method Pattern gives a detailed research potential by using quantitative and qualitative data together (Creswell, 2009). In this pattern, the quantitative and qualitative data were seen and used as a whole (Alkan, Şimşek & Erbil, 2019).

2.1 Research sample

The research sample of this study is 50 students who were studying in Ege University Engineering Faculty, Civil Engineering in the 2018-2019 Academic Year Spring Semester. The method used to select the students was simple random sampling. In simple random sampling, all the units in the universe are selected with an equal and independent probability (Büyüköztürk, Çakmak, Akgün & Karadeniz, 2017).

2.2 Data collection tool

In this study, a General Attitude Scale Towards E-Learning for Faculty of Education Students was used as the data collection tool. It was a data collection tool that was developed by Wilkinson, Roberts and While, (2010) and adopted to Turkish by Haznedar and Baran (2012). This scale consists of 20 items and has a Likert type grading. On this scale 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), 5 (Strongly Agree).

The Cronbach coefficient was calculated for reliability estimation of this scale which was adopted by Haznedar and Baran (2012). The alpha coefficient was calculated as 0.93 for 10 positive items and 0.84 for 10 negative items on this scale. The alpha was found 0.93 for a total of 20 items. The fact that this value is between 0.71 and 1 shows that this scale is quite reliable. Besides these, the data was also collected by the open-ended questions which were created by the researchers and formed with the experts' opinions.

3. Results

3.1 Research Problem 1: Do the educational videos which were developed under E-Learning have an impact on the students' attitudes towards E-Learning?

As it can be seen in Table 1 while the point average of the pretest is 53.63, the posttest point average has increased to 59.54. In order to find the significant differences, the Paired Samples t-test was performed and because $p < 0.05$ ($p = .002$) it was concluded that it is a significant difference. The significant difference between posttest and pretest is in favor of the posttest.

Table 1. The analysis results regarding pretest-posttest scores

Test	N	\bar{X}	S	t	Sd	p*
Pre-test	50	53.64	8.75			
Post-test	50	59.54	8.18	-3.299	49	.002

*p<.05

As it can be seen on Table 2, the least score between 1-10 for students learning environment is 4 and the highest score is 10. The point average regarding students' learning environment is 7.12 and the standard deviation is 1.45. The least score between 1-10 regarding students' video material is 2 while the highest score is 10.

The point average regarding students' learning environment is 6.10 and the standard deviation is 1.96. And the least score between 1-10 regarding the level of putting what they have learned into practice through video materials is 2 while the highest score is 10. The point average of students' learning environment is 6.42 and the standard deviation is 1.99.

Table 2. Instructional material and environment scores

Scored Status	N	Minimum Score	Maximum Score	Clearance	SS	Average
Learning Environment	50	4	10	6	1.45	7.12
Video Material	50	2	10	8	1.96	6.10
Put Into Practice	50	2	10	8	1.99	6.42

3.2 Research Problem 2: How are the opinions of engineering undergraduate students towards educational videos which were developed regarding E-Learning?

The students were asked "How do you think the videos you have watched under this course affected your learning process?" The answers were shown in Table 3. In the light of the analysis, 26% of the students described videos as affirmative. Also, 24% of the students found them instructional. 18% of the students said that the videos increased readiness while 12% find them embodying. 12% said memorable and the other 12% viewed them as effective.

The views of the students are as follows:

S17: "Made me more prepared for class."

S18: "The videos I watched gave me a lot of information before the experiments and I was more prepared for them. The videos affected my learning process positively."

S32: "I find the videos beneficial. They contributed to the classes and the experiments we performed."

S28: "Watching the videos before class increased my motivation and learning efficiency. The things we see for the second time made them more memorable. The videos are a reference in itself while preparing the reports."

Table 3. Affecting the learning process

<i>How do you think the videos you watched in the course affected your learning process?</i>	f	%
Positive	13	26
Instructional	12	24
Enhancing Readiness	9	18
Facilitator	8	16
Embodying	6	12
Memorable	6	12
Effective	6	12

The students were asked “How do you think about the videos you have watched in the course to be the course material? The answers were shown in Table 4. In the light of the analysis, 80% of the students find the videos affirmative. 20% of the students find them reinforcing. 16% of the students in the research find them facilitative while 8% of them find them to be beneficial. 8% of the students viewed the videos as reliable.

However, 8% of the students find the videos negative while 4% of them find them insufficient. 4% of the students in the research viewed the videos as having a sense of obligation.

Examples of students’ views are as follows:

S41: “I find it positive, we get information about our visual memory and I believe it is more permanent.”

S17: “It is more beneficial and interesting to be like this than the written material.”

S39: “I think it's a positive situation that allows us to learn about the experiment.”

S10: “I find it efficient. Theoretically, knowledge is stuck somewhere. Watching how it is done increases the memorability.”

Table 4. Opinion regarding the course material

<i>What do you think about the videos you watched in the course as used as the course material?</i>	f	%
Positive	40	80
Supportive	10	20
Facilitator	8	16
Permanent	8	16
Enhancing learning	6	12
Helpful	4	8
Reliable	4	8
Negative	4	8
Insufficient	2	4
The Feeling of Necessity	2	4

“Do you think the learning environment (Edpuzzle) where the course materials are shared was student-centered? Please explain.” The question was asked, and the answers given are shown in Table 5 by showing the frequency. In the light of the analysis, 64% of the students defined the learning environment as student-centered. In addition, 18% of the students stated that the learning environment is not student-centered. While 16% of the students participating in the research stated that the learning environment is accessible, 14% were instructive, 14% interactive,

14% applicable, 12% easy to use, 10% compulsory, 6% partially and 4% of them expressed their views on access to the learning environment.

Examples of students' views are as follows:

S1: "Yes. Students can manage the materials."

S31: "Yes, it was aimed at the student. It was simple to use, easy and convenient."

S48 "Yes, it provides great convenience in accessing course materials"

S4: "Yes. The application was very successful with easy access and the opportunity to watch the videos again.

Table 5. Views regarding the learning environment

<i>Do you think the learning environment (Edpuzzle) where the course materials were shared was student-centered? Explain.</i>	f	%
Yes	32	64
Accessible	8	16
Instructive	7	14
Interactive	7	14
Applicable	7	14
Easy to Use	6	12
No	9	18
Required	5	10
Access	2	4
Partially	3	6

The question of "Complete the sentence as the video-supported materials progress at my pace..." was asked to the students and the answers given are shown in Table 6 by showing the frequency. In the light of the analysis, 42% of the students completed the sentence as "it enabled me to understand permanently." In addition, 26% of the students completed it as "I learned easily." While 20% of the students participating in the study stated that their willingness to learn increased, 10% stated that they provided course follow-up, 6% stated that interaction increased and 4% stated that following was difficult.

Students completed the sentence as follows:

S32: "I watched the videos carefully and was able to make the necessary comments."

S31: "I had no trouble following."

S36: "I could learn the information in the video more easily."

S40: "I had the opportunity to rewind whenever I wanted."

Table 6. Video course materials and individuality

<i>Complete the sentence as “Video-supported materials are progressing at my pace...”.</i>	f	%
It provided permanent understanding	21	42
I learned comfortably	13	26
Increases Learning Willingness	10	20
It provided me to track course	5	10
My Interaction Increased	3	6
It was difficult to follow	2	4

“What was the most interesting thing about the videos with Digital Course Material (DCM)?” and the answers given are shown in Table 7 by showing the frequency. In the light of the analysis, 26% of the students answered about the performance of the experiment. In addition, 16% of the students stated that it was interesting. 12% of the students participating in the study stated that they were interested in being a source of information, while 12% stated that they were interested in being course materials, 12% being able to turn into practice and 6% being comfortable.

Examples of students’ views are as follows:

“The most interesting thing in the videos was the processing of the topics that exactly correspond to my future profession and their transfer to me already.”

S37: “Showing the narrated objects together.”

S9: “It was that it was accessible anywhere, anytime.”

S13: “It was useful to see a subject that we covered in the course put into practice. It was especially interesting to watch the cement experiment.”

S40: “The most interesting thing was that the experiments were done step by step and by establishing the cause-effect relationship in the videos which are digital course material.”

Table 7. Student interest in digital course materials

<i>What attracted you the most about the Digital Course Material (DCM) videos?</i>	f	%
Experimental Procedure	13	26
Being Interesting	8	16
Being a Source of Information	6	12
Course Materials	6	12
Becoming a Practice	6	12
Being comfortable	3	6

“Do you think DCMs are suitable for civil engineering? Why is that?” The question was asked, and the answers given are shown in Table 8 by showing the frequency. In the light of the analysis, 76% of the students answered yes. In addition, 20% of the students stated that they were instructors. 16% of the students participating in the study stated practical, 12% course reinforcement, 12% efficient, 6% modern, 6% no, 6% traditional learning and 4% visually.

Sample expressions from students’ views are as follows:

S40: “It is appropriate, and it should be used more frequently in other courses. Civil engineers must be people who can think in 3D and envision events. These DCMs increase the visuals.”

S41: “Yes, I think it is suitable. Because it brings to mind a subject whose theory we see in the course with videos.”

S7: “Yes, it is useful in seeing the experiment being done.”

S2: “DCMs are suitable for every course, every engineering or department. The ability to visualize and repeat information is a great advantage.”

Table 8. Digital course materials in civil engineering

<i>Do you think DCMs are suitable for civil engineering? Why is that?</i>	f	%
Yes	38	76
Instructive	10	20
Practical	8	16
Reinforcing	6	12
Efficient	6	12
Modern	3	6
No	3	6
Traditional Learning	3	6
Visual	2	4
Infrastructure	2	4
Partially	2	4

“How did the instructor’s use of this DCM affect your motivation for the Course? The question was asked, and the answers given are shown in Table 9 by showing the frequency. In the light of the analysis, 68% of the students stated that it affected positively. In addition, 44% of the students stated that it increases motivation. 18% of the students participating in the study stated that it increased learning, 12% was negative, 12% did not motivate, 10% was interesting, 4% was indecisive, and 2% provided focus.

Sample expressions from students’ views are as follows.

S18: “It has increased my motivation for the course.”

S41: “It made the course more interesting and added color to the existing order. Course lecture colored with visuals may be preferred than a course where we constantly see articles.”

S14: “It has increased my motivation because it makes me understand more easily.”

S32: “My motivation for the course has increased as we experience the theoretical information, we learned in the courses visually.”

Table 9. Student motivation in digital course materials

<i>How did the instructor’s use of this DCM affect your motivation for the Course?</i>	f	%
Positive	34	68
It Increased My Motivation	22	44
It Increased My Learning	9	18
Negative	6	12
It did not motivate	6	12
Interesting	5	10
Hesitant	2	4
It made me focus	1	2

4. Conclusion and discussion

Within the scope of the research about the effects of educational videos on engineering undergraduate students' laboratory applications and its examination of opinions, the effect of educational videos and the developed learning environment on attitude towards e-learning in engineering education was examined. In addition, student views on the online learning environment developed were also examined within the scope of the research.

Today, engineering laboratory applications are supported by using technological tools such as videos, simulations, virtual reality applications. In our project, the laboratory applications of a course opened in the civil engineering department were prepared using appropriate techniques as video learning materials and digital course materials, and the student's attitude towards the digital course material was questioned through this sample material presented to the student. The pretest and posttest performed in this study were found to be significantly different in favor of the posttest as a result of the Paired Samples T test analysis ($p=0.02$). This result reveals that online learning environments and educational videos in engineering education positively affect students' attitudes.

This result supports the studies in the literature (Dharmadhikari, 2011; Kay & Kletskin, 2012; Rhema & Miliszewska, 2014; Chao, Chen & Chuang, 2015). In addition, the students stated that they found 80% positive to the open-ended question asked about how they found the learning materials. This situation also showed that the students gained positive qualities in the process.

It was concluded that the students' average score for the learning environment used within the scope of this study was approximately 7 over 10. This shows that the students are satisfied with the learning environment above average. In addition, students' scores for educational video materials used as content in the learning environment appear to be approximately 6. In the light of this scoring, it is concluded that the students are generally satisfied with the video materials. However, the level of applying what students learn from the online learning environment is about 6.5 out of 10.

Within the scope of this research, it was concluded that educational videos affect the learning process in a useful and instructive way. This result is in parallel with other studies in the literature (Simo et al., 2010; Violante & Vezzetti, 2014; Granjo & Rasterio, 2018). The use of educational videos prepared within the scope of the research as course material was welcomed by the students. In addition, the students found it safe to use educational videos as course material. This result supports the studies found in the literature (Jackson et al., 2013; Zanelidin, Ahmed & El-Arris, 2019).

When the opinions about the learning environment used for the sharing of course materials within the scope of the research are examined, it is concluded that the learning environment is student-centered; The results are also accessible, instructive and interactive. When the opinions about the educational videos progress according to individual speed, it is concluded that individuality provides permanent understanding in students. In addition, it was concluded that the students could easily perform the learning process and their willingness to learn increased. This result fits with other results in the literature (Dharmadhikari, 2011; Wagner, Laforge & Cripps, 2013; Violante & Vezzetti, 2014; Carbonell & Pons, 2014; Granjo & Rasterio, 2018). Transferring the experimental processes carried out in engineering education with educational videos will increase the attractiveness of the Digital Course Material. However, it was concluded that these Digital Course Materials are suitable for civil engineering laboratory education. The factors affecting this eligibility are being instructive, practical, reinforcing and efficient.

The instructor's use of educational videos, which are Digital Course Materials, positively affects the motivation of the students to the course. This result is in line with other studies in the literature (Dharmadhikari, 2011; Wagner, Laforge & Cripps, 2013; Violante & Vezzetti, 2014; Carbonell & Pons, 2014; Månsson, Löfgreen & Warfvinge, 2017).

It is expected that the results of the study will be facilitated by the help of digital course materials, primarily for the relevant courses of our engineering faculty, and then in our other laboratories serving these faculties. In the light of the results of this study, it is recommended to conduct a wider study with the participation of other relevant units, especially in engineering education. The work outcomes are important in terms of interdisciplinary impact in education and engineering.

The outputs of this research are also important in terms of helping/supporting the production and sharing of ready-made materials against unexpected situations such as pandemic (epidemic) periods.

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References

- Alkan, V., Şimşek, S., & Armağan Erbil, B. (2019). Hash method: Story field print review. *Journal of Qualitative Research in Education*, 7(2), 558-581. <https://doi.org/10.14689/ISSN.2148-2624.1.7c.2s.5m>
- Brame, C. J. (2016). Effective educational videos: Principles and guidelines for maximizing student learning from video content. *CBE—Life Sciences Education*, 15(4), es6.
- Büyüköztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2017). *Scientific research methods*. Pegem Akademi.
- Carbonell, M. R. E., & Pons, J. V. (2014, October). Open educational resources for enhancing the learning of calculus in engineering education: Last improvements: Televoting system and specific thematic math videos. In *2014 IEEE Frontiers in Education Conference (FIE) Proceedings* (pp. 1-8). IEEE.
- Chao, C. Y., Chen, Y. T., & Chuang, K. Y. (2015). Exploring students' learning attitude and achievement in flipped learning supported computer-aided design curriculum: A study in high school engineering education. *Computer Applications in Engineering Education*, 23(4), 514-526.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3. Baskı). Thousand Oaks, CA: Sage.
- Dharmadhikari et al. (2011). Create educational lesson videos compatible with the streaming server using low-cost resources. *IEEE International Educational Technologies Conference* (pp. 116-120). IEEE.
- Domingues, L., Rocha, I., Dourado, F., Alves, M., & Ferreira, E. C. (2010). Virtual laboratories in (bio) chemical engineering education. *Education for Chemical Engineers*, 5(2), e22-e27.

- Fernandez, V., Simo, P., Algaba, I., Albareda-Sambola, M., Salan, N., Amante, B., ... & Rajadell, M. (2011). Low-cost educational videos' for engineering students: a new concept based on video streaming and Youtube channels. *International Journal of Engineering Education*, 27(3), 518.
- Ferreira, E. C. (2004). Blended learning in bioprocess systems engineering education: issues, methods, and applications. In *ESCAPE-14: European Symposium on Computer-Aided Process Engineering* (pp. 16-19).
- Fiorella, L., & Mayer, R. E. (2018). What works and doesn't work with instructional video. *Computers in Human Behavior*, 89, 465-470.
- Granjo, J. F., & Rasteiro, M. G. (2018). LABVIRTUAL—A platform for the teaching of chemical engineering: The use of interactive videos. *Computer Applications in Engineering Education*, 26(5), 1668-1676.
- Haznedar, Ö., & Baran, B. (2012). A study to develop a general scale of attitude towards e-learning for education faculty students. *Educational Technology Theory and Application*, 2(2), 42-59.
- Iqbal, S., Zang, X., Zhu, Y., Chen, Y. Y., & Zhao, J. (2014, December). On the impact of MOOCs on engineering education. In *2014 IEEE International Conference on MOOC, Innovation, and Technology in Education (MITE)* (pp. 101-104).
- Jackson, N., Quinn, D., Lonie, A., Rathore, P. & James, P. (2013). Video in engineering courses to promote active online learning environments. In *Proceedings of A2E2 conference Gold Coast*. Online access: <https://www.engineersaustralia.org.au/australasian-association-engineering-education/2013-annualconference>.
- Kay, R., & Kletskin, I. (2012). Evaluating the use of problem-based video podcasts to teach mathematics in higher education. *Computers & Education*, 59(2), 619-627.
- Kerr, B. (2015, September). The flipped classroom in engineering education: A survey of the research. In *2015 International Conference on Interactive Collaborative Learning (ICL)* (pp. 815-818). IEEE.
- Kleftodimos, A., & Evangelidis, G. (2018, April). Augmenting educational videos with interactive exercises and knowledge testing games. In *2018 IEEE Global Engineering Education Conference (EDUCON)* (pp. 872-877). IEEE.
- Maclaren, P. (2018). How is that done? Student views on resources used outside the engineering classroom. *European Journal of Engineering Education*, 43(4), 620-637
- Månsson, J., Löfgreen, J., & Warfvinge, P. (2017). Effective use of video in engineering education. In *6: e Utvecklingskonferensen för Sveriges ingenjörutbildningar, Chalmers tekniska högskola*, 22-23 November 2017 (pp. 94-96). Chalmers tekniska högskola.
- Marques, J. C., Quintela, J., Restivo, M. T., & Trigo, V. (2012, September). The use of video clips in engineering education. In *2012 15th International Conference on Interactive Collaborative Learning (ICL)* (pp. 1-4). IEEE.
- Mayer, R. E. (2009). *Multimedia learning*. Cambridge: Cambridge University Press.
- Nguyen, K. A., Husman, J. E., Borrego, M. J., Shekhar, P., Prince, M. J., & Demonbrun, M. (2017). Students' expectations, types of instruction, and instructor strategies predicting student response to active learning. *AERA Online Paper Repository*.
- Pedrotti, M., & Nistor, N. (2014, July). Online lecture videos in higher education: Acceptance and motivation effects on students' system use. In *2014 IEEE 14th International Conference on Advanced Learning Technologies* (pp. 477-479). IEEE.
- Rhema, A., & Miliszewska, I. (2014). Analysis of student attitudes towards e-learning: The case of engineering students in Libya. *Issues in informing science and information Technology*, 11, 169-190.

- Saar, M., Kusmin, M., Laanpere, M., Prieto, L. P., & Rüttemann, T. (2017, April). Semantic annotations and teaching analytics on lecture videos in engineering education. In *2017 IEEE Global Engineering Education Conference (EDUCON)* (pp. 1548-1551). IEEE.
- Shephard, K. (2003). Questioning, promoting, and evaluating the use of streaming video to support student learning. *British Journal of Educational Technology*, *34*(3), 295-308.
- Simo, P., Fernandez, V., Algaba, I., Salan, N., Enache, M., Albareda-Sambola, M., ... & Rajadell, M. (2010). Video stream and teaching channels: quantitative analysis of the use of low-cost educational videos on the web. *Procedia-Social and Behavioral Sciences*, *2*(2), 2937-2941.
- Toto, R., & Nguyen, H. (2009, October). Flipping the work design in an industrial engineering course. In *2009 39th IEEE Frontiers in Education Conference* (pp. 1-4). IEEE.
- Violante, M. G., & Vezzetti, E. (2014). Implementing a new approach for the design of an e-learning platform in engineering education. *Computer Applications in Engineering Education*, *22*(4), 708-727.
- Wagner, D., Laforge, P., & Cripps, D. (2013). Lecture material retention: A first trial report on flipped classroom strategies in electronic systems engineering at the University of Regina. *Proceedings of the Canadian Engineering Education Association (CEEAA)*.
- Wilkinson, A., Roberts, J., & While, A. E. (2010). Construction of an instrument to measure student information and communication technology skills, experience, and attitudes to e-learning. *Computers in Human Behavior*, *26*, 1369-1376.
- Yang, D., & Pakala, K. (2017). *Building an effective online thermodynamics course for undergraduate engineering students*. Online assess: https://scholarworks.boisestate.edu/cgi/viewcontent.cgi?article=1169&context=edtech_facpubs.
- Zaneldin, E., Ahmed, W., & El-Ariss, B. (2019). Video-based e-learning for an undergraduate engineering course. *E-Learning and Digital Media*, *16*(6), 475-496.





Examination of Turkish Language Teachers’ Self-Efficacy Perceptions of Teaching Thinking Skills in Terms of Various Variables

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Abstract

The aim of this study was to examine Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills in terms of the variables of age, professional experience, educational status, and taking course on thinking skills. The screening model was used in the study. The current pandemic process was taken into account and the convenience sampling method was used while determining the study group. Turkish Language teachers forming the study group consisted of 109 females and 68 males. “Teachers’ Self-efficacy towards teaching thinking scale” was used as the data collection tool. The data of the study were analyzed using the statistical package program. In conclusion, no significant difference was found between the Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills and gender. It was concluded that Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills differed according to professional experience. It was concluded that there was no significant difference between Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills and their educational status. It was concluded that there was a significant difference between Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills and taking course on thinking skills.

Keywords: Teaching thinking skills, Turkish Language teacher, self-efficacy.

1. Introduction

While thinking is an important skill that sets humans apart from other living beings and creatures, it is usually an act that we do daily without being aware of what we do. When we encounter a problem in daily life, we have to propose a solution to that problem or make a choice among existing solutions, when we read or listen to a text, we have to reach new meanings from what the author/speaker presents to us, arrange and assess our existing knowledge, reaching at a conclusion. In this context, thinking is actually an action that is at the center of our lives. In other words, thinking could be a complicated process while most of the simple decisions that we take, what we feel, do, and want in daily life emerge and are shaped as a part of our thinking ability.

Eğmir (2018) describes thinking as an action of examination people conduct towards experiences they gain during their lives. As a result of this examination, people display one of understanding, deciding, planning, problem solving, making judgment or taking action behaviors. In this sense, thinking refers to both a process and a product that must be achieved at the end of

this process. According to Özden (2003), thinking is the disciplined way of conceptualizing, applying, analyzing, and assessing knowledge gathered with observation, experience, perception, reasoning, and other channels. Timuçin (2004) defines thinking as the mind’s act of studying and comparing concepts and ideas while accepting thinking as creating ideas by comparing concepts, deriving results from judgments by comparison and the ability to exhibit a judgment or opinion. The concept of thinking with broad scope and boundaries covers types of thinking such as creative thinking, critical thinking, problem solving, reflective thinking, and reflection (Akbiyık & Kalkan Ay, 2014: 2). When definitions are considered, it could be argued that thinking is a process whereby individuals arrive at judgment by conducting certain logical procedures. In order for individuals to form relationships between certain concepts, situations, and events and lead comfortable lives, they need to think and create thoughts.

Although the problem of accessing knowledge seems disappeared nowadays, during which the ways to access knowledge have increased, it has brought along other needs and problems, as well. The inclusion of technological tools in our daily lives has enabled us to reach more than one knowledge on the same subject, which has also increased the speed of transportation. Reaching information about a subject that is more than necessary and the accuracy and reliability of which is uncertain has required the development of basic skills of individuals such as critical thinking, decision making, and discussion. The constantly developing and improving knowledge sources in life necessitated understanding of training, thus schools also change. Schools lost their edge of being the only source where knowledge is accessed to and learned. It is considered that in the process of training, it is important for students who experience the ways of accessing knowledge in their social life to gain and develop the thinking skills that will enable them to use the knowledge they have reached through mental processes in a functional way. According to Taşdelen (2017: 8) training of knowledge and sciences does not go beyond being an inefficient memorizing and a mere self-consuming effort unless it transforms into a thinking training and is blended with it. According to Gelen (2002: 102) although thinking is as old as humans, the efforts to systematically apply it to training are quite recent. Thinking is present at everywhere, every step of training and learning without thinking does not go beyond conditioning. In this context, it could be argued that introducing students to activities geared towards improving their thinking skills at training environment is now an obligation. Students must be raised as individuals that question and assess the world they live in, improve their language and mental skills, and apply them in various areas. The way to do this is through thinking training (Güneş, 2012: 130). The most important aim of modern education systems is bringing up individuals that think, can learn by oneself, apply what is learned and transfer by supporting this property of children (Mutlu & Aktan, 2011: 800). Various opinions and studies towards improving thinking have been brought forward since old ages. In such studies it was aimed to make thinking skills of individuals more effective to increase their quality of life and help humans understand the nature, themselves, and their environment much better (Tok & Sevinç, 2010: 68).

Brandt (1985) expresses thinking skills training in three main components. The first one is “*teaching for thinking*”. Teaching of thinking means creation of teaching-learning environments by teachers and administrators that would direct students into thinking. The second one is “*teaching of thinking*”. Teaching of thinking is teaching thinking skills in the framework of a teaching program. In teaching of thinking it is more effective to teach thinking skills by relating to a subject (from 1985, as cited in Seferoğlu and Akbiyık, 2006).

Beyer (1983) expresses those three main components are required in teaching of thinking skills. These are (as cited in French and Rhoder, 2011: 263):

- 1) A supportive learning environment that allows taking risks and goes beyond content;
- 2) Systematic, direct, integrative and developmental education;

3) A program that allows for development of thinking skills across the curriculum and presents teacher effective knowledge.

Choosing correct approach in teaching of thinking skills is important in the context of success of teaching thinking skills. However, qualifications of teacher that is the executor of program is also an important factor in the success of the program as well as teaching of thinking skills program (Dilekli & Tezci, 2015). Behaviors of teachers are also important for students to develop their thinking skills. Teachers must spend conscious efforts to support development of thinking. This effort must not be in a didactic teaching style explaining how students must think. In order to support development of thinking skills, teachers must introduce students to content that would motivate them to think and to duties that would encourage them to think. Thus, it is very important that teachers recognize thinking skills, notice importance of such skills, and plan how they can encourage in their classes students to think. McGregor (2007), mentions teacher behaviors who would like to improve thinking skills such as:

- Presenting open and challenging duties that allow students to think;
- Encouraging students to use knowledge they have learned in thinking processes;
- Creating cooperative groups and qualified communication environments;
- Enabling students to talk about how they perform duties towards developing their thinking skills;
- Knowing that students may have different levels of thinking skills.

Teacher qualifications, attitudes and behaviors are of great importance in the teaching of thinking skill. Considering the relationship between language and thinking, it could be said that it is important for Turkish Language teachers to have such qualities for development of language and thinking skills of students. There is a supportive and mutual relationship between language skills and thinking skill. Development of reading and listening among understanding skills, writing and speaking among narrative skills determine quality of thinking skills of individuals while development of thinking skill determines quality of language skills. According to Güneş (2012), all thoughts created in the process of thinking are transferred through language. Thus, language is not just a simple communication tool but also a tool and carrier of thinking. Yapar Gönenç and Bozkurt (2017), emphasizes that good thinking is good expressing thus, mention that justifying, moving from premise to conclusion, uniting thoughts in a certain order, deducing, proving, comparing, documenting that come to mind with thinking could be realized through language. This dual and solid relationship between language and thinking proves Turkish lessons cannot be independent of thinking skills. In this context, next to associating teaching programs of Turkish class with thinking skills; knowledge, skills, and perceptions of Turkish Language teachers regarding thinking skills and teaching of thinking skills also come forward.

In the literature, there are studies attempting to determine teachers and preservice teachers' general attitudes, perceptions, and opinions on thinking skills. When the studies on thinking skills and the teaching of thinking skills are were evaluated, there were no studies to determine the perceptions of teachers and preservice teachers on thinking skills and teaching thinking skills, their in-class practices and awareness (Akbiyık & Kalkan Ay, 2014; Dilekli, 2015; Ekinci & Tican, 2017; Aslan, 2017). It is noted that there are studies to determine the views, tendencies and perceptions of teachers and preservice teachers on critical thinking skills and teaching these skills (Korkmaz, 2008; Palavan, Gemalmaz & Kurtoğlu, 2015; Koç Erdamar & Bangir Algan, 2017). Similarly, in the literature there are studies on determining problem solving and reflective thinking skills of teachers and preservice teachers and their views, perceptions and attitudes towards teaching these skills (Demirtaş & Dönmez, 2008; Duban & Yanpar Yelken, 2010;

İnel, Evrekli & Türkmen, 2011; Kaf Hasırcı & Sadık, 2011; Durdukoca & Demir, 2012; Alkan & Gözel, 2013; Bağçeci & Kinay, 2013; Ocak & Eğmir, 2014; Erdem & Yazıcıoğlu, 2015; Dilekli & Orakcı, 2019; Erol, Erol, Çalışır & Bozan, 2019).

In the literature, there are studies on determining the opinions, attitudes and tendencies towards critical and reflective thinking skills of Turkish Language teachers and preservice teachers (Şen, 2009; Durukan & Maden, 2010; Şahin, 2011; Çetinkaya, 2011; Bağcı & Şahbaz, 2012; Çarkıt & İplik, 2019), however, no studies examining the perceptions, attitudes, opinions and self-efficacy towards teaching thinking skills were found.

While the self-efficacy perception refers to people's perceptions of their own abilities, it has a determining effect on their feelings, thoughts, motives and behaviors (Ülper & Bağcı, 2012). When self-efficacy is considered in terms of teachers, it can be expressed as a teacher's judgment about whether he/she can produce the desired results such as commitment and learning in students with his/her skills (from Tschannen-Moran & Woolfolk Hoy, 2001 as cited in Demirtaş, Cömert & Özer, 2011). Turkish Language teachers' knowledge, skills and experiences on thinking skills are necessary and important for the teaching of thinking skills. However, theoretical knowledge alone is not sufficient for teaching thinking skills. Thus, Turkish Language teachers should have self-efficacy for teaching thinking skills.

In this context, the aim of the study was to determine Turkish Language teachers' self-efficacy perceptions of the teaching of thinking skills. Based on the aim of the study, answers to the following questions were sought:

- 1) What are Turkish Language teachers' self-efficacy perceptions of teaching thinking skills according to the gender variable?
- 2) What are Turkish Language teachers' self-efficacy perceptions of teaching thinking skills according to their professional experience?
- 3) What are Turkish Language teachers' self-efficacy perceptions of teaching thinking skills according to their educational status?
- 4) What are Turkish Language teachers' self-efficacy perceptions of thinking skills according to taking course on thinking skills?

2. Method

In this section, information is given about the research model, the study group of the research, data collection and data analysis.

2.1 Research model

The screening model was used in this study, which aimed to examine Turkish Language teachers' self-efficacy perceptions of teaching thinking skills in terms of various variables. Screening is a research model that aims at determining a situation that existed in the past or continues to exist currently as it is. The aim of screening studies is usually to make a description by taking a picture of the current situation related to the research subject (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2013; Karasar, 2020).

2.2 Study group

The convenience sampling was used to determine the sample of the study due to the current pandemic process. Convenience sampling is a method that prevents the waste of time. The

researcher creates the sample starting from the most accessible respondents until he/she reaches a group of the size he/she needs (Büyüköztürk et al., 2013: 92).

Table 1. Characteristics of the study group

Variables	Qualities	f	%
Gender	Female	109	61.6
	Male	68	38.4
Professional experience	1-5 years	21	11.9
	6-10 years	68	38.4
	11-15 years	40	22.6
	16-20 years	34	19.2
	21 and more	14	7.9
Educational status	Bachelor's degree	119	67.2
	Doing a master's degree	33	18.6
	Graduate of master's degree	16	9.1
	Doing a PhD	9	5.1
Taking course on thinking skills	Yes	109	61.6
	No	68	38.4

2.3 Data collection tools

The “Personal Information Form” (PIF) prepared by the researcher and the “Teachers’ Self-efficacy towards teaching thinking scale” developed by Dilekli and Tezci (2015) were used to determine the self-efficacy perceptions of teaching thinking skills of Turkish Language teachers who constituted the sample of the study.

The personal information form included questions to determine Turkish Language teachers’ gender, professional experience, educational status, and taking courses on thinking skills during their education (undergraduate, master’s degree, doctorate).

The “Teachers’ Self-efficacy towards teaching thinking scale” is a 5-point Likert scale and consists of 20 items. In the scale, the statements of “strongly agree” (5) and “agree” (4) were used for positive items, and the statements of “strongly disagree” (1) and “disagree” (2) were used for negative items. The statement of “undecided” was used for the items without a positive or negative opinion. The scale consists of “Academic competence”, “Application” and “Design” sub-dimensions. Dilek and Tezci (2015) determined the Alpha reliability coefficient of the overall scale as .95. In this study, the Alpha reliability coefficient of the scale was determined as .96.

2.4 Data collection and analysis

In the data collection process of the study, the scale was not delivered to the participants face to face by considering the current pandemic process. The information form, the data collection tool of the study, the scale, and the measurement tool with brief information about the study and the consent for participation in the study were transferred to the Google Forms environment. Participants were informed that participation in the study was on a voluntary basis. The link created via Google Forms was shared with teacher groups in the virtual environment (such as Facebook, Whatsapp, Instagram). The data collection process was terminated when it was observed that participation in the questionnaire was completed. The data collection process took 7 days.

The data of the study were analyzed using the statistical package program. In the analysis process, whether the data obtained from the scale were normally distributed was first checked. The condition of the data meeting the normality assumptions was decided by evaluating

the Kolmogorov Smirnov test. Parametric tests were used for the data with normal distribution, and nonparametric tests were used for the data without normal distribution. In the analysis of the data with normal distribution, the T-test for Independent Samples was used in cases with two samples, and for the data without normal distribution, Mann Whitney U test was used in cases with two independent samples, and the data were analyzed by Kruskal Wallis Test in cases with more than two independent samples.

3. Results

This section includes the results on whether there was a significant difference between Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills according to the variables of gender, professional experience, educational status, and taking courses on thinking skills.

The results of the Mann Whitney U Test, in which Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills were examined according to gender, are presented in Table 2.

Table 2. Mann Whitney U test results of Turkish language teachers’ self-efficacy perceptions of teaching thinking skills according to gender variable

Gender	n	\bar{X}	SD	U	p
Female	109	87.54	9541.50	3546.500	.630
Male	68	91.35	6211.50		

According to Table 2, while the arithmetic mean of the score indicating female Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills was 87.54, it was 91.35 among male Turkish Language teachers. When the mean scores of male and female Turkish Language teachers were evaluated, although it was observed that the mean score of male teachers was higher, this difference was not statistically significant. Therefore, there was no significant difference between Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills and gender ($U=3546.500$, $p<.05$). In this case, it can be said that gender had no effect on Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills.

The results of the Kruskal Wallis test, in which Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills were examined according to professional experience, are presented in Table 3.

Table 3. Kruskal Wallis test results of Turkish language teachers’ self-efficacy perceptions of teaching thinking skills according to professional experience variable

Professional experience	n	Mean Rank	SD	X ²	p
1-5 years	20	92.43	4	14.515	.006
6-10 years	67	80.07			
11-15 years	39	111.13			
16-20 years	38	73.79			
21 years and more	13	107.81			

According to Table 3, Turkish Language teachers’ self-efficacy perceptions of teaching thinking skills differed according to their professional experience ($p<.05$). However, it can be said that this difference was not related to the duration of the experience. While the mean score of teachers with 1-5 years of experience was 92.43, the mean score of teachers with 6-10 years of experience was 80.07, the mean score of teachers with 11-15 years of experience was 111.73, the mean score of teachers with 16-20 years of experience was 73.79, and the mean score of teachers

with 21 years/more years of experience was 107.81. Based on the mean scores, it can be said that teachers with less and more experience had higher self-efficacy perceptions.

The results of the Kruskal Wallis Test, in which Turkish Language teachers' self-efficacy perceptions of teaching thinking skills were examined according to their educational status, are presented in Table 4.

Table 4. Kruskal Wallis test results of Turkish Language teachers' self-efficacy perceptions of teaching thinking skills according to the graduation status variable

Educational status	n	Mean Rank	SD	X ²	p
Bachelor's degree	118	86.70	3	2.179	.536
Doing a master's degree	33	88.97			
Graduate of master's degree	16	92.16			
Doing a PhD	10	111.20			

According to Table 4, it was observed that there was no significant difference between Turkish Language teachers' self-efficacy perceptions of teaching thinking skills and their graduation status ($p > .05$). Based on this result, it can be said that the graduation status of Turkish Language teachers did not affect their self-efficacy perceptions of teaching thinking skills. Although there was no significant difference between Turkish Language teachers' self-efficacy perceptions of teaching thinking skills and their graduation status, Turkish Language teachers doing a PhD had a mean score of 111.20, those with master's degree had a mean score of 92.16, those doing a master's degree had a mean score of 88.97, and those with bachelor's degree had a mean score of 86.70. In this context, although there was no statistically significant difference between Turkish Language teachers' educational status and their self-efficacy perceptions of teaching thinking skills, it can be stated that mean score of self-efficacy perceptions of teaching thinking skills increased as the level of education increased.

The results of T-test for Independent Samples, in which Turkish Language teachers' self-efficacy perceptions of teaching thinking skills were examined according to taking course on thinking skills, are presented in Table 5.

Table 5. T-test for Independent Samples results of Turkish Language teachers' self-efficacy perceptions of teaching thinking skills according to the variable of taking course on thinking skills

	Groups	n	\bar{X}	SD	T	p
Overall	Yes	109	83.08	11.83	3.317	.001
Average	No	68	76.67	13.50		

When Table 5 was examined, it was observed that there was a significant difference between Turkish Language teachers' self-efficacy perceptions of teaching thinking skills and taking course on thinking skills ($t(175)=3.317, p < .05$). While the mean score of the Turkish Language teachers who took courses on thinking skills was 83.08, the mean score of the Turkish Language teachers who did not take it was 76.67. It was determined that this difference between the mean scores was due to the significant difference in favor of those who took courses on thinking skills in Turkish Language teachers' self-efficacy perceptions of teaching thinking skills. Therefore, it can be said that Turkish Language teachers taking courses on thinking skills positively affected their self-efficacy perceptions of teaching thinking skills.

4. Discussion and conclusion

In this study, Turkish Language teachers' self-efficacy perceptions of teaching thinking skills were examined according to gender, professional experience, educational status, and taking courses on thinking skills. This section includes the results of the study, and the discussion of the results together with the relevant studies.

It was determined that the mean score of Turkish Language teachers' self-efficacy perceptions of teaching thinking skills was 91.35 for male teachers and 87.54 for female teachers. Although the mean score of male Turkish Language teachers was higher compared to female teachers, it was concluded that this difference did not constitute a statistically significant difference. No significant difference was found between the Turkish Language teachers' self-efficacy perceptions of teaching thinking skills and gender. No study on Turkish Language teachers' self-efficacy perceptions of teaching thinking skills was found in the literature, however, it was observed that there were studies examining Turkish Language teachers' self-efficacy. Saracaloğlu, Karasakaloğlu and Evin Gencil (2010) and Şahin (2019) concluded that Turkish Language teachers' self-efficacy did not differ according to gender.

In the studies examining classroom teachers' self-efficacy perceptions of teaching thinking skills, it was also concluded that there was no significant difference between classroom teachers' self-efficacy perceptions of teaching thinking skills and gender (Aslan, 2017; Dilekli, 2015). According to Ekinçi and Tican (2017), there was no significant relationship between classroom teachers' in-class practices for thinking skills and gender. While Dinçer Göbel (2013) found that there was no significant relationship between teaching critical thinking skills of classroom teachers and gender, Gelen (2002) found that there was no significant relationship between their abilities to gain thinking skills and gender.

It was observed that similar results were obtained in the studies examining the self-efficacy perceptions of teachers and preservice teachers. While Aslan and Kalkan (2018) reported that there was no significant relationship between teachers' self-efficacy perceptions and gender, Baykara (2011) reported that there was no significant relationship between preservice teachers' self-efficacy perceptions and gender. Ülper and Bağcı (2012) determined that professional self-efficacy perception scores of preservice Turkish Language teachers did not make a significant difference according to gender, however, there was a significant difference in favor of female students in the sub-dimension of private content knowledge. It was also observed that different results were achieved in few studies examining self-efficacy perceptions of teachers and preservice teachers compared to this study. Selçuk (2013) determined that there was a significant difference in favor of female teachers between Turkish Language teachers' special field competencies and gender. Çapri and Çelikkaleli (2008) concluded that the self-efficacy perceptions of preservice teachers made a significant difference in favor of female preservice teachers. Yeşilyurt (2013) and Demirtaş, Cömert and Özer (2011) found that male preservice teachers had higher self-efficacy perceptions compared to female preservice teachers. In their study, Coşkun, Gelen and Öztürk (2009) examined preservice Turkish Language teachers' self-efficacy perceptions of instructional planning, implementation and evaluation, they found that male students' mean perception of efficacy was higher compared to female preservice teachers, however, this result did not lead to a statistically significant difference.

It was concluded that Turkish Language teachers' self-efficacy perceptions of teaching thinking skills differed according to professional experience. While the mean score of teachers with 1-5 years of experience was 92.43, the mean score of teachers with 6-10 years of experience was 80.07, the mean score of teachers with 11-15 years of experience was 111.73, the mean score of teachers with 16-20 years of experience was 73.79, and the mean score of teachers with 21 years/more years of experience was 107.81. When the mean scores were examined, it was observed that Turkish Language teachers with the highest self-efficacy perceptions of teaching thinking

skills were the teachers with 11-15 years of experience, and those with the lowest self-efficacy perceptions were the teachers with 16-20 years of experience. Teachers' self-efficacy perceptions of teaching thinking skills are expected to increase as professional experience increases. However, it can be said that the results of the study did not meet this expectation. It was concluded that teachers' self-efficacy perceptions of teaching thinking skills were not directly associated with having less or more professional experience. In this case, it can be stated that the individual efforts and wishes of teachers are important. Aslan (2017) concluded that there was no significant difference between classroom teachers' self-efficacy perceptions of teaching thinking skills and their professional experiences. Ekinçi and Tican (2017) indicated that there was no significant difference between classroom teachers' practices for thinking skills and their professional experience, however, the mean of teachers with 11-20 years of professional experience was higher. Dilekli (2015) determined that there was a significant difference between teaching thinking skills and professional seniority and stated that professionally experienced teachers included more in-class activities for teaching thinking skills, and therefore, teachers with more professional experience also had higher self-efficacy levels for teaching thinking skills. Selçuk (2013) reported that there was no significant difference between the critical thinking skills of Turkish Language teachers and their professional experience, however, the mean score increased as the duration of experience increased.

Korkmaz (2008) examined teachers' critical thinking dispositions and levels and concluded that teachers' professional experience did not affect their critical thinking dispositions and levels. In their study, Demirtaş and Dönmez (2008) examined secondary school teachers' perceptions of problem-solving skills and determined that their perceptions of problem-solving skills decreased as their professional experience increased. In their study, Durdukoca and Demir (2012) attempted to determine the reflective thinking levels of primary school Turkish Language and Mathematics teachers and found that there was no significant relationship between teachers' reflective thinking levels and their professional experiences. Saracaloğlu et al. (2010) examined self-efficacy perceptions of Turkish Language teachers and the professional experiences of Turkish Language teachers did not affect their self-efficacy perceptions. Aslan and Kalkan (2018) found that there was a significant difference between teachers' self-efficacy perceptions and their professional experience in favor of teachers with more professional experience. Dinçer and Göbel (2013) concluded that there was a significant difference between classroom teachers' competencies of critical thinking teaching and their professional experience in favor of teachers with more experience.

It was concluded that there was no significant difference between Turkish Language teachers' self-efficacy perceptions of teaching thinking skills and their educational status. However, it was observed that the mean scores of Turkish Language teachers increased as their educational status increased. While the mean score of Turkish Language teachers with bachelor's degree was 86.70, the mean score of those doing a master's degree was 88.97, the mean score of those with master's degree was 92.16, and the mean score of those doing a PhD was 111.20. Although it was determined that there was no statistically significant difference between educational status and self-efficacy perceptions of teaching thinking skills, it can be stated that the mean scores increased as the educational status increased. In most of the studies in the literature, it was concluded that there was a significant difference between the teaching of thinking skills and the educational status. While Aslan (2017) determined that there was no significant difference between classroom teachers' self-efficacy perceptions of teaching thinking skills and their educational status, Ekinçi and Tican (2017) determined that there was no significant difference between classroom teachers' in-class practices for thinking skills and their educational status. Bağçeci and Kinay (2013) determined that there was no significant difference between teachers' problem-solving skills and their educational status.

It was concluded that there was a significant difference between Turkish Language teachers' self-efficacy perceptions of teaching thinking skills and taking course on thinking skills. While the mean score of Turkish Language teachers who took courses on thinking skills was 83.08, the mean score of Turkish Language teachers who did not take courses on thinking skills was 76.67. Aslan (2017) also determined that the self-efficacy perceptions of teaching thinking skills of classroom teachers who took courses on thinking skills made a significant difference. In this context, it can be said that teachers' taking courses on thinking skills and teaching these skills in their undergraduate or graduate education have an effect on their self-efficacy perceptions of teaching thinking skills. Dinçer Göbel (2013) concluded that the classroom teachers' taking courses on critical thinking skills did not make a significant difference in general, however, there was a significant difference in favor of those who took courses on critical thinking skills in the teacher qualifications sub-dimension.

5. Recommendations

1. Although the teaching of thinking skills generally concerns all teaching fields, it is an issue that Turkish Language teachers should especially focus on, when the relationship between language and thought is considered. Therefore, Turkish Language teachers should perform studies for the acquisition of thinking skills and should improve themselves in this regard.
2. Teachers should be provided to encounter courses on thinking skills or the teaching of thinking skills during the undergraduate period, which is the pre-service education period, and during the postgraduate education period.
3. Turkish Language teachers can be provided with in-service trainings on how to improve their thinking skills in Turkish Language courses.

Ethic Committee Approval

Ethics Committee Approval was given to this study with the decision No. 11 at the meeting No. 06 held on 18 June 2021 by Atatürk University Educational Sciences Unit Ethics Committee.

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References

- Akbıyık, C., & Kalkan Ay, G. (2014). Okul öncesi yönetici ve öğretmenlerin düşünme becerilerinin öğretimine yönelik algıları: bir durum çalışması. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 29(1), 1-18. <https://dergipark.org.tr/tr/download/article-file/87074>.
- Alkan, V., & Gözel, E. (2013). Sınıf öğretmeni adaylarının yansıtıcı düşünme becerilerine ilişkin görüşleri. *e-Journal of New World Sciences Academy*, 8(1), 1-12. <https://dergipark.org.tr/tr/download/article-file/185405>.

- Aslan, M., & Kalkan H. (2018). Öğretmenlerin özyeterlik algılarının analizi. *Bingöl Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 8(16), 477-493. <http://dx.doi.org/10.29029/busbed.434926>
- Aslan, S. (2017). Sınıf öğretmenlerinin düşünme becerisi öğretimine yönelik özyeterlik algılarının çeşitli değişkenler açısından incelenmesi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 41, 61-73. <http://dx.doi.org/10.9779/PUJE675>
- Bağcı, H., & Şahbaz N. K. (2012). Türkçe öğretmeni adaylarının eleştirel düşünme beceriler üzerine bir değerlendirme. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 8(1), 1-12. <https://dergipark.org.tr/tr/download/article-file/160811>.
- Bağçeci, B., & Kinay, İ. (2013). Öğretmenlerin problem çözme becerilerinin bazı değişkenlere göre incelenmesi. *Electronic Journal of Social Sciences*, 12(44), 335-347.
- Baykara, K. (2011). Öğretmen adaylarının bilişötesi öğrenme stratejileri ile öğretmen yeterlik algıları üzerine bir çalışma. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 40, 80-92. <https://dergipark.org.tr/en/download/article-file/87351>.
- Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2015). *Bilimsel araştırma yöntemleri*. (19. Basım). Ankara: Pegem Akademi Yayınları.
- Coşkun, E., Gelen, İ., & Öztürk, E. P. (2009). Türkçe öğretmen adaylarının öğretimi planlama, uygulama ve değerlendirme yeterlik algıları. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 6(12), 140-163.
- Çapri, B., & Çelikkaleli, Ö. (2008). Öğretmen adaylarının öğretmenliğe ilişkin tutum ve mesleki yeterlik inançlarının cinsiyet, program ve fakültelerine göre incelenmesi. *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, 9(15), 33-53. <https://dergipark.org.tr/tr/download/article-file/92333>.
- Çarkıt, C., & İplik, Y. (2021). Ortaokul Türkçe derslerinde yansıtıcı düşünme becerisinin geliştirilmesine yönelik öğretmenlerin görüş ve uygulamaları. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi*, 41(1), 497-524. <http://www.gefad.gazi.edu.tr/tr/pub/issue/62024/831314>.
- Çetinkaya, Z. (2011). Türkçe öğretmen adaylarının eleştirel düşünmeye ilişkin görüşlerinin belirlenmesi. *Ahi Evran Üniversitesi Eğitim Fakültesi Dergisi*, 12(3), 93-108. <https://dergipark.org.tr/tr/download/article-file/1492276>.
- Demirtaş, H., & Dönmez, B. (2008). Ortaöğretimde görev yapan öğretmenlerin problem çözme becerilerine ilişkin algıları. *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, 9(16), 177-198. <https://dergipark.org.tr/tr/download/article-file/92319>.
- Demirtaş, H., Cömert, M., & Özer, N. (2011). Öğretmen adaylarının öz-yeterlik inançları ve öğretmenlik mesleğine ilişkin tutumları. *Eğitim ve Bilim*, 36(159), 96-111. <http://egitimvebilim.ted.org.tr/index.php/EB/article/view/278/241>.
- Dilekli, Y. (2015). *Öğretmenlerin düşünmeyi öğretmeye yönelik yaptıkları sınıf içi uygulamalar, özyeterlik düzeyleri ve öğretim stilleri arasındaki ilişki* [Doctoral dissertation, Muğla Sıtkı Kocman University].
- Dilekli, Y., & Tezci, E. (2015). Öğretmenlerin düşünme becerisi öğretimine yönelik özyeterlik algıları ölçeği geçerlik ve güvenirlik çalışması. *International Journal of Social Science*, 38, 135-153. <http://dx.doi.org/10.9761/JASSS3056>
- Dilekli, Y., & Orakcı, Ş. (2019). Öğretmenlerin yansıtıcı düşünme becerilerinin çeşitli değişkenlere göre incelenmesi. *OPUS*, 11(18), 1517-1539. <http://dx.doi.org/10.26466/opus.550187>
- Dinçer Göbel, Ş. (2013). *Sınıf öğretmenlerinin eleştirel düşünme becerisi öğretimi yeterlilikleri ve uygulamaları* [Master's thesis, Sakarya University].
- Duban, N., & Yanpar Yelken, T. (2010). Öğretmen adaylarının yansıtıcı düşünme eğilimleri ve yansıtıcı öğretmen özellikleriyle ilgili görüşleri. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 19(2), 343-360. <https://dergipark.org.tr/tr/download/article-file/50607>.

- Durukan, E., & Maden, S. (2010). Türkçe öğretmeni adaylarının eleştirel düşünme eğilimleri üzerine bir araştırma. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 28, 25-34. <https://dergipark.org.tr/tr/download/article-file/55647>.
- Eğmir, E. (2018). Eleştirel düşünme becerisi öğretimi: ortaokul öğrencileri için bir program tasarısı. Ankara: Pegem Akademi Yayınları.
- Ekinci, N., & Tican, C. (2017). Sınıf öğretmenlerin epistemolojik inançları ve düşünme becerilerinin öğretimine yönelik sınıf içi uygulamaları. *İnsan ve Toplum Bilimleri Araştırmaları Dergisi*, 6(3), 1747-1773. <http://www.itobiad.com/tr/download/article-file/337634>.
- Erdem, A. R., & Yazıcıoğlu, A. (2015). Öğretmen adaylarının problem çözme becerileri ile eleştirel düşünme becerileri arasındaki ilişki. *OPUS*, 5(9), 37-41. <https://dergipark.org.tr/tr/download/article-file/210719>.
- Erol, M., Erol, A., Çalışır, S., & Bozan, M. (2019). Öğretmenlerinin yansıtıcı düşünme eğilimleri ile yaratıcı düşünme düzeyleri arasındaki ilişkinin incelenmesi. *Temel Eğitim Dergisi*, 1(2), 20-29. <https://dergipark.org.tr/tr/download/article-file/701412>.
- Fırat Durdukoca, Ş., & Demir, M. (2012). İlköğretim öğretmenlerin bazı değişkenlere göre yansıtıcı düşünme düzeyleri ve düşüncelerindeki öğretmen niteliklerinin yansıtıcı öğretmen niteliklerine uygunluğu. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 9(20), 357-374. <https://dergipark.org.tr/tr/download/article-file/183091>.
- French, J. N., & Rhoder, C. (2011). *Teaching thinking skills*. Routledge.
- Gelen, D. (2002). Sınıf öğretmenlerinin sosyal bilgiler dersinde düşünme becerilerini kazandırma yeterliklerinin değerlendirilmesi. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 10(10), 100-119. <https://dergipark.org.tr/tr/download/article-file/50111>.
- Güneş, F. (2012). Öğrencilerin düşünme becerilerini geliştirme. *TÜBAR*, 32, 127-146. <https://dergipark.org.tr/tr/download/article-file/157123>.
- İnel, D., Evrekli, E., & Türkmen, L. (2011). Sınıf öğretmeni adaylarının problem çözme becerilerinin araştırılması. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 11(1), 167-178. <https://dergipark.org.tr/tr/download/article-file/114604>.
- Kaf Hasırcı, Ö., & Sadık, Ö. (2011). Sınıf öğretmenlerinin yansıtıcı düşünme eğilimlerinin incelenmesi. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 20(2), 195-210. <https://dergipark.org.tr/tr/download/article-file/50687>.
- Karasar, N. (2020). *Bilimsel araştırma yöntemi*. Ankara: Nobel Yayıncılık.
- Koç Erdamar, G., & Bangir Alpan, G. (2017). Eleştirel düşünme algısı: lise öğretmenleri üzerine bir araştırma. *Elektronik Sosyal Bilimler Dergisi*, 16(62), 787-800. <https://doi.org/10.17755/esosder.305631>
- Korkmaz, Ö. (2008). Öğretmenlerin eleştirel düşünme eğilim ve düzeyleri. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 10(1), 1-13. <https://dergipark.org.tr/tr/download/article-file/1494903>.
- McGregor, D. (2007). *Developing thinking; developing learning*. Open University Press.
- Mutlu, E., & Aktan, E. (2011). Okul öncesi öğretmenlerinin düşünme eğitimi ile ilgili tutumlarının incelenmesi. *Türk Eğitim Bilimleri Dergisi*, 9(4), 799-830. <https://dergipark.org.tr/tr/download/article-file/256200>.
- Ocak, G., & Eğmir, E. (2014). Öğretmen adaylarının problem çözme becerilerinin çeşitli değişkenler açısından incelenmesi. *Asya Öğretim Dergisi*, 2(1), 27-45. <https://dergipark.org.tr/tr/download/article-file/17639>.
- Özden, Y. (2003). *Öğrenme ve öğretme*. Ankara: Pegem Akademi Yayınları.
- Palavan, Ö., Gemalmaz, N., & Kurtoğlu, D. (2015). Sınıf öğretmenlerinin eleştirel düşünme becerisine ve eleştirel düşünme becerisinin geliştirilmesine yönelik görüşleri. *Mustafa Kemal Üniversitesi*

Sosyal Bilimler Enstitüsü Dergisi, 12(30), 26-49.
<https://dergipark.org.tr/tr/download/article-file/183398>.

- Saracaloğlu, A. S., Karasakaloğlu, N., & Gencil, İ. E. (2010). Türkçe öğretmenlerinin özyeterlik düzeylerinin çeşitli değişkenlere göre incelenmesi. *Elektronik Sosyal Bilimler Dergisi*, 33, 265-283. <https://dergipark.org.tr/tr/download/article-file/70212>.
- Seferoğlu, S. S., & Akbıyık, C. (2006). Eleştirel düşünme ve öğretimi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 30, 193-200. https://yunus.hacettepe.edu.tr/~sadi/yayin/Seferoglu-Akbıyık_EFDergi-2006_Eles.Dusun.pdf.
- Selçuk, B. (2013). *Türkçe öğretmenlerinin eleştirel düşünme eğilimleri ve özel alan yeterlilik düzeyleri arasındaki ilişkinin incelenmesi (Muğla ili örneği)* [Master's thesis, Mugla Sıtkı Kocman University].
- Şahin, A. (2011). Türkçe öğretmeni adaylarının yansıtıcı düşünme eğilimlerinin çeşitli değişkenlere göre değerlendirilmesi. *Elektronik Sosyal Bilimler Dergisi*, 10(37), 108-119. <https://dergipark.org.tr/tr/download/article-file/70293>.
- Şahin, B. (2019). *Türkçe öğretmen adayları ve Türkçe öğretmenlerinin öz yeterlik algıları* [Master's thesis, Kafkas University].
- Şen, Ü. (2009). Türkçe öğretmeni adaylarının eleştirel düşünme tutumlarının çeşitli değişkenler açısından değerlendirilmesi. *Zeitschrift für die Welt der Türken/Journal of World of Turks*, 1(2), 69-89.
- Timuçin, A. (2004). *Felsefe sözlüğü*. İstanbul: Bulut Yayınları.
- Taşdelen, V. (2017). Çocuk kültürü bağlamında çocuklarla felsefe. *Çocuk ve Medeniyet*, 2, 7-17.
- Tok, S., & Sevinç, M. (2010). Düşünme becerileri eğitiminin eleştirel düşünme ve problem çözme becerilerine etkisi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 27, 67-82. <https://dergipark.org.tr/tr/download/article-file/114637>.
- Ülper, H., & Bağcı, H. (2012). Türkçe öğretmeni adaylarının öğretmenlik mesleğine dönük öz yeterlik algıları. *Turkish Studies*, 7(2), 1115-1135. <http://dx.doi.org/10.7827/TurkishStudies.3039>.
- Yapar Gönenç, A., & Bozkurt, G. (2017). *Dil temelinde felsefe ve medya*. İstanbul: Der Yayınları.
- Yeşilyurt, E. (2013). Öğretmen adaylarının öğretmen öz-yeterlik algıları. *Elektronik Sosyal Bilimler Dergisi*, 12(45), 88-104.





Exploring the Effect of STEM Education on the Motivations and Epistemological Beliefs Related to Science Among Talented and Gifted Students

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Abstract

The research is aimed to explore the effect of STEM education on the motivations and epistemological beliefs related to science among talented and gifted students. A mixed research method was employed in collecting the data of the research. The sample of the research consisted of 20 5th and 6th grade students who were diagnosed to be talented. Before the activities, the Epistemological Beliefs Questionnaire and the Motivation Scale for Science Learning were applied to the students. The reflective journals were asked to fill in reflective journals after each activity and individual interviews were conducted after all activities were completed. A significant difference was found between the Epistemological Beliefs Questionnaire and the Motivation Scale for Science Learning pre-test and post-test scores at the end of the research. With the conducted interviews and results from the journals, positive changes were observed in students' self-confidence, motivation, and attitudes towards science lessons in training.

Keywords: STEM, epistemological beliefs, motivation scale for science learning, gifted students.

1. Introduction

In line with the needs that came into existence in the 21st century that we are in, the trends towards technology and scientific studies have increased. These trends have brought about a global economic, scientific and technological race between countries and necessarily directed the countries to revise their education system and make reforms (Aydın, 2011; Dönmez, 2020). It is noticed that the countries try to create a productive society and to create such a social structure, it is stated that there must be qualified individuals who will grow up are individuals who think, question, research, wonder, problem solve, question, and discover in accordance with 21st-century skills (Bybee, 2011; Koştur, 2017; Akgündüz et al., 2015; Sanders, 2009). To provide this, especially The United States of America and The European countries focus on STEM education and try to integrate it into their education system (Lacey & Wright, 2009). STEM is an educational approach that consists of the initials of the words Science, Technology, Engineering, and Mathematics. STEM education aims to use these four disciplines in the education field with the integration of each other (Maryland, 2012; Gonzalez & Kuenzi, 2012; Moomaw, 2013). In STEM education, student analyses the situation determine the problem, collects information, produces authentic ideas, offers solutions to the problems and create and test models for the solution in the process, evaluate the situation (American Association for the Advancement of Science [AAAS], 1993; NAE & NRC, 2009; NGSS, 2013; NRC, 2012). In such an educational environment, it is

crucial to give education to gifted students (Barış & Ecevit, 2019). Gifted students who have great potential will contribute to the development of science and technology. Thus, it will be ensured that they play a critical role in the development of the country and its economy (Banks & Barlex, 2014). With STEM education, educational facilities suitable for the potentials of the gifted students are provided. Thus, it enables to uncover of the potentials that existed among the gifted students accurately and ensure to develop their current potentials (Barış & Ecevit, 2019). STEM Education has the qualifications to meet the different education that is required for gifted individuals (Kanlı & Özyaprak, 2015). An effective STEM education attaches great importance to students' interests and experiences, based on their existed knowledge, engages them in the practice of science and maintains their interest in STEM (NRC, 2011). In addition, it helps gifted students to capture the nature of STEM disciplines, to function as a scientist, and to be productive as soon as possible (Kanlı & Özyaprak, 2015). Teaching the STEM field courses with the interdisciplinary integration approach for gifted students enables the students' holistic learning (Steenbergen-Hu and Olszewski-Kubilius, 2017). STEM education may offer an integrated and differentiated learning opportunity to gifted students. Because, activities that reveal their talents and allow them to think multidimensionally can be carried out while doing STEM education (Altun Yalçın, 2019; Özçelik & Akgündüz, 2018). In addition, that the STEM attitude levels of gifted students are generally positive and that gifted students are interested in STEM career professions have been determined (Bircan and Köksal; 2020). Besides, these students' interests in the professions in the STEM field must be determined and they should be directed in their early ages (Özçelik & Akgündüz, 2018).

Epistemological belief is an indicator of the systematic structure of the bond and relationship between the structure of knowledge and the individual's belief system. It includes the contexts such as the source of the information, its accuracy, the creation, verification, and acceptance of the information by the individual (Schommer, 1990). Therefore, there is a relationship between learning of the information and the epistemological belief (Schommer-Aikins, 2002). A relationship was also found between the epistemological belief and academic performance and their understanding levels (Schommer, 1998), attitude (Deryakulu & Büyüköztürk, 2005), intrinsic motivations, and self-efficacy (Ricco, Pierce, & Medinilla; 2010) with students' science achievements (Braten & Ferguson, 2014). In addition, in the study conducted by Lin, Deng, Chai and Tsai (2013) with high school students, they determined a significant relationship between the epistemological beliefs and the motivation related to learning science. Even in the study conducted by Aşut and Köksal (2015), they investigated the relationship between the scientific epistemological beliefs of the students diagnosed to be gifted on their motivation levels related to science learning and science achievement. At the end of the study, a significant relationship was found between their motivation level related to science learning and their scientific epistemological beliefs. It was determined that the task-oriented effort and importance dimensions of motivation towards science learning were positively related to the accuracy and developmental epistemological belief dimensions. Dönmez and Yalmançı-Yücel, (2020) explored the relationship between STEM attitude and epistemological belief, STEM attitude, and epistemological beliefs of gifted students. At the end of the research, a statistically positive weak relationship was found between the STEM attitude and scientific epistemological belief values. That is, it was concluded that the epistemological beliefs of the students can be a significant predictor of their attitudes related to STEM.

Epistemological belief influences the students' academic achievements (Schommer, 1998); however, this is not the single factor. Motivation is also a significant factor that influences the students' academic achievements (Pintrich, 1999). This case is also effective in learning sciences. The motivation related to learning science has a relationship with self-efficacy, the value of learning science, the main purpose of learning, and the strategy used by the learner (Tuan, Chin & Shieh, 2005). The motivation towards learning science is effective in students' structuring of science concepts, being aware of the purpose of learning that concept, and the significance of learning (Pintrich, Marx & Boyle; 1993). The individuals who can control their motivational beliefs

more efficiently have higher cognitive performances compared with the other individuals (Pape & Smith, 2002; Schunk & Zimmerman, 2011). To increase the students' motivations towards science more, increasing their interests, achievements, and attitudes towards science is significant (Kurnaz & Şentürk Barışık, 2018). It can be claimed that a student with high motivational belief will make effort to learn and satisfy his/her curiosity rather than getting good grades in the science lesson, can overcome even the most complex subjects, can use the knowledge and skills that have been learned in the science lesson in other lessons, and believes that learning this lesson is beneficial for him/her (Schunk & Zimmerman 2011). Considering this, some studies related to the motivation levels of gifted students, who are seen as future scientists and the heirs of science, towards learning science have been a matter of curiosity, have been conducted. As the literature was reviewed, there are even studies demonstrating that gifted students have a high level of motivational beliefs (Aşut, 2013) and have low motivation (Sak, 2010) towards learning science. For this purpose, laboratory, project, and computer-assisted science education support the desire and determination of gifted students towards science lessons (Hoover, 1989). In the study conducted by Mustafa Kahyaoğlu and Ata Pesen (2013), the relationship between the learning styles of the gifted students and their motivation styles and their attitudes towards science and technology courses was examined. At the end of the research, a moderately significant relationship in a positive direction was determined between the attitudes of the gifted students towards science and technology, their learning styles, and their motivations towards science learning.

As the literature was reviewed, it was noticed that the researches on the implementation of STEM education on the gifted/special talented students were insufficient (Özçelik & Akgündüz, 2018). Although it has been conducted recently, there is a lack of studies focused on a special group of learners such as gifted students (Aşut & Köksal 2013; Yılmaz & Çavaş Huyugüzel, 2007). It is crucial to use enriched curriculum content and materials for the education of gifted and talented students (Miedijensky & Tal, 2016). It is vital to apply STEM education and activities in the development of gifted and talented students' skills by providing an effective teaching environment in meeting their needs (Yoon & Mann, 2017). Besides, there is a need for various models and a more structured and planned framework for advancement, for certain interventions such as STEM education especially for the gifted students (Kanlı & Özyaprak, 2015).

In this scope, the study focuses on the effects of STEM and STEM-Based Robotics applications on gifted students' epistemological beliefs and their motivation to learn science.

2. Method

A mixed-method was employed in the research. The mixed-method is defined as using and evaluating quantitative and qualitative methods together in the analysis of data (Creswell & Plano Clark, 2007). Johnson and Onwuegbuzie (2004) defined the mixed method applications as the completion of each other by combining the qualitative and quantitative research techniques, methods, and approaches of the researcher in a single study. The mixed-method used in the research is a parallel mixed method. The purpose of parallel mixed method researches is to combine the qualitative and quantitative data by collecting them jointly and simultaneously. The emerging strengthened result is used (Tashakkori & Teddlie, 2003). In the parallel mixed design, it is tried to reach a good understanding in line with the main purpose of the research by interpreting the similarities and differences between the qualitative and quantitative findings (Creswell & Plano Clark, 2011). To determine the gifted students' motivations towards science learning, the Motivation Towards Science Learning scale developed in 2005 by Tuan, Chin, and Shieh, was applied. The Epistemological Beliefs scale was developed by Conley (2004). In addition, the reflective journals prepared by the researcher were applied to the voluntary students after each application. At the end of the research, an interview was held with the voluntary students. The interview and reflective journal questions were prepared by taking the opinions of

the two academicians who were professionals in STEM education and an academician dealing with gifted students. In preparing these questions, it was tried to pay attention to the preparation of the research in accordance with the purpose of the research. The scales used in the research were tried to be prepared in line with the sub-dimensions and the behaviors that the scales aim to measure. To determine the effect of STEM Activities on the gifted students' Motivations Towards Science Learning, the questions "Have STEM activities changed your attitude towards Science? Why?" and "Did STEM Activities give you an idea about the application areas of science subjects? Why?" were asked to in the interview. In the reflective journal, to determine the effect of each STEM Activity on students' viewpoints on science and knowledge, and their career choices in science. "Have STEM Activities changed your viewpoint on science and knowledge? Why?" and "Did these activities contribute to your choice of profession in the field of science? Why?" The purpose of these questions is to uncover the effects of these activities on students' perception, attitude, choice of profession, and understanding of science, that is, its application areas. To determine the effect of STEM activities on the gifted students' Epistemological Beliefs, the questions "Did STEM Activities affect your deduction and prediction skills? Why?", "Have you thought about doing research on activities and improving yourself? Why?", "Did these activities help you produce the design of a shape?", "Can you design and build your products?" and "Would you like to present the products you made at the event again? Why?" were asked during the interview. In addition, to determine the effect of each STEM activity on their epistemological beliefs, the questions "If you had the chance to change the materials you used for STEM Activities, how would you design the same activity?", "What do you think you would do if you had the chance to improve our activity? You can show it with a drawing" and "What kind of idea did you have when you first saw the materials?", "Have you thought about creating products from these materials at that moment? The purpose of asking these questions was to reveal the accuracy of knowledge, the development of knowledge, the source of knowledge, and the verification of knowledge are affected by these activities, which the epistemological beliefs scale tries to measure. Thus, it was tried to determine the trends and purposes of the students in developing, proving, confirming, and validating the knowledge experience they have acquired during these activities

The research was carried out with 20 special talented/gifted students who were under education at 5th and 6th class levels. The participant selection does not represent the universe in the feature of the research. In purposive sampling, it is possible to examine the situation in depth through a small sample. Therefore, it was considered to be appropriate to select the participants with the purposive sampling (Yıldırım & Şimşek, 2011). The ethical principles were taken into consideration in the research, therefore, the teachers' names were not used. The teachers were coded as T₁, T₂, T₃... T₁₀. In the research, the special talented/gifted students have applied the STEM and STEM-based robotic activities for 10 weeks. These activities were applied with simple materials and robotic Legos that can be found everywhere. It was taken into account that the STEM activities would be held with the materials that they could easily find around even with the items that can be considered as waste. It was given the importance that these activities include different structural logic and content. For instance, 4 types of motors were used in the simple circuits that students would create (geared DC motor, gearless DC motor, brushless DC motor, and RPM motor) and they produced different systems that can function as a motor. The STEM-Based Robotics activities were based on the logic of building machine-style structures that they encounter in daily life with special Legos and coding them. Electronic components such as sound sensors, light sensors, smoke and heat sensor, electronic components such as motor, speaker, microphone, lamp, the digital brain can be attached to these Legos. Thus, the students would both make workable prototypes of the machines they see around them, learn what components and elements they include while making them, and also experience how they work by coding.

Table 1. Application content

Week	Course Hour	Activity Name	Activity Purpose and Content
1.	2	Pre-test Application	“Motivation Scale for Science Learning” and “Epistemological Belief Questionnaire”
2.	2	Traffic Light	This activity is carried out with a carton, tin can of Coke, 3 LEDs, and batteries. The main purpose of this activity is to use the tin can as the contactor switch. The students will make the red, yellow, and green light up in sequence in this activity. There must be at least 3 contactor switch, however, it is not included in the materials. The students will solve this problem with the way of a solution that they find themselves; that is, they need to design the can tin in such a way as to do the duty of 3 contactor switches.
3.	2	The Car with Mousetrap	They need to design a car working with a mousetrap. The main purpose of this activity is to design the mousetrap in a way to be used as a motor and develop their cars to go to the farthest. To make an activity, they will use the simple materials that can be easily found around; that is with plastic bottle cover, pipette, stick, string, CD.
4.	2	Robot Spider	They will build a robot spider with a motor, a contactor switch, battery, and wire pieces. The students are asked to learn how to build a simple electrical circuit and create a moving spider. Thus, they are expected to design and run a spider that will move with a motor.
5.	2	Non-tipping CD	It is expected from the students to design the CD in a way to stand upright without collapsing and thus dance. For this, they were allowed to use only 1 CD, 1 small CD, 1 motor, 1 battery, and 1 contactor switch. It is aimed at the students, in this activity, both learn to create a different system with a simple circuit and learn to establish a system in which the CD can dance upright without being knocked down (even if kicked).
6.	2	The money swallowing piggy bank	It is aimed at the students to make a money swallowing piggy bank with 1 motor, 1 contactor switch, battery, wire, and carton.
7.	2	The snake with remote control	The students are expected to make a snake with remote control with 2 motors, 2 contactor switches, 2 bottle covers, and cartons. The students designed both a remote control system with simple circuits and a snake system that can move. In this way, they were able to move the snake back, forward and right, left.
8.	2	Traffic Light	It is expected the students design a traffic light with legos and code them. In addition, by giving different problem situations, it is ensured that they create traffic lights that work in the appropriate function for these situations.
9.	2	The Carousel	They are expected to design the Carousel system that they ride in the amusement parks with its whole parts using the legos. Thus, they were ensured to create the working systems, the parts, and the components of those systems. It is also provided that they understand how these components work and their role in the system. In addition, they made it work as they wanted and automatically by coding this carousel.
10.	2	Washing Machine	The students were expected to design the prototypes of the washing machines that are used in daily life with legos. Thus, it was aimed to build all the parts and functions that a washing machine consists of and help them to understand their duties. In addition, they were enabled to operate as they desired by coding the washing machine. During the coding, the digital brains enabling the washing machine used in daily life work were used. Thus, it was tried to ensure that the students were coding and operating a real washing machine. For instance, the washing machine does not work when its door is open, and when its door is closed, the lamp lights up and codes for it to work at the desired speed, duration, and performance.
11.	2	Hand dryer	It was aimed the students to design the prototype of the hand dryer they used in daily life with legos. Thus, it was aimed that all parts and functions that make up the hand dryer are operational and they understand their duties. In addition, they were ensured to operate as they wished by coding the hand dryer. During the coding, the digital brains enabling the hand dryer used in daily life work were used.
12.	2	Post-test	“Motivation Scale for Science Learning” and “Epistemological Belief Questionnaire”

In the research, the data were analyzed with the paired samples t-test among the parametric tests as the Motivation Scale Towards Science Learning and the Epistemological Beliefs Questionnaires provided the normality. The content analysis was applied in the analysis of the qualitative data. Cohen, Manion and Morrison (2007) defined the content analysis applied in

the mixed method researches as categorizing the available texts, making comparisons, and ensuring the organization of the data. The data obtained with the interviews held and reflective journals were included in the evaluation after they were analyzed. For this, similarities and differences were determined by creating the codes and categories of the results that emerged from the journals performed with the interviews and activities with students. The frequency situations in which these concepts were repeated were determined. These analyses were performed by the two researchers at different times. It was taken into account that these researchers had taken the qualitative data analysis course. In giving the final form to the analysis, the formula developed by Miles and Huberman (1994) were used. According to the formula, (Reliability = Consensus / Consensus + Disagreement) the fit reliability coefficient between the researchers was found as 0,84 in the analyses (Miles & Huberman, 1994). While the expressions of validity and reliability are used in quantitative researches, in qualitative researches the expressions such as credibility, the accuracy of results, and competence of the researcher are mostly used. Therefore, the validity and reliability of the qualitative researches are provided with the concepts of credibility, consistency, generalizability, and verifiability (Krefting, 1991). The data and analyzes were presented to the participants being investigated for the credibility of the study. Audio recordings, which were recorded, were transcribed. Besides, different researchers' opinions were also applied in evaluating the data. To increase the reliability, the participants were selected from the voluntary students. Participants' names were coded in accordance with ethical rules. Voice recordings were deleted.

3. Findings

The data, obtained with the Motivation Scale for Science Learning used to determine whether the opinions of the experimental group, whom the STEM education was held with, related to the Science Learning, were subjected to the paired samples t-test and the results reached are presented in the table below.

Table 2. Motivation Scale for Science Learning t-test results

Measurements	N	\bar{X}	Ss	t	Sd	p
Pre-test	15	127.4000	20.16999	-3.383	24.02	.000
Post-test	15	145.0000	14.89487			

The Paired samples t-test results conducted between the pre-test and post-test scores related to the Motivations for Science Learning of the students who were under education at the Science and Art Center are presented in Table 3.1. As a result of the paired samples t-test was applied to determine whether there was a difference between the averages of the data collected with the self-regulated learning strategies scale applied before and after these applications were implemented to the 15 gifted students who were investigated in terms of whether there were STEM activities had any effect on the Motivations for Science Learning among the special talented and gifted students, a significant difference was found between the pre-application score average (\bar{X} Pre-test = 127,4000) and post-application score average (\bar{X} Post-test =145,0000) (t_{15} : -3,383, $p < .05$) (Can, 2016). Thanks to this significant difference, it was observed that STEM activities had positive effects on the motivations for science learning among the special talented and gifted students.

Table 3. Epistemological Belief Questionnaire t-test results

Measurements	N	\bar{X}	Ss	t	Sd	p
Pre-test	15	85.2000	16.29724			
Post-test	15	108.8000	11.60788	-4.383	20.85	.001

The paired samples t-test results performed between the pre-test and post-test scores related to the Epistemological Beliefs of the students who were under education at the Science and Art Centre are presented in Table 5.2 below. As a result of the paired samples t-test was applied to determine whether there was a difference between the averages of the data collected with the Epistemological Beliefs Scale applied before and after these applications were implemented to the 15 gifted students who were investigated in terms of whether there were STEM activities had any effect on the Epistemological Beliefs of the special talented and gifted students, a significant difference was found between the pre-application score average ($\bar{X}_{\text{Pre-test}} = 85,2000$) and the post-application score average ($\bar{X}_{\text{Post-test}} = 108,8000$) ($t_{15}: -4,383, p < .05$) (Can, 2016). Thanks to this significant difference, it was observed that the given educations contributed positive effects on the epistemological beliefs of the special talented and gifted students.

4. Qualitative findings

The students' answers to the interview questions were analyzed and separated into codes and categories.

When the answers of the special talented students to the question "Have STEM activities changed your attitude towards Science?", only the category of viewpoint towards science and science was formed. In this category, the codes I already liked (f=5), I liked it more (f=3) were formed. The students generally stated that they had already loved science much. However, the students claimed that the science course was no longer boring thanks to these activities and the courses were more enjoyable. They stated that science became more enjoyable with the training and they enjoyed it. Some students' answers to this question are as below:

"....It was a bit boring before, now ... entertaining...." (S3)

"...towards science ... changed we even made a washing machine out of a lego or a lego-like piece. I think it changed..... I liked it more" (S8)

As the answers of the special talented students to the question "Did STEM Activities give you an idea about the application fields of science subjects?" were analyzed, the category of developing their knowledge category (f=8) was formed. In this category, the codes undecided (f=2), finding a solution (f=2), no (f=3), and repeating what they learned (f=1) were formed. They claimed that, in the code, they were not decided about, they did not have a definite idea, and in the solution-oriented code, they came up with ideas for solving the problems that they come across. In the code of repeating what they learned they defined what and how the activities were created. Some student answers are as follows:

"....If I become a vehicle engineer in the future....as you know the cars have difficulty in parking, one wheel will turn sideways, then as you hit the gas it will go straight. I want to make it...." (S2)

"....I don't know but I believe I will in the future..." (S1)

As the gifted students' answers to the question "Did inference improve prediction skills? How has development been achieved?" were analyzed the category of predicting and yes and no codes under this code were created. In the code "yes" (f=5), the students, claiming that it

had developed their skills, stated that they reached the result more quickly by determining what they would do in their minds while combining the parts during the realization of the operations in the activities. On the other hand, the students in the code group of “no” (f=3) stated that they had already had these skills and that the activities did not develop them. Some of the students' answers are as follows.

“... Yes. The questionnaires I filled asked my prediction. That is yes, it helped to develop. For instance, I think I'm speeding up my work when attaching it to something by predicting it earlier ...” (S2)

“...I did not develop, I had already had inferencing, predicting, it did no develop...” (S7)

When the gifted students' answers the question “Have you thought about doing research on activities and improving yourself?”, “Have you ever thought of writing a project relevant to the activities you performed?” were analyzed, the category of developing knowledge was formed. This category consists of yes (f=2), no (f=5) and not decided (f=1) codes. It was noticed that the code “no” was expressed more in terms of the students' developing their products. The students claimed that they did not want to add anything to what they had learned. On the other hand, the students expressing the code “yes”, generally claimed that they wanted to work to find solutions to the problems they encountered in the future. The undecided students (not decided) stated that they have not thought about developing themselves in this field, maybe they do not have a decision that they can do something in the future. Some student answers are as follows:

“.....no, because they do their best to teach us everything...” (S4)

“... I haven't thought about developing myself by searching....” (S5)

As the gifted students' answers to the question “Did these activities help you create the design of a shape? Can you design and build your products?” were analyzed, the category of creating the design was formed. In this category, the codes making prototype (1), better positioning (3), combining the pieces (2) were formed. The students claimed whether the product that they made worked or not, whether it will be useful or not by making a prototype. In the task coded as better positioning, the students stated how they could help to find ways to add to the information they learned from the current study and to create better results in the future. In the category of combining pieces, they expressed that they were trying to reach the right result by considering the processes they designed in their minds how to place the appropriate parts correctly as the student-created. Some student answers are as follows:

“...yes, I can make my designs..... we make mini washing machines with different materialseven if the washing machine does not wash, at least, I learned how it works....When I saw them first, I thought how a washing machine was made with them, but we did. That is, if a washing machine can be made with legos, then everything can be made, therefore, I think it improves us....” (S6)

When the answers of the gifted students to the question “If you had the chance, would you like to reveal the products you made at the event again?” were analyzed, the category of being open to innovations was formed. In this category, the students' opinions were collected under the codes of difference (5) and repetition (3). In the difference dimension, the students mostly stated that they wanted to do new, different activities. They stated that they would do the same activities again if there was nothing to do. They stated that they wanted to set and create new useful things by using and developing their knowledge. On the other hand, in the code of repetition, the students claimed that they wanted to do the same activities again. Some student answers are as follows:

“... I want ...I want to do the same activities again...” (S1)

“...If I had the opportunity, I would attend these activities again. Certainly, because we both have fun and learn.no, I think I would make different things.... It would be better and different...” (S5)

4.1 Answers for the reflective journal

As the answers of the gifted students to the question in the reflective journal “What kind of idea did you have when you first saw the materials? Have you thought about creating products from these materials at that moment?” were reviewed, the category of predicting the activity was formed. In this category, the codes such as complex (2), ambiguity (19), pessimism (5), creating mechanism (47) were formed. The ambiguity code of predicting the activity category originated from the students’ inability to figure out exactly how to turn the materials they have into a working mechanism. The pessimism that occurs in students is usually due to not being able to complete the activity or to thinking that they cannot create a complete product on time. In the category of creating mechanism, it was noticed from the answers given by the students that they were going to establish a mechanism, but they were undecided on how it would emerge, they could not predict exactly what some materials would do in that event, and different products emerged from different perspectives than expected. Some of the student answers are as follows:

“...I thought I was going to make a circuit” (S2)

“...We thought we'd make a car directly. We didn't understand what to use the mousetrap for at first....” (S8)

In the findings related to the question “If you had the chance to change the materials you used for the activity, how would you design the same activity?”, “What do you think you would do if you had the chance to improve our activity? You can show it by drawing”, asked the gifted students, the category of creating their design was created. In this category, six codes were formed consisting of changing the materials (48), omitting material (3), unwilling to change (14), I would not want to do (1), taking the easy way (2) and using a different program (1). It was seen from the students’ answers that they wanted the materials to be of higher quality, robust, and strong in the change of materials. Because they wanted to ensure that the materials remain strong for a longer period while doing the activities. They added that things like the engine and beads should be larger at the point where they thought it would be more useful. They also stated that they should develop the mechanism they have established in a way that can change the direction of control or movement. Because of the complexity of some activities, they also stated that they should remove some of the materials they used to create a product more simply. Besides, they stated that they wished to make aesthetical decorations. Some student answers are as follows:

“...I would wrap gelatin which reduces friction around the wheel. I would choose lighter sticks ...” (S2)

“...I would make the cardboard we cut more solid instead of gear. I would add a mouth, eye, etc. I would make at least some legs to the edge to make it look real....” (S3)

From the answers of the gifted students to the question “Has your viewpoint on Science and Knowledge changed as a result of the activities?”, the category of mental and 3 codes under this category was formed. These codes are “viewpoint”, “associating”, and “perception”. In the code of viewpoint, the students referred that they had positive attitudes towards Science (41); however, they loved science and knowledge more with this training (28). In the category of association, the students (1) stated that as a result of the activities, their points of view can change positively only if they can conclude with success. With the feeling of competition within and between groups, they claimed that only if they succeeded, they would develop positive situations towards science and knowledge (1). In the code of feeling-thought, the students claimed that some

activities were difficult for them (1) or would be boring thinking that they would not be able to finish on time (1) and have difficulty (1). However, they thought that the practices in some weeks could be more understandable and complete, and stated that it was good because they enjoyed the training. The structures that seemed complex were perceived by students as boring or difficult, considering that they would not be able to complete the activities carried out during the education process as a task. The students, who claimed the activities as good, stated that it was pleasant to achieve the results they did not expect, as they learned something new. The answers of some students to this question are as follows:

“...It developed a bit more. We can build a mean with simple materials...” (S4)

“...I have already loved science and knowledge much, but these activities increased it a bit bore...” (S2)

In the findings obtained from the question asked to the gifted students “Did these activities contribute to your choice of profession in the field of science? Why?”, in the category of the professions they want to choose in the future, totally nine codes consisting of robot technologies (1), related to the science courses (4), lawyer (1), doctor (7), engineer (16), information technologies (1), lawyer basketballer (2) and not decided (8). The students generally selected the professions in the field of science (22). However, they (32) added that the activities helped to have ideas related to the professions in these fields in time. With these activities, they stated that they tended robot technologies, informatics, and engineering (23). Some student answers are as follows:

“...I want to be an electric and electronic engineer. As engineering is entertaining...” (S1)

“...as I want to choose to engineer and still I want to choose a job in this field....” (S6)

5. Discussion and result

At the end of the study, it was determined that the STEM activities carried out with the gifted students had positive effects on the motivations towards science learning among the gifted students and their epistemological beliefs. In addition, the data obtained from the reflective journals and the data obtained from the interviews support this situation. No research has been encountered conducted related to the effect of STEM Education on the motivations and epistemological beliefs of gifted students towards science learning. However, in the study carried out with the students under education in the state schools, Ozan and Uluçınar Sağır (2020) suggested that the STEM applications had positive effects on the science academic achievements, attitudes towards STEM, motivations, the permanence of the knowledge that they learned. In the study conducted by Çakır and Altun Yalçın (2021), it has been determined that STEM Education develops the pre-service teachers' attitudes towards science and science teaching positively. In the study by Yamak et al., (2014), it was observed that the attitudes towards science and scientific process skills of the secondary school 5th class students developed positively thanks to the STEM activities. In some studies, the results supporting this finding were encountered. As a result of these studies, it was found that STEM education was effective in developing the students' positive attitude towards science, increasing their interests and motivations, accordingly increasing their science achievements (Güldemir & Çınar, 2017). In addition, in the study by Mellat and Lavasani (2011), it was found that the students' epistemological beliefs had positive effects on the motivational factors. In the study by Dönmez and Yalmançı-Yücel (2020), a statistically positive weak relationship was found between the STEM attitude of the gifted students and their scientific epistemological belief values. It can be claimed that this situation can be originated from the positive effect of STEM activities on the motivation and epistemological beliefs of gifted students

towards science learning, and the positive effect of epistemological belief (Tal, Krajcik & Blumenfeld, 2006; Ercan & Şahin, 2015). Akbaba (2006) defined motivation as the most significant factor in the topic of reaching the student behavior at a desired target in the educational environment. In the data obtained from the reflective journals and interviews applied to the students within the scope of the study, the students claimed that their motivations and attitudes changed positively. The students claimed in their answers related to their attitudes towards science and knowledge, they generally expressed that they had already loved science and knowledge much, but with these activities, science is far from being boring, they have fun, they feel excited and happy. In addition, during the activities, they stated that they could use the knowledge they learned in science in these applications to find solutions to the problems encountered. It was determined that the groups were in competition to participate in the contest held after the activities and tried to be the first, and this increased their purpose and incentive to realize their performance. Besides, the students also referred that they aim to achieve success, to be the first and that they work for this and make an effort. They claimed that they had high self-efficacy, self-confidence in the activities that they performed. Even though the students had difficulties completing the activities on time, they said that they could not give up and that they wanted to go to a solution instead of making excuses. The students expressed that after carrying out such activities, they produced their products in a way they did not expect as a result of the materials they had, and they used their knowledge of science subjects while performing the activities, while they realized it with different designs. The students stated in their journals that they would carry out the activities related to force or circuit elements depending on the question of what kind of product will emerge according to the materials in the activities. In addition, they referred that they did not expect the circuit elements to use it in so many different ways in their journals, that they could not think about how they would create the product they would make from the materials they had at the beginning, but that they were happy and enjoyed the fact that even such an easily obtainable material was moving as a result. These findings directly support the sub-dimensions Self-Efficacy, Active Learning Strategies, Value of Science Learning, Performance Purpose, Achievement Goal, Encouragement in the Learning Environment of the motivation scale for science learning. In this way, it can be claimed that the STEM activities increase the students' motivations towards science, learning science, their wishes towards applying what they learned; that is, their motivations towards learning science positively. STEM education is a significant factor in terms of concretizing the subjects and increasing motivation in science teaching. At the same time, lessons can be made more interesting and enjoyable by adding mathematics, engineering, and technology to science teaching (Aşut & Köksal, 2015; Kennedy et al., 2014; Pintrich, Marx & Boyle; 1993). With the constructivist approach that takes the student at the center, STEM education, which is an interdisciplinary collaboration, creates an education system that improves life skills by changing the individual's viewpoints towards science (Seren & Veli, 2018). Camcı Erdoğan (2014) in his study, found that the gifted students' attitudes towards science changed positively after the lessons they conducted with a differentiated model in science education. It can be claimed that this situation is valid for the realization of science with STEM activities. That is STEM activities consisting of science direct play a differentiating role in science education for students. İdin and Kayhan (2016) suggest that it is necessary to prepare appropriate teaching programs so that gifted students can use their potential at the highest level, develop their creativity and skills, and realize their potential. In the present study, with the activities adopted and developed for the gifted students, it was tried to help them to use their potential at the highest level, develop their creativity and skills, and realize their potential. Öztürk and Altun Yalçın (2020); STEM education develops that students' problem-solving motivations and skills and enables them to experience the feeling and thought that "I can do – I do". Thus, their self-confidence and self-efficacy are increased towards the problems they encounter in daily life.

According to the findings obtained from this research, it is realized that the applications consisting of STEM activities affect the development of their skills related to the gifted

students' epistemological beliefs. The sub-dimensions of the questionnaire used in the study areas are "Certainty of knowledge, Development of knowledge, Source of knowing and Confirmation of knowing". The students, similarly, answered the question in the journals "if they wanted to redesign the activities, how would they design them and what would you do if they wanted to develop them?" that they wanted to strengthen and reinforce the materials to improve the effectiveness and they designed them differently. The students claimed that it was difficult to reach the results of the activities in one go, but they did not give up on starting over and they wanted to try again. They also expressed that they could take different ways to complete an activity to conclude; however, that it was difficult to restart. They claimed that they wanted to reach the result though. With these activities that take place in the interview questions, as the question, would you like to do the research yourself and reveal different things? was taken into consideration, some students stated that they could design themselves by making additions and changes to find solutions to the problems experienced in the future with the information they learned in the activities. In the study conducted by Çakır and Altun Yalçın (2021), it was determined that STEM Education helped individuals the skill and ability to reach knowledge like a scientist, to question and verify the knowledge s/he has reached, and to develop knowledge by applying knowledge. This case stems from the fact that during STEM education, students constantly experience the process of using existing information, gaining new information, testing new information, and structuring information (Çalik & Altun Yalçın, 2022). STEM education has great significance in helping the students to develop their interdisciplinary knowledge and skills in different fields and to reorganize their ideas (Honey et al., 2014). With STEM education, the individual applies different methods and techniques to produce appropriate solutions against the problem (Kelley & Knowles, 2016). They can get rid of traditional methods, look at problem situations from all aspects and with a critical perspective by integrating four skills with STEM, work in cooperation with their peers by communicating effectively, and apply the knowledge they have obtained in their daily lives as well as in their academic life (Kennedy & Odell, 2014). That is, it is aimed to ensure students with the ability to produce solutions to the problems they encounter in daily life, to think deeply and scientifically (Çepni, 2017).

6. Suggestion

STEM; It is an educational approach that focuses on learning science by integrating it with other branches of science or integrating it into lessons. This situation enables students to love science, to increase their motivation and desire to learn science, and to increase their epistemological beliefs. In order to increase students' interest in science and thus increase their academic success, it can be suggested to use STEM Education in classroom and extracurricular activities. It is of great importance to include STEM Education in the education of especially gifted students. Gifted students are the gems of countries. In this case, students should receive the best education. STEM Education gains more importance especially as it increases their epistemological beliefs and motivation towards science learning. Increasing interest of gifted students in science professions and choosing these professions will enable countries to progress economically, technologically and scientifically. In order to achieve this, the education of gifted students should be based on STEM Education.

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References

- American Association for Advancement of Science. (1993). *Benchmarks for science literacy*. New York: Oxford University Press.
- Akbaba, S. (2006). Eğitimde Motivasyon. *Kazım Karabekir Eğitim Fakültesi Dergisi*, 13, 343.
- Akgündüz, D., Aydeniz, M., Çakmakçı, G., Çavaş, B., Çorlu, M. S., Öner, T., & Özdemir, S. (2015). STEM Eğitimi Türkiye Raporu: Günün Modası Mı Yoksa Gereksinim mi? İstanbul: Aydın Üniversitesi. Retrieved 15 March 2021, from <https://www.aydin.edu.tr/tr-tr/akademik/fakulteler/egitim/Documents/STEM%20E%C4%9Fitimi%20T%C3%BCrkiye%20Raporu.pdf>.
- Altun, Yalçın, S. (2019). The effect of integrated STEM education on teachers and the opinions of teachers. *Journal of Social, Humanities and Administrative Sciences*, 20(5), 948-963.
- Aşut, N. (2013). *Relationship of gifted students' epistemological beliefs with science achievement and motivation towards science learning*. Unpublished master's thesis, İnönü University Institute of Education Sciences.
- Aşut, N., & Köksal, M. (2015). Relationship of gifted students' epistemological beliefs with achievement and motivation towards science learning. *Journal of Düzce University Institute of Social Sciences*, 2(1), 22-44.
- Aydın, M. (2011). *Fen ve Teknoloji öğretmenleri için geliştirilen proje tabanlı öğretim yöntemi konulu bir destek programının etkilerinin araştırılması*. Unpublished doctoral thesis, Karadeniz Teknik University.
- Banks, F., & Barlex, D. (2020). *Teaching STEM in the secondary school: Helping teachers meet the challenge*. Routledge.
- Barış, N., & Ecevit, T. (2019). STEM education for gifted student. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education*, 13(1), 217-233.
- Bircan, M. A., & Köksal, Ç. (2020). Investigation of STEM attitudes and STEM career interests of gifted students. *Turkish Journal of Primary Education*, 5(1), 16-32.
- Bråten, I., & Ferguson, L. E. (2014). Investigating cognitive capacity, personality, and epistemic beliefs in relation to science achievement. *Learning and Individual Differences*, 36, 124-130.
- Bybee, R. W. (2011). Scientific and engineering practices in K-12 classrooms: Understanding a framework for K-12 science education. *Science and Children*, 49(4), 10-16.
- Camcı Erdoğan, S. (2014). *The effect of differentiated science and technology instruction based on scientific creativity on gifted and talented students' achievement, attitude and creativity*. Istanbul University (Doctoral dissertation, PhD Dissertation, Institute of Educational Sciences, Istanbul).
- Can, A. (2016). *SPSS ile bilimsel araştırma sürecinde veri analizi [Data analysis in the scientific research process with SPSS]*. Ankara: Pegem Akademi.
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education. Sixth Edition*. New York.
- Conley, A. M., Pintrich, P. R., Vekiri, I., & Harrison, D. (2004). Changes in epistemological beliefs in elementary science students. *Contemporary Educational Psychology*, 29, 186-204.
- Cresswell, J. W., & Plano Clark, V. L. (2007). *Designing and conducting mixed method research*. London: Sage Publications.
- Çakır, Z., & Altun-Yalçın, S. (2021). The investigation of the effect of Montessori approach-based STEM activities on the problem-solving skills of pre-service preschool teachers. *Kuramsal Eğitimbilim Dergisi [Journal of Theoretical Educational Science]*, 14(2), 93-119.
- Çakır, Z., & Altun Yalçın, S. (2021). The effects of Montessori approach based STEM activities on pre-service teachers' attitudes towards science and science teaching. *OPUS International Journal of Society Researches*, 17(35), 1895-1924. <https://doi.org/10.26466/opus.831879>

- Çalik, H., & Altun Yalçın, S. (2022). The effect of stem and stem-based robotics activities on constructive learning environments opinions of teacher candidates. *IBAD Sosyal Bilimler Dergisi*, (12), 137-163. <https://doi.org/10.21733/ibad.948455>
- Çepni, S. (2018). *Kuramdan uygulamaya STEM eğitimi [STEM education from theory to practice]* (2nd edition). Ankara: Pegem Akademi Yayınları
- Deryakulu, D., & Büyüköztürk, Ş. (2005). Epistemolojik inanç ölçeğinin faktör yapısının yeniden incelenmesi: Cinsiyet ve öğrenim görülen program türüne göre epistemolojik inançların karşılaştırılması. *Eurasian Journal of Educational Research*, 18, 57-70.
- Dönmez, M.C. (2020). *Robotik Uygulamaların Aday Öğretmenlerin STEM Farkındalıkları, Fen Öğretmeye Yönelik Öz Yeterlikleri ve Stem'e Yönelik Tutumları Üzerine Etkileri*. Unpublished masters' thesis, Kırşehir Ahi Evran University.
- Dönmez, İ., & Yalmanlı-Yücel, S. Y. (2020). Analysis of scientific epistemological beliefs and STEM attitudes of the gifted students. *Bartın University Journal of Faculty of Education*, 9(3), 515-526.
- Ercan, S., & Şahin, F. (2015). The Usage of Engineering Practices in Science Education: Effects of design based science learning on students' academic achievement. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education*, 1(9), 128-164.
- Gonzalez, H. B., & Kuenzi, J. J. (2012). *Science, technology, engineering, and mathematics (STEM) education: A primer*. Congressional Research Service.
- Güldemir, S., & Çınar S. (2017). *Fen bilimleri öğretmenleri ve ortaokul öğrencilerinin STEM etkinlikleri hakkındaki görüşleri*. ULEAD 2017 Annual Congress: ICRE, 280-286.
- Honey, M., Pearson, G., & Schweingruber, A. (2014). *STEM integration in K-12 education: Status, prospects, and an agenda for research*. Washington: National Academies Press.
- Hoover, S. M. (1989). The Purdue three stage model as applied to elementary science for the gifted. *School Science and Mathematics*, 89(3), 244-50.
- İdin, Ş., & Kayhan, N. (2016). European Union countries and primary period gifted-talented students for special education practices in Turkey. *Journal of Kırşehir Education Faculty*, 17(2), 17-31.
- Johnson, R., & Onwuegbuzie, A. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.
- Kahyaoğlu, M., & Pesen, A. (2013). The relationship between gifted students' attitudes towards science and technology and their learning and motivation styles. *Journal of Giftedness and Education*, 3(1), 38-49.
- Kanlı, E., & Özyaprak, M. (2016). Stem education for gifted and talented students in Turkey. *Journal of Gifted Education Research*, 3(2), 1-10
- Kelley, T. R., & Knowles, J. G. (2016). A conceptual framework for integrated STEM education. *International Journal of STEM education*, 3(1), 1-11.
- Kennedy, T., & Odell, M. (2014). Engaging students in STEM education. *Science Education International*, 25(3), 246-258.
- Koştur, H. İ. (2017). The history of science practices in stem education: Al-Jazari example. *Başkent University Journal of Education*, 4(1), 61-73.
- Krefting, L. (1991). Rigor in qualitative research: The assessment of trustworthiness. *American Journal of Occupational Therapy*, 45(3), 214-222.
- Kurnaz, A., & Barışık, C. Ş. (2018). Examination of relationship between gifted students' motivational beliefs and creative thinking skills in science course. *Milli Eğitim Dergisi*, 47(220), 59-78.
- Lacey, T. A., & Wright, B. (2009). Occupational employment projections to 2018. *Monthly Labor Review*, 82-109.
- Lin, T. J., Deng, F., Chai, C. S., & Tsai, C. C. (2013). High school students' scientific epistemological beliefs, motivation in learning science, and their relationships: A comparative study within the Chinese culture. *International Journal of Educational Development*, 33(1), 37-47.

- Maryland State STEM Standards of Practice. (2012). *Maryland STEM: Innovation today to meet tomorrow's global challenges*. Retrieved on 22 April 2021, from <http://mdk12.msde.maryland.gov/instruction/academies/marylandstatestemstandardsopra ctice .pdf>.
- Mellat, N., & Lavasani, M. G. (2011). The role of epistemological beliefs, motivational constructs and Information processing strategies in regulation of learning. *Procedia-Social and Behavioral Sciences*, 30, 1761-1769.
- Miedijensky, S., & Tal, T. (2016). Reflection and assessment for learning in science enrichment courses for the gifted. *Studies in Educational Evaluation*, 50, 1-13.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.
- Moomaw, S. (2013). *Teaching STEM in the early years: Activities for integrating science, technology, engineering, and mathematics*. Redleaf Press.
- National Research Council (NRC). 2011. *A framework for K–12 science education: Practices, crosscutting concepts, and core ideas*. Washington, DC: National Academies Press.
- National Academy of Engineering and National Research Council [NAE & NRC] (2009). *Engineering in K-12 education: Understanding the status and improving the prospects*. Washington: National Academies Press.
- NGSS Lead States (2013). *Next generation science standards: For states, by states*. Washington, DC: National Academies Press.
- National Research Council (2012). *A framework for K-12 science education: Practices, crosscutting concepts, and core ideas*. Washington, DC: National Research Council.
- Ozan, F., & Uluçınar Sağır, Ş. (2020). The effect of stem implementation on attitude towards stem and success in “measurement of force and friction” class. *Journal of Kazım Karabekir Education Faculty*, 41, 260-275.
- Özçelik, A., & Akgündüz, D. (2018). Üstün/özel yetenekli öğrencilerle yapılan okul dışı STEM eğitiminin değerlendirilmesi. *Trakya Üniversitesi Eğitim Fakültesi Dergisi*, 8(2), 334-351.
- Öztürk, S. C., & Altun Yalçın, S. (2020). STEM eğitiminin fen bilgisi öğretmen adaylarının problem çözme becerilerine etkisi. *Turkish Studies – Education*, 15(4), 2893-2915. <https://dx.doi.org/10.47423/TurkishStudies.43707>
- Pape, S. J., & Smith, C. (2002). Self-regulating mathematics skills. *Theory Into Practice*, 41(2), 93-101.
- Pintrich, P. R. (1999). The role of motivation in promoting and sustaining self-regulated learning. *International Journal of Educational Research*, 31(6), 459-470.
- Pintrich, P. R., Marx, R. W., & Boyle, R. A. (1993). Beyond cold conceptual change: The role of motivational beliefs and classroom contextual factors in the process of conceptual change. *Review of Educational Research*, 63(2), 167-199.
- Ricco, R., Schuyten Pierce, S., & Medinilla, C. (2010). Epistemic beliefs and achievement motivation in early adolescence. *The Journal of Early Adolescence*, 30(2), 305-340.
- Sak, U. (2011). An overview and social validity of the education programs for talented students' model (EPTS). *Education and Science*, 36(161), 213-229.
- Sanders, M. (2009). STEM, STEM education, STEM mania. *The Technology Teacher*, 68(4), 20-26.
- Schommer, M. (1990). Effects of beliefs about the nature of knowledge on comprehension. *Journal of Educational Psychology*, 82(3), 498.
- Schommer, M. (1998). The influence of age and education on epistemological beliefs. *British Journal of Educational Psychology*, 68(4), 551-562.
- Schommer-Aikins, M. (2002). Epistemological belief system. Personal epistemology: *The Psychology Of Beliefs About Knowledge And Knowing*, 105-118.
- Schunk, D. H., & Zimmerman, B. (Eds.) (2011). *Handbook of self-regulation of learning and performance*. Taylor & Francis.

- Seren, S., & Veli, E. (2018). 2005 yılı itibariyle değişen fen bilimleri dersi öğretim programlarında STEM eğitimine yer verilme düzeylerinin karşılaştırılması [Comparison of different levels of including STEM education in science curriculum modified since 2005]. *Journal of STEAM Education*, 1(1), 24-47.
- Steenbergen-Hu, S., & Olszewski-Kubilius, P. (2017). Factors that contributed to gifted students' success on STEM pathways: The role of race, personal interests, and aspects of high school experience. *Journal for the Education of the Gifted*, 40(2), 99-134.
- Tal, T., Krajcik, J. S., & Blumenfeld, P. C. (2006). Urban schools' teachers enacting project-based science. *Journal Of Research In Science Teaching*, 43(7), 722-745.
- Johnson, R. B., & Turner, L. A. (2003). Data collection strategies in mixed methods research. A. Tashakkori, and C. Teddlie (Ed.), *Handbook of mixed methods in social and behavioral research* (pp. 297-319).
- Tuan, H. L., Chin, C. C., & Shieh, S. H. (2005). The development of a questionnaire to measure students' motivation towards science learning. *International Journal of Science Education*, 27(6), 639-654.
- Yamak, H., Bulut, N., & DüNDAR, S. (2014). 5. Sınıf öğrencilerinin bilimsel süreç becerileri ile fene karşı tutumlarına FeTeMM etkinliklerinin etkisi. *Gazi Eğitim Fakültesi Dergisi*, 34(2), 249-265.
- Yıldırım, A., & Şimşek, H. (2011). Sosyal Bilimlerde Nitel Araştırma Yöntemleri. Seçkin Yayınevi: Ankara.
- Yılmaz, H., & Çavaş Huyugüzel P. (2007). Reliability and validity study of the students' motivation toward science learning (smts) questionnaire. *İlköğretim Online*, 6(3), 430-440. <http://ilkogretim-online.org.tr>.
- Yoon, S. Y., & Mann, E. L. (2017). Exploring the spatial ability of undergraduate students: association with gender, STEM majors, and gifted program membership. *Gifted Child Quarterly*, 61(4), 313-327.





Speaking Anxiety of Students Learning Turkish as a Foreign Language: Instructors' Experiences

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Abstract

The purpose of present research is to examine the speaking anxiety observed by the instructors in their students in teaching Turkish as a foreign language settings. For this aim, phenomenology, one of the qualitative research methods, was used. The participants of the research are the instructors working in the Turkish teaching centers of various state universities who were reached through the snowball sampling technique. A semi-structured interview was used to collect the data from these tutorials. To analyze the data a content analysis technique with MAXQDA 2020 program was utilized. Instructors of Turkish as a foreign language stated that material and instructor proficiency are the most common factors in foreign language teaching, while motivation, attitude and anxiety are the most common internal factors. According to the results of the study, speaking is the language skill most affected by anxiety. It was concluded that the most common causes of speaking anxiety experienced by the students were the fear of being ridiculed, the thought of failure, and the lack of personal development. Instructors think that speaking anxiety occurs mostly with a shy attitude while speaking. In addition, the instructors stated that they took various measures to solve this situation in their students who they thought had speaking anxiety. These are mostly creating a flexible and relaxing learning environment, applying interesting activities, and allocating special time for the student.

Keywords: Teaching Turkish as a foreign language, anxiety, speaking anxiety, instructors.

1. Introduction

Foreign language teaching process has a multivariate structure. There are many factors that can affect learning in this process. An effective combination of several factors is necessary to ensure success. These factors can be classified as internal and external factors according to their sources. In terms of learners, learning environment, teaching material, teaching method are external factors; students' motivation and willingness are considered as internal factors (Turanlı, 2007). Gonzales (2001: 3) states that internal factors in learning are biological, physical, psychological, cognitive and social characteristics, and external factors are social characteristics such as school, family, occupation. In the context of language learning, Brown

(2007) states that internal factors determined by each individual and student such as motivation, attitude, personal practice and study habits. On the other hand, the common feature of external factors is that they all depend on external situations beyond the student's control (Brown, 2007). Özer and Korkmaz (2016), state the factors affecting success in foreign language teaching as teachers, students, coursework, environment and education system. All of the mentioned factors must be in harmony. However, it can be said that the learner-based situations among the factors are very important in terms of ensuring learning. Because it is stated that the individual psychological characteristics of the learners have a great impact on language learning (Özer & Korkmaz, 2016). Hutchinson and Waters (1987: 47) state that "learning a language is an emotional experience, and the feeling that the process of learning evokes will have a crucial bearing on the success or failure of the learning." In addition, when Dil (2009) investigated the difficulties in foreign language classroom he reported that one of the biggest psychological obstacles is anxiety for learners.

Anxiety is generally defined as "subjective feeling of tension, apprehension, nervousness, and worry associated with an arousal of the autonomic nervous system" (Spielberger, 1983: 15). Anxiety is also addressed in the context of language teaching. "Language anxiety can be defined as the feeling of tension and apprehension specifically associated with second language contexts, including speaking, listening, and learning" (MacIntyre & Gardner, 1994: 284). Arnold and Brown (1999) state that anxiety is associated with negative emotions such as restlessness, self-doubt, fear, and tension that prevent learning. Horwitz, Horwitz and Cope (1986) report that foreign language anxiety consists of three components: communication anxiety, fear of negative evaluation, and test anxiety. Young (1991) states that language anxiety is a complex, multidimensional phenomenon and manifests itself quite differently in students depending on ethnicity, previous language experience, student personality and classroom conditions. Horwitz, Horwitz and Cope (1986) stated that students with anxiety were worried, afraid, had concentration disorders, and avoided lessons.

In a meta-analysis study conducted by Teimouri, Goetze and Plonsky (2019) with 97 reports from 23 countries, it was determined that language anxiety has a negative role in second language learning. In addition, in the meta-analysis study conducted by Zhang (2019), it was determined that foreign language anxiety had a negative effect on foreign language performance. However, it is stated that the most anxiety-provoking activity in a foreign language is speaking (VonWörde, 2003).

It is known that in studies dealing with anxiety in teaching Turkish to foreigners, speaking skills are mostly focused on (Polatcan, 2019). It can be considered as a normal result that anxiety occurs most in speaking skill, and a special examination of anxiety experienced in this skill. To put it simply, the restlessness, tension, fear, anxiety, avoidance, and concentration disorder that occur especially during speaking can be evaluated as speaking anxiety. Melanlıoğlu and Demir (2013) state that speaking anxiety can manifest itself emotionally in the form of sadness, anger, fear, or physically in the form of rapid heartbeat and sweating. In the related literature, speaking anxiety in foreign language teaching, the causes of speaking anxiety, and ways of coping with speaking anxiety are examined (Alrabai, 2015; Balemir, 2009; Çağatay, 2015; Debreli & Demirkan, 2015; Duman, Göral & Bilgin, 2017; He, 2017; Liu, 2007; Köse, 2020; Marzec-Stawiarska, 2015; Öztürk & Gürbüz, 2014; Sadighi & Dastpak, 2017; Tüm & Kunt, 2013; Yılmaz, 2018), in which speaking anxiety was examined in terms of various variables (Boylu & Çangal, 2015; Şen & Boylu, 2015; Tunçel, 2015; Öztürk & Gürbüz, 2013), there are various studies examining the relationship between speaking anxiety and various performance tools (Gökhan, 2020; Mede & Karairmak, 2017; Serraj & Noordin, 2013; Vural, 2017). As can be seen from the studies, speaking anxiety in foreign language teaching has been examined by researches. In the literature review, no study was found in which speaking anxiety in teaching Turkish as a foreign language was examined in terms of instructors.

Instructors, who are the practitioners of the courses, are one of the most effective factors in ensuring success. The purpose of this research is to examine the speaking anxiety observed by the instructors in their students in teaching Turkish as a foreign language. The research is considered important in terms of providing an explanation for speaking anxiety from the perspectives of the instructors. Thus, it will be possible to reveal the ideas of course practitioners about speaking anxiety. In current study the factors affecting teaching Turkish as a foreign language according to the instructors, the place of anxiety among these factors, the skill most affected by anxiety, the effect of speaking anxiety, the possible causes of speaking anxiety, the measures taken when speaking anxiety is detected, will be examined.

2. Method

2.1 Design

Phenomenological approach was used in the research. The phenomenology is “a form of qualitative research that tries to understand how one or more people make sense of a phenomenon” (Johnson & Christensen, 2014: 48). “A phenomenological approach is well suited to studying affective, emotional, and often intense human experiences” (Merriam & Tisdell, 2016: 28). The phenomenon examined in this study is the speaking anxiety situations that instructors of Turkish as a foreign language encounter with students in their classes. Thus, the state of speaking anxiety experienced in the learning-teaching process was tried to be examined.

2.2 Participants

The participants of the research are the instructors working in the Turkish teaching centers of various state universities. Snowball sampling technique was used to determine these instructors. In the snowball sampling technique, a few reference people related to the study subject are selected and other people are reached through these people (Gay, Mills & Airasian, 2011: 143). As the reference group, the instructors in the Turkish teaching centers in the universities where the authors work were selected. The reference group consists of 7 instructors. The reference group and other instructors voluntarily participated in the study. The instructors in the reference group were asked to invite the instructors who teach Turkish to foreigners they know to the study. Thus, a total of 19 participants were reached. Detailed information about the participants is given in Table 1 below.

Table 1. Participants' information

Participant	Gender	Title	Experience Period (years)
P1	Male	Dr.	3
P2	Male	Assoc. Dr.	9
P3	Male	Instructor	3
P4	Female	Instructor	2
P5	Female	Instructor	1.5
P6	Male	Instructor	1
P7	Female	Instructor	1
P8	Female	Instructor	2.5
P9	Male	Instructor	19
P10	Male	Instructor	4
P11	Female	Instructor	2
P12	Male	Dr.	10

P13	Male	Dr.	3
P14	Male	Dr.	7
P15	Male	Instructor	1
P16	Female	Instructor	1.5
P17	Male	Dr.	2
P18	Female	Instructor	5
P19	Male	Dr.	5

2.3 Instruments and procedure

In order to collect the data, a semi-structured interview form was created by the researchers. The draft form includes 9 questions written by examining the relevant literature in order to collect information about speaking anxiety. In order for this form to be valid and reliable, firstly, opinions from various field experts were taken. The form was presented to the opinion of 3 Turkish Education, 1 Guidance and Psychological Counseling and 1 Curriculum Development experts in its printed form. Various corrections were made as stated in the forms collected after 5 days. 4 out of 9 questions were rearranged according to the opinions of field experts. After the arrangement, the second version of the form was applied to 2 instructors working in the Turkish teaching center for pilot application. As a result of the pilot application, it was deemed appropriate to add an explanation to 3 questions. Thus, the semi-structured interview form created was conveyed to the other instructors through the determined reference group. The instructors, who constituted the reference group of the study, were interviewed and during these interviews, explanations were given to the instructors about the content, purpose and why it was important. The questions that the instructors wondered about the research subject were answered. In addition, these explanations have been added to the interview form. An e-mail address was provided to the participants outside the reference group in order to answer their questions about the interview form. Since the distance education activities continued at the end of the 2020-2021 academic year, the data were collected online due to COVID-19 pandemic (via Google Forms).

2.4 Data analysis

In the present research, the data accessed through the forms were analyzed with the content analysis technique. The basic process applied in content analysis is to gather similar data within the framework of certain concepts and themes and to interpret them in a way that the reader can understand (Yıldırım & Şimşek, 2011). Categorical analysis, one of the content analysis types, was also used. In the application of categorical analysis, first the data was coded, categories were created and organized, and in the final stage, the findings were defined and interpreted (Robson, 2001). The MAXQDA 2020 qualitative data analysis program was used to conduct the content analysis. In order to ensure validity and reliability in the analysis of the data, the coding was carried out by two researchers (authors) and direct quotations were made from the instructors' views on the codes. After the analysis, the data was visualized and presented to the reader.

3. Results

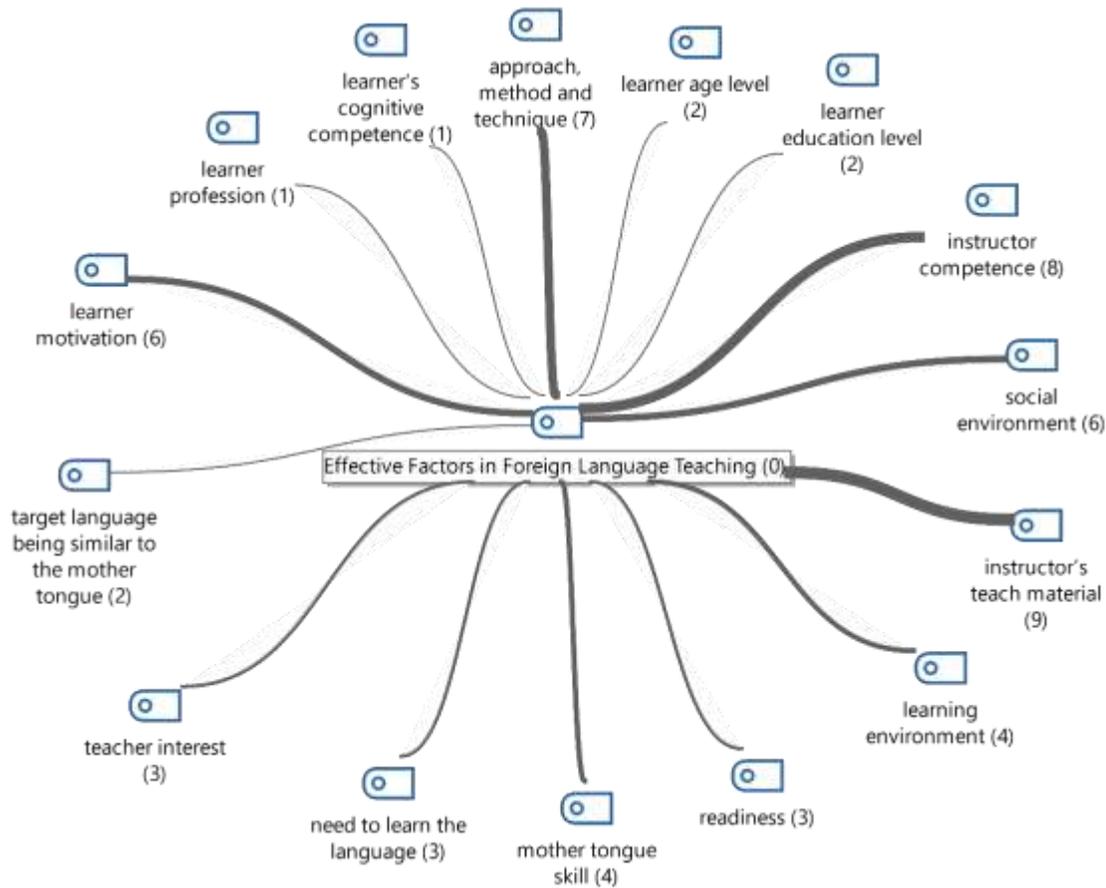


Figure 1. Effective factors in foreign language teaching according to Turkish as a foreign language instructors

In Figure 1, the codes related to the effective factors in foreign language teaching according to Turkish as foreign language instructors are indicated. For this, the following question was asked to the instructors: “Which factors do you think are effective in foreign language teaching?”. As shown in Figure 1, instructor’s teach material (9), instructor competence (8), approach, method and technique (7), learner motivation (6), social environment (6), mother tongue skill (4), learning environment (4), readiness (3), teacher interest (3), need to learn the language (3), target language being similar to the mother tongue (2), learner age level (2), learner education level (2), learner's cognitive competence (1), learner profession (1) are among the most effective factors are in foreign language teaching. In this theme, direct quotations were not included, as only the affecting factors were listed by the instructors.

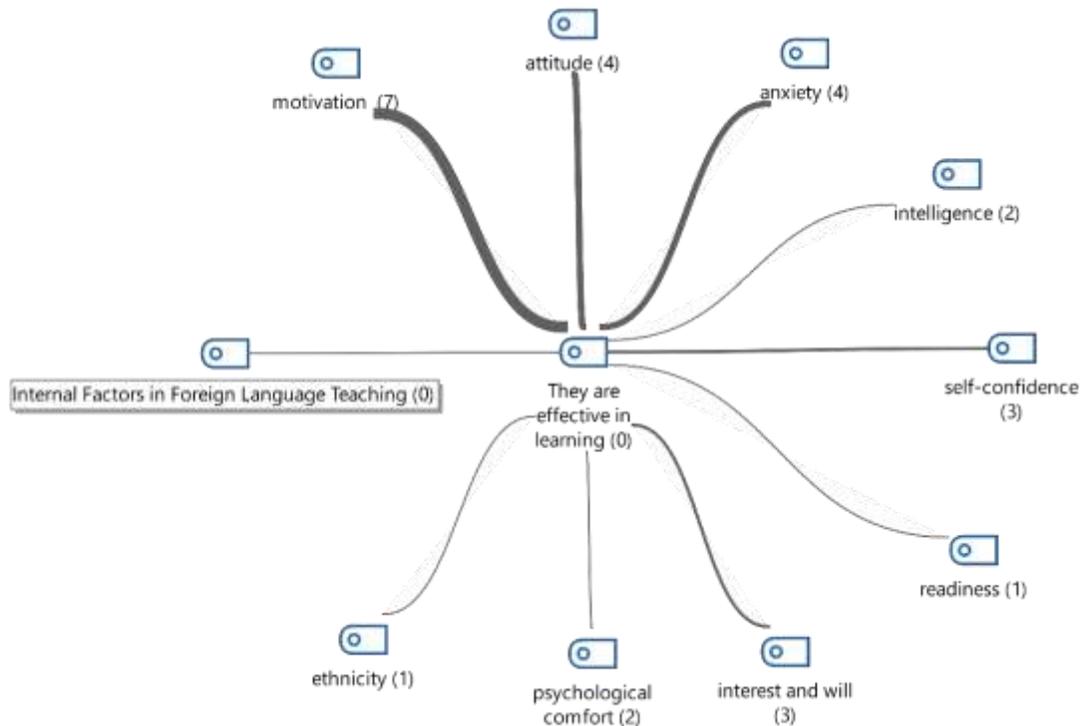


Figure 2. Effective internal factors in foreign language teaching according to Turkish as a foreign language instructors

In Figure 2 based on the question, “What do you think about the effect of internal factors in speaking a foreign language? (2.1. If you think it is effective, which internal factors can be effective?)”, the codes related to the effective internal factors in teaching Turkish as foreign language were presented. Accordingly, the instructors think that motivation (7), attitude (4), anxiety (4), interest and will (3), self-confidence (3), psychological comfort (2), intelligence (2), readiness (1), ethnicity (1) are effective internal factors in learning.

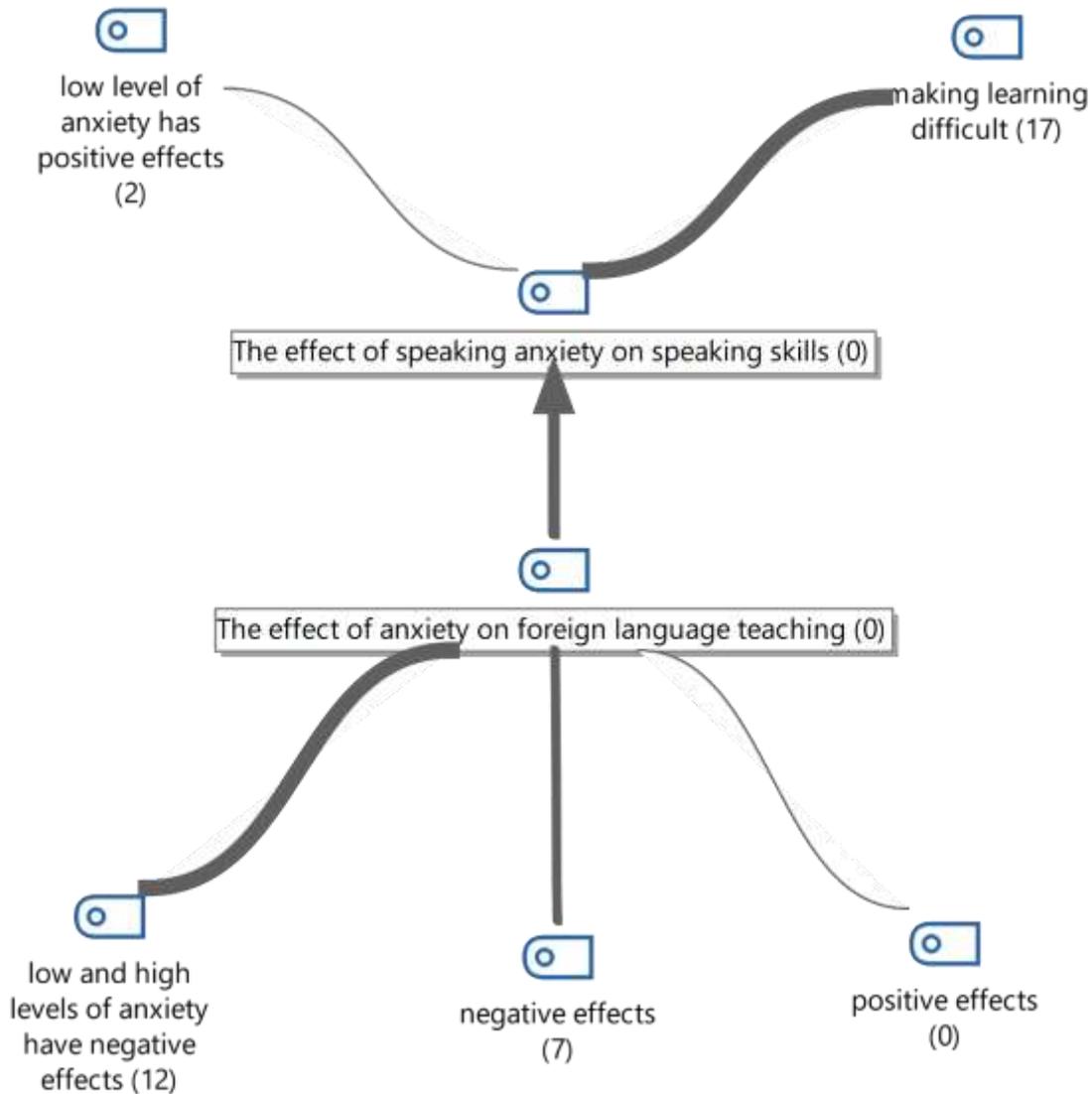


Figure 3. The effect of anxiety on foreign language teaching and speaking skills according to Turkish as a foreign language instructors

Figure 3 shows “What do you think about the effect of anxiety in foreign language teaching? (3.1. Do you think anxiety affects foreign language teaching positively or negatively? Explain with reasons.)” and “What do you think about the effect of speaking anxiety on speaking skill? Please explain.” The codes related to the effect of anxiety on foreign language teaching and speaking skills were given to Turkish as a foreign language instructors. Accordingly, the effect of anxiety on foreign language teaching was seen as completely negative by 7 instructors. While 12 instructors stated that low and high levels of anxiety have negative effects on teaching. There was no instructor who thought that anxiety had a positive effect. The codes obtained from the question about the effect of speaking anxiety on speaking skills were found to be making learning difficult (17), and a low level of anxiety has positive effects (2). In other words, 17 instructors think that speaking anxiety makes it difficult to learn in speaking skills, while 2 instructors think that having a low level of anxiety will have positive effects on speaking skills.

Table 2. Direct quotations regarding the effect of anxiety on foreign language teaching and speaking skills

Foreign Language Teaching	
Code	Direct Quote
low and high levels of anxiety have negative effects	P2: Anxiety is definitely effective. We can see concretely the effects of anxiety, especially on listening and speaking skills. Anxiety is definitely effective. We can see concretely the effects of anxiety, especially on listening and speaking skills. Both high anxiety and low anxiety affect learning negatively. If the anxiety is high, the student hesitates to speak and develops a negative attitude towards speaking. Or they may not be able to express what they know. He may miss words while listening due to high anxiety, and may have trouble making sense of them. She may make speech mistakes. And it can affect other reading and writing skills as well.
negative effect	P1: Anxiety in foreign language teaching negatively affects learning. If the language learner has a high level of anxiety, the language learning process is negatively affected, and if the anxiety level is low, it is positively affected.
Speaking Skill	
low level of anxiety has positive effects	P13: I think that anxiety at the optimum level is necessary in all skill areas and has a nurturing aspect to the learning process, but the concept of speaking anxiety has negative connotations as it is and will definitely interrupt the fluency of the speech. Speaking anxiety can also stem from fear of being judged, being disgraced to others, and feeling worthless.
making learning difficult	P12: Speaking anxiety can prevent the speaker from using the language properly and properly by having diction problems. It can weaken the power to comment. By suppressing critical and creative thinking skills, it may prevent her from performing original and meaningful conversations.

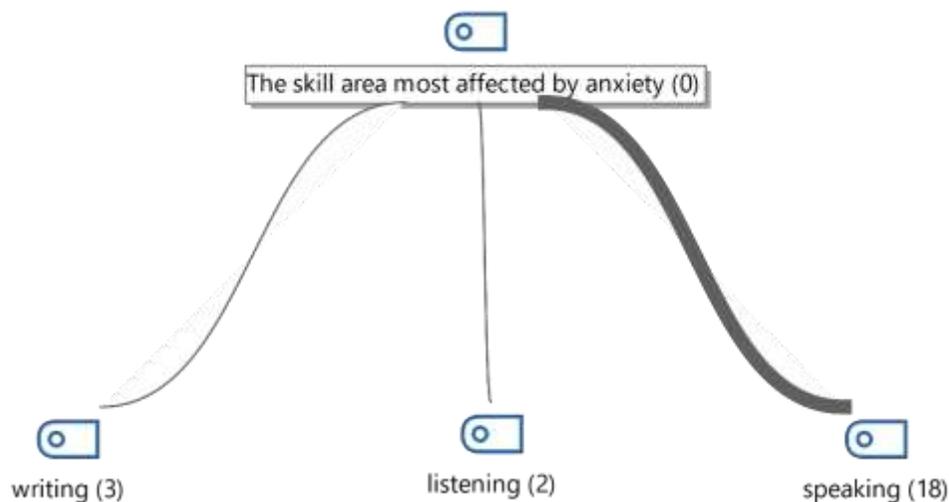


Figure 4. The skill area most affected by anxiety in foreign language teaching according to Turkish as a foreign language instructors

In Figure 4 According to the question of “Which of the basic language skills do you think anxiety affects the most? Please explain with reasons.”, the codes related to the skill area

most affected by anxiety in foreign language teaching were presented. Accordingly, the codes related to the skill most affected by anxiety are as follows: speaking skill (18), writing skill (3), listening skill (2). Examples of direct quotations from the resulting codes are given in Table 3 below.

Table 3. Direct quotations from the skill area most affected by anxiety in foreign language teaching instructors

Code	Direct Quote
Speaking	P17: It is most effective in speaking. Anxiety about making mistakes in the target language, embarrassment when speaking, tongue stiffness, social phobia, and low self-efficacy beliefs are felt or revealed more in speaking skills.
Writing	P4: It affects speaking and writing skills. In writing skill, the student has the fear of making mistakes while writing his thought. On the other hand, in her speaking skill, she thinks that the people around her will not understand them, and she creates shyness.
Listening	P13: On the other hand, in her speaking skill, she thinks that the people around her will not understand them, and she creates shyness. Missing a few words while listening and being stuck there will cause the whole to slip out of hand.

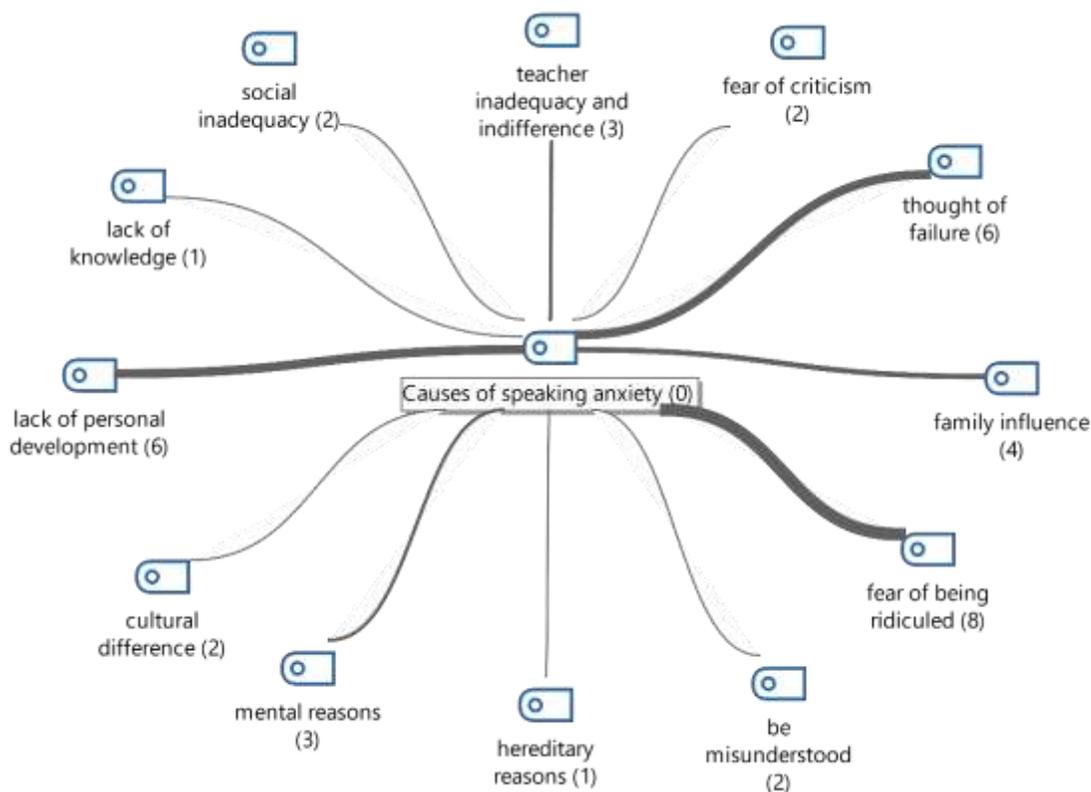


Figure 5. Causes of speaking anxiety in foreign language teaching according to Turkish as a foreign language instructors

In Figure 5, according to the question of, “What do you think might be the reasons for the speaking anxiety you observe in your students?”, the codes for the reasons for the occurrence

of speaking anxiety in foreign language teaching were presented. The codes were formed according to: fear of being ridiculed (8), thought of failure (6), lack of personal development (6), family influence (4), teacher inadequacy and indifference (3), mental reasons (3), social inadequacy (2), cultural difference (2), be misunderstood (2), fear of criticism (2), lack of knowledge (1) and hereditary reasons (1). Examples of direct quotations for frequently occurring codes in this theme are presented in Table 4 below.

Table 4. Direct quotations regarding the causes of speaking anxiety in foreign language teaching

Code	Direct Quote
fear of being ridiculed	P3: ... The attitudes of other students in the classroom environment towards their friends, that is, the simple mistakes that are encountered are not tolerated and ridiculed in the classroom.
lack of personal development	P10: Lack of words and not repeating and reinforcing the new words heard, Lack of speaking skills in front of the community, Rules of the society, Lack of personal development (introvert), Fear of criticism.
thought of failure	P1: I think that the thought of failing, the worry of making mistakes, the fear of being disliked and criticized are effective.

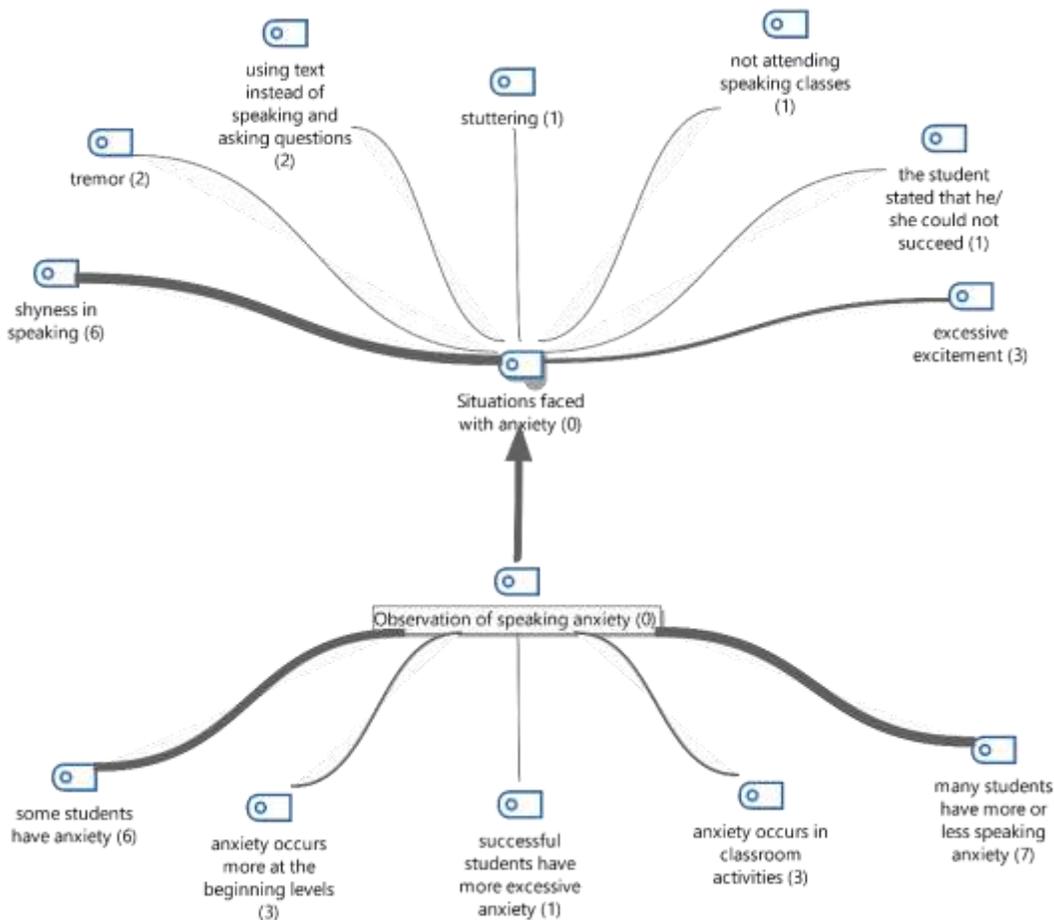


Figure 6. Observation of speaking anxiety in foreign language teaching according to Turkish as a foreign language instructors

In Figure 6, according to the question of “What can you say about whether your students have speaking anxiety?” and “If you think they have speaking anxiety, can you explain the situations that caused you to think so?” codes for observing speaking anxiety are given. According to this, regarding the observation of speaking anxiety, many students have more or less speaking anxiety (7), some students have anxiety (6), anxiety occurs more at the beginning levels (3), anxiety occurs in classroom activities (3), successful students have more excessive anxiety (1). In addition, the following codes were formed in the sub-theme of situations faced with anxiety: shyness in speaking (6), excessive excitement (3), using text instead of speaking and asking questions (2), tremor (2), stuttering (1), not attending speaking classes (1), the student stated that he/she could not succeed (1). Direct quotations regarding the frequently repeated codes in this theme are presented in Table 5 below.

Table 5. Direct quotations regarding the observation of speaking anxiety in foreign language teaching according to Turkish as a foreign language instructors

Observation	
Code	Direct Quote
many students have more or less speaking anxiety	P1: Almost all of the students have more or less speaking anxiety. The reasons for this may be different for each student. He does not speak well in his native language, so he may think that this will be the case in a foreign language as well. The culture of the society she grew up in can also be effective in this.
some students have anxiety	P13: I had students with speaking anxiety. Some of these students were students who spent most of their time alone outside of the classroom and participated in social activities at a limited level. Sometimes they were exposed to the laughter of their friends. They had arrived in a foreign environment and were leaving their country for the first time. Most of them were not in good financial condition and were deprived of the opportunity to participate in social activities.
Situations Faced with Anxiety	
shyness in speaking	P2: I can say that the students are shy during the speech, their excessive excitement, and their unwillingness to participate in the conversation.
excessive excitement	P12: I think some of my students have speaking anxiety. The body language they use and the behaviors they show, their voices hoarse, trembling, abnormal breathing, the shape of their faces, and stuttering make me think about this.
using text instead of speaking and asking questions	P11: I had students who I thought were anxious, I tried to communicate with them more one-on-one rather than at the center of the class crowd, and tried to support them. This is what I thought when the student pulled back in the lesson or had something he wanted to say, instead of saying it directly, he called him and wrote it on a paper.

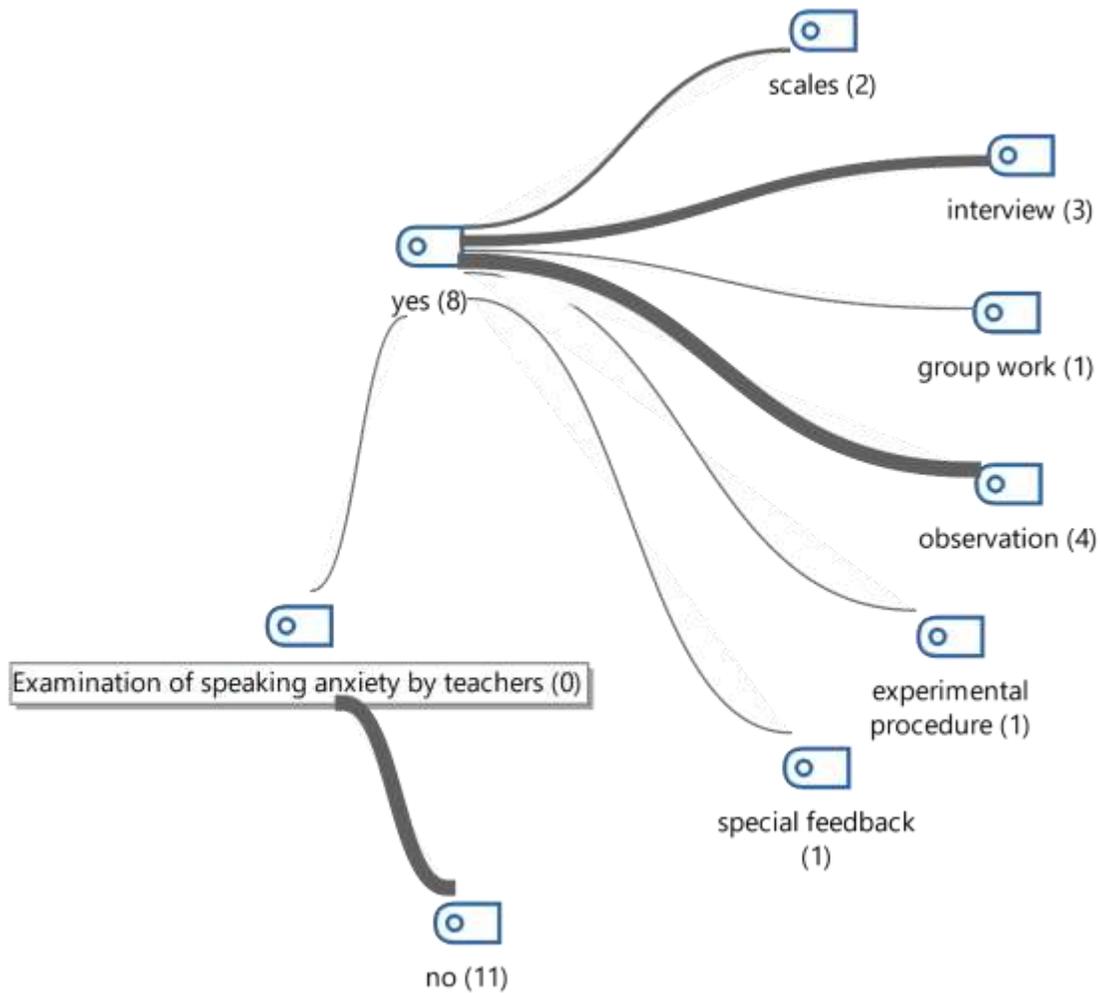


Figure 7. Examination of speaking anxiety by instructors

In Figure 7, the codes formed for the examination of speaking anxiety by Turkish as a foreign language instructors were presented with the question of “Do you do any work to measure the anxiety level of your students or to reveal the reasons? If so, what tools do you use?”. Accordingly, 11 instructors do not examine speaking anxiety by conducting a separate study. The remaining 8 instructors conduct examinations with some techniques. Observation (4), interview (3), scales (2), group work (1), experimental procedure (1), special feedback (1) codes were formed from the instructors who examined speaking anxiety by doing a separate study.

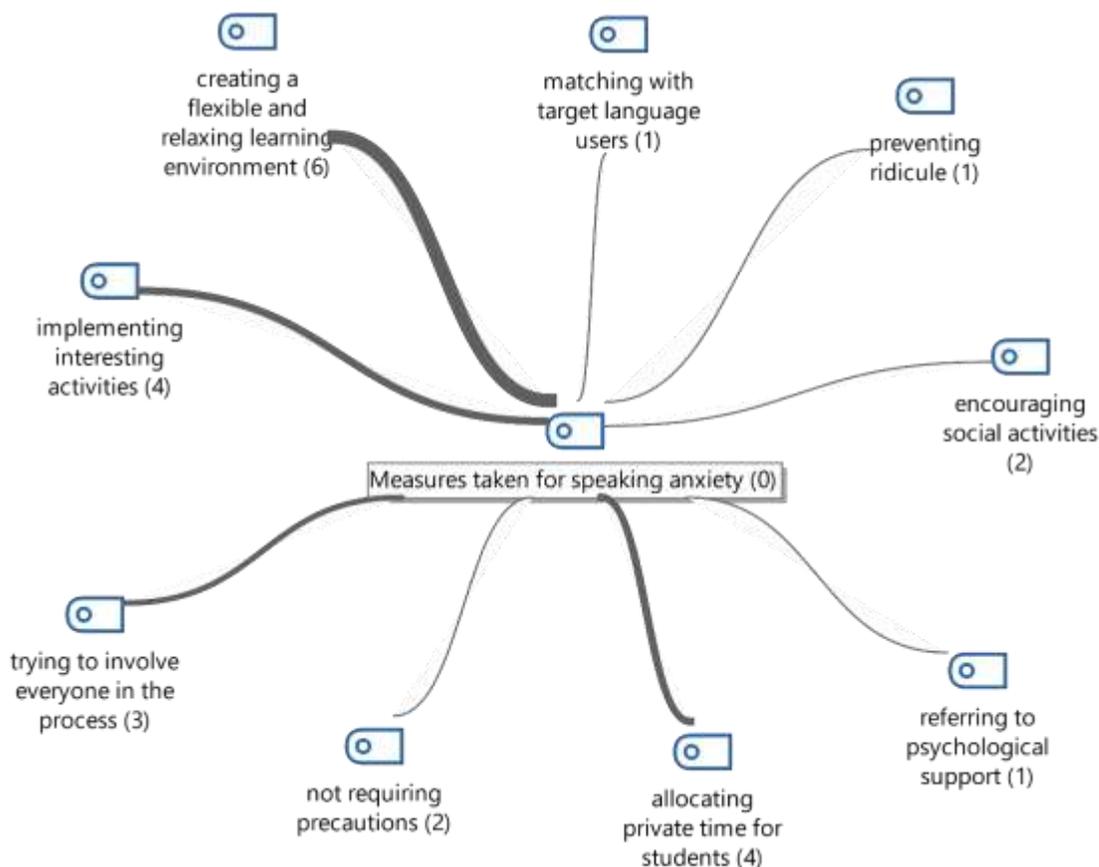


Figure 8. Measures for speaking anxiety in foreign language teaching according to Turkish as a foreign language instructors

In Figure 8, based on the question of “What kind of precautions do you take when you think your students have speaking anxiety?”, measures for speaking anxiety in foreign language teaching were examined. Thus, creating a flexible and relaxing learning environment (6), implementing interesting activities (4), allocating special time for students (4), trying to involve everyone in the process (3), not requiring precautions (2), encouraging social activities (2), matching with target language users (1), preventing ridicule (1), and referring to psychological support (1), a total of nine codes were formed. Direct quotations for frequently recurring codes are given in Table 6 below.

Table 6. Direct quotations of measures for speaking anxiety in foreign language teaching according to Turkish as a foreign language instructors

Code	Direct Quote
creating a flexible and relaxing learning environment	P15: I'm trying to instill confidence. I support your speeches. I don't focus on mistakes. P1: I make the learning environment more flexible and comfortable.
implementing interesting activities	P2: I encourage students to participate in the conversation through fun activities. P7: After or before the lesson, I do some activities that motivate her. By changing the shape of the question and asking a question with a different grammatical structure, I try to focus on a structure directly and prevent it from worrying. I pave the way especially with descriptive sentences that start with "so".

allocating special time for students	P8: I take care of my students personally. I think that I have gained 3 of my students very well. I think that I have achieved success on my students who do not attend the course. P13: I am in frequent contact with people who have speaking anxiety.
trying to involve everyone in the process	P3: I am in frequent contact with people who have speaking anxiety.

4. Discussion and conclusion

In the study, the speaking anxiety observed by Turkish language instructors in their students was examined. Data were collected by applying a semi-structured interview form to 19 instructors. Thus, it has been tried to explain the subject from the perspectives of Turkish language instructors.

Turkish as a foreign language instructors stated that material, instructor proficiency, approach, method and technical subjects are the most effective factors in foreign language teaching. Language learning methods are effective in preparing an independent learning environment suitable for the needs of students, and the targeted level of proficiency can be easily achieved with these methods (Baskın, İşcan, Karagöz & Birol, 2017). On the other hand, the importance of materials in the realization of formal teaching activities is undeniable. Because the materials prepared according to the program to be followed in the teaching process provide students with learning opportunities in accordance with the approach and method used. Demir (2015) stated that teaching materials are effective in making learning permanent. Barın (2004) evaluated the subject of material preparation within the general principles of teaching Turkish to foreigners and emphasized that the materials should be prepared according to the level of the student and the teaching purpose. Duman (2013) states that the well-prepared materials in teaching Turkish as a foreign language are important in achieving the teaching objectives, but also states that the competencies of the instructors who will apply these materials are a much more effective factor. Instructors play important roles in all stages of education, including planning, implementation and evaluation of educational activities (Mutlu, 2020). Thus, it is stated in various studies that the competencies of the instructors are an effective factor in achieving the objectives of the teaching activities (Ashton & Webb, 1986; Eryaman, 2007; Leigh & Mead, 2005; Tschannen-Moran & Hoy, 2001; Woolfolk & Hoy, 1990). Approaches, methods and techniques related to how teaching should be done were also seen as an important factor by the instructors. The method is “the way chosen by the teacher to teach a content and to organize the efforts of the student to learn it in line with the determined strategy”; and the teaching technique as “the method of applying the methods chosen to achieve the goal” (Dal & Tatar, 2017, p. 27-28). Türkoğlu (2004) also discusses the method used among the factors affecting success in language teaching. According to these, the choice of approach, method and technique, which is seen as an important factor by the instructors, has a great importance in conducting the courses in line with the desired goals. Because all teaching activities are organized according to these. Göçen (2020) states that it is important for Turkish as a foreign language instructors to have knowledge about methods and to choose the most suitable method for learners.

The instructors think that motivation, attitude and anxiety are the most effective factors among the internal factors in teaching Turkish as a foreign language. As can be seen, these factors are closely related to the psychological state of the students. It can be said that motivation is in a central position together with language ability in foreign language learning success (Acat & Demiral, 2002). Motivation is a very important factor in foreign language learning, which is affected by different variables (personality variables, students' attitudes, learning styles) (Gilakjani, Leong & Sabouri, 2012). Studies in the field of foreign language teaching related to attitude and anxiety have revealed that these psychological states affect learning (Genç & Kaya,

2011; Kazazoğlu, 2013; Saracoğlu & Varol, 2007; Teimouri, Goetze & Plonsky, 2019; Zhang, 2019). According to these, the internal factors that Turkish as a foreign language instructors consider most important are also seen as important factors in the literature.

Turkish as a foreign language instructors stated that the speaking skill most affected by anxiety. Baş (2014) found that high school students generally get excited and worried about speaking activities in foreign language classes. VonWörde (2003) also stated that the most anxiety-provoking language activity is speaking. This may be because the speaking skill manifests itself in a more immediate way and the learner needs to respond in a limited amount of time.

The instructors explained the reasons for the speaking anxiety experienced by their students as the fear of being ridiculed, the thought of failure, lack of personal development, and the family effect. In the study conducted by Tekşan, Mutlu and Çinpolat (2019), it was stated that secondary school students in mother tongue teaching also experienced speaking anxiety most frequently due to the fear of being ridiculed. It can be seen from here that the fear of being ridiculed manifests itself not only in foreign language teaching but also in other course areas. This situation can be considered as a social problem. In the study of İşcan and Karagöz (2016a), it was determined that feeling inadequate in terms of knowledge and lack of self-confidence have an effect on the speaking anxiety of university students. In this study, the thought of failure of learners may have overtaken their self-confidence. In the study conducted by Erdoğan (2018), it was stated that the family has an effect on the communication anxiety of university students. In the Erdoğan's (2018) study, it was presented that the oppressive parental attitude in the family environment, where children gain their first socialization and communication skills, may have a negative effect. The lack of personal development and family effect revealed in this research can be combined at this point. Because, as a result of the negative impact of the family, children who cannot fully acquire their first socialization and communication skills may experience personal development deficiencies in later ages, so it can be said that this situation may cause speaking or communication anxiety.

Most of the instructors stated that many students have more or less speaking anxiety. They observed that this speaking anxiety mostly occurs with shy attitude and excessive excitement when speaking. In the study conducted by Duman, Görül and Bilgin (2017), it was stated that university students avoid speaking English when they experience foreign language speaking anxiety. It is stated that speaking anxiety can manifest itself emotionally in the form of sadness, anger, fear, or physically in the form of rapid heartbeat and sweating (Melanlıoğlu & Demir, 2013). Trembling and stuttering reached in this study can also be considered as situations in which anxiety manifests itself physically. In addition, trembling and stuttering can also be situations that can manifest themselves with excessive excitement.

There are a total of 8 instructors who examine the speaking anxiety of the learners by conducting a study. The other 11 instructors also stated that they did not examine the situation with a special study. It was determined that the instructors who examined the speaking anxiety state mostly observed, interviewed, and used scales. The fact that the instructors examine the situation by using more observation and interview techniques can be considered as a factor that will lead to more detailed results. Because in this way, the situation of the students in the classroom can be determined, and detailed answers can be obtained from the student's point of view by interviewing.

The instructors take various measures to solve speaking anxiety situation in their students. These are mostly creating a flexible and relaxing learning environment, applying interesting activities, and allocating special time for the student. In Polatcan's (2019) study, in which he examined the studies on anxiety in teaching Turkish as a foreign language, it was mostly focused on creating environments where the target language can be used in daily life, accepting anxiety as a factor in the education process and arranging the environment by taking this situation

into account, various in-class activities. It has been determined that suggestions are made to eliminate the anxiety of the students, to pay attention to the level of interest and motivation. Mutlu and Süğümlü (2018) states that audio-visual materials are fun and interesting, so they are essential for effective language teaching. In this context, İşcan and Karagöz (2016b) drew attention to the fact that movies provide entertaining and instructive environments in classroom activities. In this research, the solution suggestions regarding the learning environment and activity stated by the instructors are in line with the results of the researches cited.

According to the results of the research, the following recommendations are presented:

- In teaching Turkish as a foreign language, it may be beneficial to consider the internal factors by the instructors.
- It is necessary to determine the speaking anxiety states of the students and to take measures to prevent it.

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References

- Acat, M. B., & Demiral, S. (2002). Türkiyede yabancı dil öğreniminde motivasyon kaynakları ve sorunları. *Kuram ve Uygulamada Eğitim Yönetimi*, (31), 312-329.
- Alrabai, F. (2014). A model of foreign language anxiety in the Saudi EFL context. *English Language Teaching*, 7(7), 82-101
- Arnold, J., & Brown, H. D. (1999). A map of the terrain. Affect in language learning. J. Arnold. (Ed.) UK: Cambridge University Press. pp. 1-24.
- Ashton, P. T., & Webb, R. (1986). *Making a difference: Teachers' sense of efficacy and student achievement*. New York: Longman.
- Balemir, S. H. (2009). *The sources of foreign language speaking anxiety and the relationship between proficiency level and degree of foreign language speaking anxiety* (Master's thesis, Bilkent University).
- Barın, E. (2004). Yabancılar Türkçe öğretiminde ilkeler. *Hacettepe Üniversitesi Türkiyat Araştırmaları (HÜTAD)*, (1), 19-30.
- Baskın, S., İşcan, A., Karagöz, B., & Birol, G. (2017). The use of vocabulary learning strategies in teaching Turkish as a second language. *Journal of Education and Practice*, 8(9), 126-134.
- Baş, G. (2014). Lise öğrencilerinde yabancı dil öğrenme kaygısı: Nitel bir araştırma. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, (36), 101-119.
- Boylu, E., & Çangal, Ö. (2015). Yabancı dil olarak Türkçe öğrenen Bosna-Hersekli öğrencilerin konuşma kaygılarının çeşitli değişkenler açısından incelenmesi. *Uluslararası Türkçe Edebiyat Kültür Eğitim (TEKE) Dergisi*, 4(1), 349-368.
- Brown H. D. (2007). *Principles of language learning and teaching*. White Plains, NY: Pearson Education.

- Çağatay, S. (2015). Examining EFL students' foreign language speaking anxiety: The case at a Turkish state university. *Procedia-Social and Behavioral Sciences*, 199, 648-656.
- Dal, S., & Tatar, N. (2017). Temel kavramlar. In S. Dal & M. Köse (Eds.), *Öğretim ilke ve yöntemleri* (pp. 1-45). Ankara: Anı Yayıncılık.
- Debreli, E., & Demirkan, S. (2015). Sources and levels of foreign language speaking anxiety of English as a foreign language university students with regard to language proficiency and gender. *International Journal of English Language Education*, 4(1), 49-62.
- Demir, T. (2015). Yabancı dil olarak Türkçe öğretiminde materyal yetkinliği-ders kitapları. *Dil Dergisi*, 166, 43-52.
- Dil, Y. (2009). EFL Learners communication obstacles. *Electronic Journal of Social Sciences*, 8(29), 84-100.
- Duman, B., Göral, G. N., & Bilgin, H. (2017). Üniversite öğrencilerinin sınıf ortamında yabancı dil konuşma kaygısı üzerine nitel bir çalışma. *Adnan Menderes Üniversitesi Eğitim Fakültesi Eğitim Bilimleri Dergisi*, 8(2), 13-27.
- Duman, G. B. (2013). Türkçenin yabancı dil olarak öğretiminde materyal geliştirme ve materyallerin etkin kullanımı. *Ana Dili Eğitimi Dergisi*, 1(2), 1-8.
- Erdoğan, Ö. (2018). Üniversite öğrencilerinde topluluk önünde konuşma kaygısının nedenleri ve geliştirilen baş etme mekanizmaları. *İletişim Kuram ve Araştırma Dergisi*, (47), 351-367.
- Eryaman, M. Y. (2007). From reflective practice to practical wisdom: Toward a post-foundational teacher education. *International Journal of Progressive Education*, 3(1), 87-107
- Gay, L. R., Mills, G. E., & Airasian, P. W. (2011). *Educational research: Competencies for analysis and application* (10th ed.). Boston: Pearson.
- Genç, G., & Kaya, A. (2011). Sınıf öğretmeni adaylarının yabancı dil derslerine yönelik tutumları ile yabancı dil akademik başarıları arasındaki ilişki. *Bahkesir Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 14(26), 19-30.
- Gilakjani, A. P., Leong, L. M., & Sabouri, N. B. (2012). A study on the role of motivation in foreign language learning and teaching. *International Journal of Modern Education & Computer Science*, 4(7), 9-16.
- González, V. (2001). The role of socioeconomic and sociocultural factors in language minority children's development: An ecological research view. *Bilingual Research Journal*, 25(1-2), 1-30.
- Göçen, G. (2020). Türkçenin yabancı dil olarak öğretiminde yöntem. *RumeliDE Dil ve Edebiyat Araştırmaları Dergisi*, (18), 23-48. <https://doi.org/10.29000/rumelide.705499>
- Gökhan, O. (2020). *Türkçeyi ikinci dil olarak öğrenen bireylerin konuşma kaygısının konuşma öz yeterliliklerine etkisinin incelenmesi* (Master's thesis, Bursa Uludağ University).
- He, D. (2017). How to cope with foreign language speaking anxiety effectively? The case of university students in China. *Electronic Journal of Foreign Language Teaching*, 14(2), 159-174.
- Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern language journal*, 70(2), 125-132.
- Hutchinson, T., & Waters A. (1987). *English for specific purposes: A learning-centred approach*. Cambridge: Cambridge University Press.
- İşcan, A., & Karagöz, B. (2016a). Türkçe öğretmeni adaylarının konuşma kaygılarının incelenmesi Gaziosmanpaşa üniversitesi Örneği. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 17(3), 193-206.
- İşcan, A., & Karagöz, B. (2016b). The use of films to help students gain speaking ability in teaching Turkish as a foreign language. *Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 20(4), 1265-1278.

- Johnson, B., & Christensen, L. (2014). *Eğitim araştırmaları: nicel, nitel ve karma yaklaşımlar* (Translate Ed. S. B. Demir). Ankara: Eğiten Kitap.
- Kazazoğlu, S. (2013). Türkçe ve İngilizce derslerine yönelik tutumun akademik başarıya etkisi. *Eğitim ve Bilim*, (38), 294-307.
- Köse, H. (2020). *Türkçeyi yabancı dil olarak öğrenenlerin konuşma kaygularının değerlendirilmesi* (Master's thesis, Tokat Gaziosmanpaşa University).
- Leigh, A., & Mead, S. (2005). Lifting teacher performance, Policy Report. Progressive Policy Institute. <https://files.eric.ed.gov/fulltext/ED491196.pdf>.
- Liu, M. (2007). Anxiety in oral English classrooms: A case study in China. *Indonesian Journal of English Language Teaching*, 3(1), 119-137
- MacIntyre, P. D., & Gardner, R. C. (1994). The subtle effects of language anxiety on cognitive processing in the second language. *Language learning*, 44(2), 283-305.
- Marzec-Stawiarska, M. (2015). Investigating foreign language speaking anxiety among advanced learners of English. In *Issues in teaching, learning and testing speaking in a second language* (pp. 103-119). Springer, Berlin, Heidelberg.
- Mede, E., & Karairmak, Ö. (2017). The predictor roles of speaking anxiety and English self efficacy on foreign language speaking anxiety. *Journal of Teacher Education and Educators*, 6(1), 117-131.
- Melanlıoğlu, D., & Demir, T. (2013). Türkçe öğrenen yabancılar için konuşma kaygısı ölçeğinin Türkçe formunun geçerlik ve güvenilirlik çalışması. *The Journal of Academic Social Science Studies*, 6(3), 389-404.
- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation* (fourth edition). San Francisco, CA: John Wiley & Sons.
- Mutlu, H. H. (2020). A case study on the competencies of the teachers assigned abroad by the ministry of national education to teach turkish to foreigners. *Educational Policy Analysis and Strategic Research*, 15(1), 73-93. <https://doi.org/10.29329/epasr.2020.236.5>
- Mutlu, H. H., & Süğümlü, Ü. (2018). Türkçenin yabancı dil olarak öğretiminde reklam filmlerinin farklı beceri ve seviyelerde kullanımı. *Turkish Studies (Elektronik)*, 13(27), 1039-1053.
- Özer, B., & Korkmaz, C. (2016). Yabancı dil öğretiminde öğrenci başarısını etkileyen unsurlar. *EKEV Akademi Dergisi*, (67), 59-84.
- Öztürk, G., & Gürbüz, N. (2013). The impact of gender on foreign language speaking anxiety and motivation. *Procedia-Social and Behavioral Sciences*, 70, 654-665.
- Öztürk, G., & Gürbüz, N. (2014). Speaking anxiety among Turkish EFL learners: The case at a state university. *Dil ve Dilbilimi Çalışmaları Dergisi*, 10(1), 1-17.
- Polatcan, F. (2019). Yabancı dil olarak Türkçe öğretiminde kaygı üzerine yapılan araştırmaların incelenmesi. *Ana Dili Eğitimi Dergisi*, 7(1), 205-216.
- Robson, C. (2001). *Real world research*. Oxford: Blackwell Publishers.
- Sadighi, F., & Dastpak, M. (2017). The sources of foreign language speaking anxiety of Iranian English language learners. *International Journal of Education and Literacy Studies*, 5(4), 111-115.
- Saracaloğlu, A., & Varol, S. (2007). Beden eğitimi öğretmen adaylarının yabancı dile yönelik tutumları ve akademik benlik tasarımları ile yabancı dil başarıları arasındaki ilişki. *Eğitimde Kuram ve Uygulama*, 3(1), 39-59.
- Serraj, S., & Noordin, N. B. (2013). Relationship among Iranian EFL students' foreign language anxiety, foreign language listening anxiety and their listening comprehension. *English Language Teaching*, 6(5), 1-12.
- Spielberger, C. D. (1983). *Manual for the state-trait anxiety inventory*. Palo Alto, California: Consulting Psychological Press.

- Şen, Ü., & Boylu, E. (2015). Türkçeyi yabancı dil olarak öğrenen İranlı öğrencilerin konuşma kaygılarının değerlendirilmesi. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 12(30), 13-25.
- Teimouri, Y., Goetze, J., & Plonsky, L. (2019). Second language anxiety and achievement: A meta-analysis. *Studies in Second Language Acquisition*, 41(2), 363-387. <https://doi.org/10.1017/S0272263118000311>
- Tekşan, K., Mutlu, H. H., & Çinpolat, E. (2019). The examination of the relationship between the speech anxiety and speaking skill attitudes of middle school students and the opinions of teachers on speech anxiety. *Journal of Language and Linguistic Studies*, 15(4), 1395-1412.
- Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and teacher education*, 17(7), 783-805.
- Tunçel, H. (2015). Yabancı dil olarak Türkçe konuşma kaygısının çeşitli değişkenler açısından incelenmesi. *Hacettepe Üniversitesi Yabancı Dil Olarak Türkçe Araştırmaları Dergisi*, (2), 107-135.
- Turanlı, A. (2007). Yabancı dil öğrencilerinin sözel katılımını etkileyen etmenler ve algılanan etki düzeyleri (Öğrenci ve öğretmen algıları). *Eğitim ve Bilim*, 32(146), 39-53.
- Tüm, D. Ö., & Kunt, N. (2013). İngilizce Öğretmen Adaylarının Konuşma Kaygısı. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 28(3), 385-399.
- Türkoğlu, S. (2004). Dil öğretiminde başarıyı etkileyen etmenler. *Kazım Karabekir Eğitim Fakültesi Dergisi*, 9, 457-469.
- Von Wörde, R. (2003). Students' perspectives on foreign language anxiety. *Inquiry*, 8(1), n1.
- Vural, H. (2017). *The relationship of personality traits with English speaking anxiety and English speaking self-efficacy* (Doctoral dissertation, Institute of Educational Sciences, Gazi University).
- Woolfolk, A. E., & Hoy, W. K. (1990). Prospective teachers' sense of efficacy and beliefs about control. *Journal of Educational Psychology*, 82, 81-91.
- Yıldırım, A., & Şimşek, H. (2011). *Sosyal bilimlerde nitel araştırma yöntemleri*. Ankara: Seçkin Yayıncılık.
- Yılmaz, G. (2018). *Ortaokuldaki sığınmacı öğrencilerin konuşma kaygılarının değerlendirilmesi* (Master's thesis, Institute of Educational Sciences, Sakarya University).
- Young, D. J. (1991). Creating a low-anxiety classroom environment: What does language anxiety research suggest? *The Modern Language Journal*, 75(4), 426-439.
- Zhang, X. (2019). Foreign language anxiety and foreign language performance: A meta-analysis. *The Modern Language Journal*, 103(4), 763-781.





Examination of the Correlation Between 8th grade Students' Cyber Bully/Victim Behaviors and their Self-confidence Values

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Abstract

In the study, the correlation between cyberbullying and cyber victimization, which is included in the digital literacy skill in the Social Studies Curriculum, and self-confidence value was examined. From this point of view, the research aims to determine the degree and direction of the correlation between 8th grade students cyberbully/victim behaviors and their self-confidence value. As a data collection tool; The CyberBully/Victim Scale developed by Ayas and Horzum (2010); The Self-Confidence Scale developed by Akin (2007), and the Personal Information Form developed by the researcher were used to access personal information. The research sample consists of a total of 455 students studying at the 8th grade of public and private schools in the Nilufer, Yildirim, and Kestel districts of Bursa. Spearman's Rho Correlation analysis was used in the analysis of the data. As a result of the study, a statistically significant moderate-level inverse correlation was found between students cyberbully/victim status and their tendency levels of self-confidence.

Keywords: cyberbullying, cyberbully, cyber victim, value, self-confidence.

1. Introduction

Innovation is progressing rapidly in the field of education as well as in many areas. The most common of these innovations is the use of technology in education. Education is not the only technology in student life. Technology not only enables easier and faster access to scientific information, but also impacts social relationships (Tanrikulu et al., 2013).

The rapid increase in Internet use in all disciplines and age groups has created critical remorse from today's individuals. Increasing number of mass media users, aging general network users, easy access to general network applications for everyone, interpersonal communication via social media and provision of other general network applications via mass media being easy always produces positive results. If the Internet is used improperly, carelessly, and unknowingly, these situations can cause serious problems. Today, cyberbullying and suffering is a sense of meaning through the virtual world, where individuals want to share their personal lives through applications in the virtual world, express their feelings and thoughts with unlimited freedom, and

prove themselves to others. Brings to trying to meet. Better than others and take revenge. Recently, the situation of cyberbullying and victims is widespread due to the use of mass media in a wider segment. This is especially apparent among students in the world of education (Peker, 2013).

With the increasing use of technology among young people today, students can use technology tools to bully at school. Under these circumstances, one of the types of bullying among school students is a new type of bullying called “cyberbullying” (Ayas & Horzum, 2010). We believe that the effects of cyberbullying and the reflection of cyber damage are serious phenomena in our lives in interpersonal and family relationships, friendships, relationships with parents, educational processes, and many other social and human relationships increase.

1.1 *Value and values education*

In social life, everything is shaped according to values and compared with others. People often assimilate the values of their group, society, and culture and take them as criteria in their choices and judgments. Thus, they can reach general opinions such as more beautiful, appropriate, accurate, fairer, better, and more critical. Values are essential factors in determining normal or abnormal behavior in society. The affective dimension, which consists of personal behaviors and attitudes, customs and traditions, feelings of appreciation, morals and ethical values, etc., is indispensable for both individual and social life (Dilmac et al., 2009). Values are also criteria in the regulation, selection, evaluation, and decision-making processes of individuals. Values are the driving force in achieving the needs for love, respect, and self-actualization. With this aspect, values constitute a guiding, regulating, and motivating element in human life (Aydin & Gurler, 2012)

It is observed that there is serious corruption in human values in the world and Turkey. This situation reaches those who threaten humanity. As people move away from values, they lose their human characteristics. Almost all countries tend to find solutions to turn the bad situation into a positive one. As a result of the search for a solution, a new education model expressed as “values education” has been created to be implemented in schools (Yaman, 2012).

Values education strives to strengthen the transition process of values in education. These transitions are achieved through the training program and moral environment. Values education aims to develop ideas about values and their development through critical thinking, comparison of ideas, and analysis. When we examine the relationship between values education and moral development, we can say that values education and moral development focus on students' value development, but they also have differences. Values education expresses ideas about the values necessary for students while moral development focuses on the cognitive process (Yalar, 2010).

It is based on acquiring values in the educational processes to maintain the culture created in the historical process, reach the determined goals, and transfer them to the next generations. With the significant contribution of society, family, media, and education programs, it is aimed that people learn, adapt, and internalize universal, national, and spiritual values and transform them into behavior. Thus, students can become persons compatible with society developing their personalities in a healthy, balanced, and consistent way through the values education provided during the educational process (MoNE, 2017).

1. 2 *Self-confidence*

Mainly, self-confidence can be explained as believing in one's ideas, feelings, and learning ability. Since the existence of humanity, self-confidence has been affected by various experiences in family, school, and business life and is needed in every period of life. The dictionary

meaning of self-confidence is the confidence that an individual feels in himself/herself. A self-confident individual can look at the events s/he encounters realistically and positively, analyze his/her experiences correctly, make the right decisions and show active reactions to the changes in his/her life. The level of self-confidence can differ from person to person. The high or low self-confidence will make the individual successful or unsuccessful in directing his/her life as s/he wishes. Self-confidence is crucial as a determinant of failure or success in the process of being at peace with each individual's life (Yurtseven, 2011).

Self-confidence is one of the most significant factors that determine the actions of individuals. It is an expression that includes dimensions such as individuals' positive opinions about themselves, the belief that they can control events, knowing themselves with their truth and mistakes, being satisfied with themselves, and accepting themselves as they are (Gokkaya, 2017). Being aware of one's behavior, expectations, goals, and feelings; is essential for self-confidence. When asked about his/her thoughts about himself/herself, the individual should make favorable inferences with his/her likes and dislikes (Kasatura, 1998).

School-age people display certain behaviors that show their self-confidence levels. Individuals with low self-confidence levels exhibit excessive controlling attitudes. Moreover, they are also introverted, shy, quiet, and afraid of the possibility of failure. Therefore, they refrain from trying to do something, have difficulty establishing friendships, show attitudes dependent on their parents, have difficulty adapting to new situations, are emotionally overly sensitive and hurt, and constantly try to please others. Another behavior showing low self-confidence level is the lack of control, and individuals in this group have been stated to be bullies, blame others even for their own mistakes, be angry, aggressive, uncooperative, often need to ask their parents if they are loved, and have trust issues (Humphreys, 2002).

According to Lindenfield (2011), self-confidence is divided into two as internal confidence and external confidence. Internal confidence comes from people's self-emotions. Self-love, recognizing and accepting one's characteristics, thinking positively about oneself, setting realistic goals in line with their characteristics, and putting them into practice are among the elements of internal confidence. Individuals who are satisfied with themselves and at peace with themselves can be interpreted as having high-level internal confidence. External confidence is complementary to internal confidence. It is the behavior of the individual that s/he is pleased with himself/herself and that s/he accepts and loves himself/herself. It can be said that individuals with high internal confidence also have high external confidence. These two must be balanced for healthy communication (Akt. Gundogdu, 2019).

The correlation between cyberbullying/victim status, which is the sub-problem of digital literacy skills in the Social Studies Curriculum, and the self-confidence value were examined in the research. From this point of view, the research aims to determine the degree and direction of the correlation between 8th-grade students cyberbully/victim behaviors and their self-confidence value. In response to the problem of the study, answers were sought for the questions "Is there a correlation between the cyberbullying status and the self-confidence value?" and "Is there a correlation between cyber victimization experiences and self-confidence value?".

2. Method

The study was carried out with the quantitative research method and the relational survey model. The study, which aims to collect data to determine a group's main characteristics, is called the survey model (Buyukozturk et al., 2016). Relational survey models are research models that aim to determine the existence and/or degree of covariance between two or more variables (Karasar, 2009). The survey method reveals a situation to determine the selected group's

beliefs, attitudes, and opinions about a particular subject. Survey models are studies that aim to collect data to determine specific characteristics of a group (Buyukozturk et al., 2016).

2.1 Participants

The current research was conducted with 455 students, 223 of which were girls and 232 were boys, studying at the 8th-grade level in private and public secondary schools in Nilufer, Yildirim, and Kestel districts of Bursa province in the 2018-2019 academic year. In the research, 6 secondary schools were reached. Three of these schools are public and three are private schools. We especially selected the schools attended by students from different socio-economic levels.

2.2 Data collection tools

In the current study, the Cyberbully/Victim Scale developed by Ayas and Horzum (2010) and the Self-Confidence Scale developed by Akin (2007) were used as data collection tools. In addition, the Personal Information Form developed by the researcher was used to reach the students' personal information.

2.2.1 Cyberbully/victim scale

In the study, the Cyberbully and Victim Scale developed by Ayas and Horzum (2010) was used to determine students' cyberbullying and cyber victimization. During the development phase of the scale, a question pool consisting of 30 items was created by examining the literature and conducting interviews and observations with primary school students, teachers, and families where the scale would be applied. A 5-point Likert type was used to express the level of agreement about the items on the scale. This rating type was "Always (5), Often (4), Sometimes (3), Rarely (2), and Never (1)".

The Cyberbully/Victim Scale was created to determine the cyberbullying behaviors of the 6th, 7th, and 8th grade primary school students. This scale consists of 19 items and three factors to reveal cyberbully/victim levels of the individuals who are "cyberbullying" and "who are cyberbullied" to their peers. The Cyberbullying/Victim Scale's subdimension of Sexual Bullying in a Virtual Environment includes items 1, 2, 3, 4, 5, 6, and 18. Among these items, "Unauthorized and inappropriate photo-taking" constitutes the sample item of this factor. The sub-dimension of Inhibition and Harming in the Virtual Environment includes items 7, 8, 9, 12, 13, 14, 15, and 16. "Deliberately sending infected mail" constitutes the sample item of this factor. The sub-dimension of Rumors in the Virtual Environment includes items 19, 20, 21, and 22. "Spreading and disseminating humiliating rumors on the Internet or phone" constitutes the sample item of this factor.

Students were expected to mark how often they used the words and actions in the cyberbully section and how often they were exposed to them in the cyber victim section. The lowest score obtained from the Cyberbully/Victim Scale is 19, and the highest score is 95. As the scores on the scale increase, the situation of being a bully and a victim also increases.

2.2.2 Self-confidence scale

In the study, the Self-confidence Scale developed by Akin (2007) was used to determine the students' self-confidence levels. As a result of the factor analysis performed in the Self-confidence Scale study, a total of 33 items with two factors as internal confidence and external

confidence, were obtained and factor loadings of the scale are also ordered between the values of 31 and 75.

The Self-confidence Scale has the sub-dimensions of internal confidence and external confidence. The sub-dimension of internal confidence includes items 1, 3, 4, 5, 7, 9, 10, 12, 15, 17, 19, 21, 23, 25, 27, 30, 32. "I believe I can overcome my problems" is an example item for the internal confidence sub-dimension. The sub-dimension of external confidence includes items 2, 6, 8, 11, 13, 14, 16, 18, 20, 22, 24, 26, 28, 29, 31, 33. "I can understand other people's criticisms" is an example item for the external confidence sub-dimension. The highest score obtained from the Self-confidence Scale is 165, and the lowest score is 33. A high score indicates a high-level self-confidence.

2.3 Data collection and data analysis

The data in the study were obtained by using the Cyberbully/Victim Scale and the Self-confidence Scale. The research was carried out with 8th grade students studying in private and public schools in the Nilufer, Yildirim, and Kestel districts of Bursa. Through Correlation analysis, the data were analyzed to find an answer to the main problem of the study, with the questions; "Is there a correlation between the cyberbullying status and the self-confidence value?" and "Is there a correlation between cyber victimization experiences and self-confidence value?". The data were analyzed by applying correlation analysis. For the normality assumption, the Kolmogorov-Smirnov test was performed, and Skewness and Kurtosis coefficients were examined. The Skewness value in the study was between 1.507 and 941, and the Kurtosis value was between 571 and 185. Based on the findings, it was determined that the assumption of normal distribution could not be achieved. Spearman's Rho Correlation analysis was conducted to determine the degree of the correlation between students cyberbully/victim behaviors and their self-confidence value tendencies due to the data not showing normal distribution.

3. Findings

Analyzes were made in order to determine the relationship degrees of students cyberbully and cyber victim behaviors and their tendencies towards self-confidence value and the direction of the relationships.

3.1 The correlation between cyberbully/victim and self-confidence value of the students participating in the research

The results of the correlation analysis showing the correlation between the students' cyberbullying behavior scores and their self-confidence tendency scores are presented in Table 1.

Table 1. The correlation analysis results showing the correlation between students' cyberbullying behavior scores and self-confidence scores (n=455)

	Spearman's rho					
	Self-confidence			Cyberbully		
	r	P	N	r	p	N
Self-confidence	1.000	.	455	-.532**	.000	455
Cyberbully	-.532**	.000	455	1.000	.	455

** . The correlation is significant at the level of 0.01.

According to the results of the correlation analysis given in Table 1, a negative, significant, and moderate-level correlation was found between students' cyberbullying behaviors and their levels of self-confidence ($r = -.532$). According to the analysis results, as the cyberbullying scores increase, the self-confidence value tendency decreases.

The results of the correlation analysis showing the correlation between students' cyber victimization experiences and their self-confidence scores are presented in Table 2.

Table 2. The correlation analysis results showing the correlation between students' cyber victimization experiences and their self-confidence scores (n=455)

	Spearman's rho					
	Self-confidence			Cyberbully		
	r	P	N	r	p	N
Self-confidence	1,000	.	455	-.595**	.000	455
Cyberbully	-.595**	.000	455	1,000	.	455

** . The correlation is significant at the level of 0.01.

According to the results of the correlation analysis, a negative, significant, and moderate-level correlation was found between students' cyber victimization behaviors and their self-confidence levels ($r = -.595$). According to the analysis results, as the cyber victimization experiences increase, the self-confidence value tendency decreases.

3.2 The cyberbully/victim and self-confidence value sub-dimensional correlations of the students participating in the research

In this part of the analysis, the correlation analysis between the sub-dimensions was interpreted through the tables. Table 3 shows the correlation between the cyberbully scale's sub-dimensions and the self-confidence scale's sub-dimensions.

Table 3. The correlation analysis results of students' cyberbullying sub-dimension scores and self-confidence sub-dimension scores (N=455)

			Cyber bully	Sexual Bullying	Inhibition Harming	Spreading Rumors
Spearman's rho	Self-confidence	r	-.532**	-.513**	-.554**	-.579**
		p	.000	.000	.000	.000
	Internal Confidence	r	-.544**	-.538**	-.558**	-.560**
		p	.000	.000	.000	.000
	External Confidence	r	-.508**	-.483**	-.544**	-.584**
		p	.000	.000	.000	.000

** . The correlation is significant at the level of 0.01.

According to the results of the correlation analysis given in Table 3, a negative, significant, and moderate-level correlation was found between students' cyberbullying behaviors and their internal confidence level ($r = -.544$) and external confidence level ($r = -.508$). As the students' levels of cyberbullying behavior increase, their tendency levels of internal and external confidence decrease.

According to the study results, a high correlation was determined between the students' tendency levels of cyberbullying and internal confidence. In contrast, a low-level correlation was determined between their tendency levels of external confidence. It can be said that as students' tendency levels of cyberbullying increase, their tendency levels of internal confidence decrease.

There was a negative, significant, and high-level correlation between the students' tendency levels of self-confidence and sexual bullying ($r=-.513$), inhibition and harming ($r=-.554$), and spreading rumors in the virtual environment ($r=-.579$). As the students' levels of self-confidence increase, their tendency levels of sexual bullying, inhibition, and harming and spreading rumors in the virtual environment decrease.

There was a negative, significant, and moderate-level correlation between the students' status of internal confidence and their scores of sexual bullying ($r=-.538$), inhibition and harming ($r=-.558$), and spreading rumors in the virtual environment ($r=-.560$). As the students perform sexual bullying, inhibition and harming, and spreading rumors in the virtual environment, their tendency levels of internal confidence decrease.

There was a negative, significant, and moderate-level correlation between the students' status of internal confidence and their scores of sexual bullying ($r=-.483$), inhibition and harming ($r=-.544$), and spreading rumors in the virtual environment ($r=-.584$). As the students' levels of external confidence increase, their tendency levels of sexual bullying, inhibition, and harming and spreading rumors in the virtual environment decrease.

According to the research results, a high-level correlation was determined between students' tendency levels of self-confidence, internal and external confidence, and spreading rumors in the virtual environment. In addition, there was a low-level correlation between their tendency levels of sexual bullying in the virtual environment. As the students' tendency levels of self-confidence, internal and external confidence increase, their tendency levels of spreading rumors in the virtual environment decrease.

Table 4 shows the correlation between the Cyber Victim Scale's sub-dimensions and the Self-confidence Scale's sub-dimensions.

Table 4. The correlation analysis results of students' scores for cyber victim sub-dimension and self-confidence sub-dimension (N=455)

			Cyber bully	Sexual Bullying	Inhibition Harming	Spreading Rumors
Speaman's rho	Self-confidence	r	$-.595^{**}$	$-.560^{**}$	$-.574^{**}$	$-.591^{**}$
		p	.000	.000	.000	.000
	Internal Confidence	r	$-.596^{**}$	$-.568^{**}$	$-.572^{**}$	$-.585^{**}$
		p	.000	.000	.000	.000
	External Confidence	r	$-.577^{**}$	$-.540^{**}$	$-.560^{**}$	$-.579^{**}$
		p	.000	.000	.000	.000

** . The correlation is significant at the level of 0.01.

According to the results of the correlation analysis in Table 4, a negative, significant, and moderate-level correlation was found between students' status of cyber victimization and their levels of internal confidence ($r=-.596$) and external confidence ($r=-.577$). As students' levels of cyber victimization increase, their tendency levels of internal and external confidence decrease.

According to the study results, a high-level correlation was determined between the students' tendency levels of cyber victimization and internal confidence. In contrast, a low-level correlation was determined between their tendency levels of external confidence. It can be said that as students' tendency levels of cyber victimization, their tendency levels of internal confidence decrease.

There was a negative, significant, and moderate-level correlation between students' self-confidence and their tendency levels of sexual bullying ($r=-.560$), inhibition, and harming ($r=-.574$), and spreading rumors in the virtual environment ($r=-.591$). As the students' levels of self-confidence increase, their cyber-bullying behavior levels of sexual bullying, inhibition and harming, and spreading rumors in the virtual environment decrease.

According to the research results, while a high-level correlation was determined between students' tendency levels of self-confidence and spreading rumors in the virtual environment, a low-level correlation was determined between their tendency levels of sexual bullying in the virtual environment. As the students' tendency levels of self-confidence increase, their tendency levels of spreading rumors in the virtual environment decrease.

There was a negative, significant, and moderate-level correlation between the students' levels of internal confidence and their scores of sexual bullying ($r=-.568$), inhibition and harming ($r=-.572$), and spreading rumors in the virtual environment ($r=-.585$). As the students' levels of self-confidence increase, their cyber victimization levels of sexual bullying, inhibition and harming, and spreading rumors in the virtual environment decrease.

There was a negative, significant, and moderate-level correlation between the students' levels of internal confidence and the scores of sexual bullying ($r=-.540$), inhibition and harming ($r=-.560$), and spreading rumors in the virtual environment ($r=-.579$). As the students' levels of external confidence increase, their cyber victimization levels of sexual bullying, inhibition and harming, and spreading rumors in the virtual environment decrease.

According to the research results, while a high-level correlation was determined between students' tendency levels of internal and external confidence and spreading rumors in the virtual environment, a low-level correlation was determined between their tendency levels of sexual bullying in the virtual environment. As the students' tendency levels of internal and external confidence increase, their tendency levels of spreading rumors in the virtual environment decrease.

4. Conclusion and recommendations

In this part of the study, the results of an analysis to determine the relationship between 8th grade cyberbullying/victim behavior and self-confidence were discussed, interpreted, and conclusions were drawn.

According to the results obtained from the study, it was observed that the cyberbully/victimization status of the students differed significantly according to the gender variable, and that male students were more cyberbullying and cyber-victimized than female students. It was observed that male students do more cyberbullying and cyber victimization than female students in the studies by Şam (2017), Özer (2016), Öztürk (2019), Sipahi (2019) Özdemir (2015), Yalçın (2019), Çetinkaya (2010), Erdur-Baker and Kavşut (2007), Arıcak (2008), Dilmaç (2009), Serin (2012), Ekşi (2012), Ayas and Horzum (2012), Başköy (2013), Özbay (2013), Yaman and Sönmez (2015), Çiftçi (2015) Korkmaz (2016), Metli (2017), and Yazar (2019). In the study by Pekşen-Süslü (2016), when the cyberbullying/victimization scores of high school students were examined in terms of gender, and the cyberbullying scores were examined, it was found that male students had higher scores than female students and there was a significant difference. It was

determined that there was no significant difference in terms of gender in cyber victimization scores.

Unlike the results of the current study, Ünver and Koç (2017) did not find a significant difference between cyberbullying and gender in their study. Dilber (2013) found in his study that gender did not show a significant difference between being a cyberbully and being a victim. Gök (2019), Özer (2016), Özdemir and Akar (2014), and Tokunaga (2010) stated in their studies that there is no significant difference between exposure to cyberbullying and gender.

As a result of the research, a negative, significant, and moderate-level correlation was found between students' cyberbullying behaviors and their tendency levels of self-confidence. In other words, as students' status of cyberbullying increases, their tendency value of self-confidence decreases. A negative, significant, and moderate-level correlation was found between students' scores of cyber victimizations and their tendency levels of self-confidence. As their cyber victimization experiences increase, their tendency of self-confidence value decreases.

When evaluated in terms of the sub-dimensions of the scales, a negative, significant, and moderate-level correlation was found between the students' levels of cyberbullying behavior and internal and external confidence. As the students' levels of cyberbullying behavior increase, their tendency levels of internal and external confidence decrease. A negative, significant and moderate-level correlation was found between students' sexual bullying, inhibition and harming, spreading rumors in the virtual environment, and their internal and external confidence tendencies. As the students perform sexual bullying, inhibition and harming, and spreading rumors in the virtual environment, their tendency levels of internal confidence decrease.

A negative, significant, and moderate-level correlation was found between students' levels of cyber victimization behavior and internal and external confidence. As students' cyber victimization experiences increase, their tendency levels of internal and external confidence decrease. A statistically significant, negative, and moderate-level correlation was found between students' levels of sexual bullying, inhibition and harming, spreading rumors in the virtual environment, and internal and external confidence. As the students' levels of sexual bullying, inhibition and harming, and spreading rumors in the virtual environment increase, their internal and external confidence levels decrease.

4.1 Recommendations

(1) The current research was carried out before the epidemic process, which has been on the agenda recently. For this reason, it is recommended that researchers interested in the subject carry out similar studies to determine the change in cyberbullying or victimization conditions due to the intense use of mass media and the general network by students in this process of distance education due to the epidemic.

(2) The incidents of bullying and victimization are also experienced at young ages. It is seen that this situation affects the value tendencies of children as much as their psychological, sociological, and academic achievements. In this direction, it is recommended to move the studies on values to digital platforms.

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References

- Akın, A. (2007). Öz-güven ölçeğinin geliştirilmesi ve psikometrik özellikleri. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 7(2), 167-176.
- Arıcak, O.T., Kınay, H., & Tanrıkulu, T. (2011). Siber zorbalık ölçeğinin ilk psikometrik bulguları. İzmir: XI. Ulusal Psikolojik Danışma ve Rehberlik Kongresi Bildiri Özetleri Kitabı, 340-341.
- Arıcak, O.T., Kınay, H., & Tanrıkulu, T. (2012-1). Siber zorbalık ölçeğinin ilk psiko-metrik bulguları. *Hasan Ali Yücel Eğitim Fakültesi Dergisi*, (17), 101-114.
- Ayas, T., & Horzum, M. B. (2010). Sanal zorba/kurban ölçek geliştirme çalışması. *Akademik Bakış Dergisi*, (19), 1-17.
- Aydın, M. Z., & Akyol Gürler, Ş. (2012). *Okulda değerler eğitimi*. Ankara: Nobel Yayıncılık.
- Başköy, N. (2013). *Ortaöğretim öğrencilerinin internet bağımlılık, siber zorbalık ve bilgisayara karşı tutumlarının farklı değişkenler açısından incelenmesi* (Yayınlanmamış yüksek lisans tezi). Ahi Evran Üniversitesi, Kırşehir.
- Büyüköztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2016). *Bilimsel Araştırma Yöntemleri* (21. baskı). Ankara, Pegem Akademi.
- Çetinkaya, B. (2010). *İlköğretim ikinci kademe öğrencilerinde siber zorbalığın yaygınlığı* (Yayınlanmamış yüksek lisans tezi). Selçuk Üniversitesi, Konya.
- Çiftçi, H. (2015). *Lise öğrencilerinin siber zorbalık eğilimlerinin Facebook tutumu ile ilişkisinin incelenmesi* (Yayınlanmamış yüksek lisans tezi). Marmara Üniversitesi, İstanbul.
- Dilmaç, B., Deniz, M., & Deniz, M. (2009). Üniversite Öğrencilerinin Öz-Anlayışları İle Değer Tercihlerinin İncelenmesi. *Değerler Eğitimi Dergisi*, 7(18), 9-24.
- Dilber, Y. (2013). *Ergenlerde görülen siber zorba/mağdur yaşantılarının utanç/suçluluk ve intikam duyguları çerçevesinde incelenmesi: Bursa ili örneği* (Yayınlanmamış yüksek lisans tezi). Yeditepe Üniversitesi, İstanbul.
- Erdur-Baker, Ö. (2010). Cyberbullying and its correlations to traditional bullying, gender and frequent and risky usage of internet-mediated communication tools. *New Media & Society*, 12(1), 109-125.
- Gök, S. (2019). *Ergenlerde siber zorbalığın yordanmasında değerlerin rolü* (Yayınlanmamış yüksek lisans tezi). Pamukkale Üniversitesi, Denizli.
- Gökkaya, D. (2017). *Psikolojik Beceri Kıstası Olarak Özgüvenin Elit Sporcuların Performansına Katkısı; Boks Milli Takımı Örneği* (Yüksek Lisans Tezi). Marmara Üniversitesi, İstanbul.
- Gündoğdu, H. (2019). *Okul spor takımlarında olan ve olmayan 12-14 yaş arası kız çocuklarının özgüven ve benlik saygısı değerlerinin incelenmesi* (Yayınlanmamış yüksek lisans tezi). Maltepe Üniversitesi, İstanbul.
- Humphreys, T. (2002). *Çocuk eğitiminin anahtarı: Özgüven* (4. Baskı). İstanbul: Epsilon Yayıncılık.
- Karasar, N. (2009). *Bilimsel Araştırma Yöntemi*. 20. Basım, Ankara: Nobel Yayın Dağıtım.
- Kasatura, İ. (1998). *Kişilik ve özgüven*. İstanbul: Evrim Yayınevi.
- Korkmaz, S. (2019). *Siber zorbalık ve mağduriyet, problemli internet kullanımı ve dindarlık ilişkisi* (Yayınlanmamış doktora tezi). Marmara Üniversitesi, İstanbul.
- Metli, G. (2017). *Ortaokul öğrencilerinin siber zorbalık, siber mağduriyet ve insani değerleri arasındaki ilişkinin incelenmesi* (Yayınlanmamış yüksek lisans tezi). İstanbul Sabahattin Zaim Üniversitesi, İstanbul.
- Milli Eğitim Bakanlığı (2018). *İlköğretim Sosyal Bilgiler Ders Programı* (İlkokul ve Ortaokul 4, 5, 6, 7. Sınıflar), Ankara.
- Milli Eğitim Bakanlığı (2017). *Sosyal Bilgiler Dersi Öğretim Programı* (İlkokul ve Ortaokul 4, 5, 6 ve 7. Sınıflar), Ankara.

- Özbay, A. (2013). *Ergenlerde siber zorbalık, siber mağduriyet, aleksitimi ve öfke ifade etme biçimleri arasındaki ilişki* (Yayınlanmamış yüksek lisans tezi). Fatih Üniversitesi, İstanbul.
- Özdemir, S. (2015). *Ergenlerde siber zorbalık ve mağduriyetin, anne-baba ve akran ilişkilerine göre incelenmesi* (Yayınlanmamış yüksek lisans tezi). Gazi Üniversitesi, Ankara.
- Özdemir, M., & Akar, F. (2011). Lise öğrencilerinin siber-zorbalığa ilişkin görüşlerinin bazı değişkenler bakımından incelenmesi. *Kuram ve Uygulamada Eğitim Yönetimi*, 17(4), 605-626.
- Özer, H. (2016). *Ortaokul ve lise öğrencilerinin siber zorbalık tutum ve duyarlılıklarının drama metoduyla incelenmesi*. (Yayınlanmamış doktora tezi). Marmara Üniversitesi.
- Öztürk, C. (2019). *8. sınıf öğrencilerinin dijital vatandaşlık düzeyleri ile siber zorbalık eğilimleri arasındaki ilişki* (Yayınlanmamış yüksek lisans tezi). Sakarya Üniversitesi, Sakarya.
- Peker, A. (2013). *İnsani değerler yönelimli psiko-eğitim programının problemli internet kullanımı ve siber zorbalık üzerindeki etkisi* (Yayınlanmamış doktora tezi). Sakarya Üniversitesi, Sakarya.
- Peşken-Süslü, D. (2016). *Lise öğrencilerinde siber zorbalık ve siber mağduriyetin benlik saygısı, anne, baba ve akran ilişkileri açısından incelenmesi* (Yayınlanmamış doktora tezi). Maltepe Üniversitesi, İstanbul.
- Serin, H. (2012). *Ergenlerde siber zorbalık/siber mağduriyet yaşantıları ve bu davranışlara ilişkin öğretmen ve eğitim yöneticilerinin görüşleri* (Yayınlanmamış doktora tezi). İstanbul Üniversitesi, İstanbul.
- Sipahi, E. (2019). *Ortaokul öğrencilerinin siber zorbalık ve akran zorbalığı eğilimlerinin örgütsel yabancılaşma ve örgütsel güven algılarına etkilerinin incelenmesi: Ankara ili örneği* (Yayınlanmamış doktora tezi). İstanbul Gelişim Üniversitesi, İstanbul.
- Şam, M. (2017). *Ergenlerde siber zorba ve mağdur olmanın anne baba tutumları ve okul iklimi ile ilişkisinin incelenmesi* (Yayınlanmamış yüksek lisans tezi). Pamukkale Üniversitesi, Denizli.
- Tokunaga, R. S. (2010). Following you home from school: A critical review and synthesis of research on cyberbullying victimization. *Computers in Human Behavior*, 26(3), 277-287.
- Ünver, H., & Koç, Z. (2017). Siber zorbalık ile problemli internet kullanımı ve riskli internet davranışı arasındaki ilişkinin incelenmesi. *Türk Eğitim Bilimleri Dergisi*, 15(2), 117-140.
- Yalar, T. (2010). *İlköğretim Sosyal Bilgiler Programında Değerler Eğitiminin Mevcut Durumunun Belirlenmesi ve Öğretmenlere Yönelik Bir Program Modülü Geliştirme* (Yayınlanmamış doktora tezi). Mersin Üniversitesi, Mersin.
- Yalçın, S. (2019). *Ergenlerde siber zorbalık ve siber mağduriyet ile umutsuzluk düzeyleri arasındaki ilişkinin incelenmesi* (Yayınlanmamış yüksek lisans tezi). Maltepe Üniversitesi, İstanbul.
- Yaman, E. (2012). *Değerler eğitimi* (2. baskı). Ankara: Akçağ Yayınları.
- Yaman, E., & Sönmez, Z. (2015). Ergenlerin siber zorbalık eğilimleri. *Online Journal of Technology Addiction & Cyberbullying*, 2(1), 18-31.
- Yarar, Y. (2019). *Lise öğrencilerinin iyi oluş düzeyleri ile siber zorbalık siber mağduriyetleri arasındaki ilişkinin incelenmesi* (Yayınlanmamış yüksek lisans tezi). İstanbul Sabahattin Zaim Üniversitesi, İstanbul.
- Yıldırım, A. (1999). Nitel araştırma yöntemlerinin temel özellikleri ve eğitim araştırmalarındaki yeri ve önemi. *Eğitim ve Bilim*, 23(112).
- Yurtseven, F. (2011). *Kendine güven*. İstanbul: İmge Yayınevi.





Applications of Tulip Motif in Turkish Art with Geometer's Sketchpad Program

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Abstract

In the 21st century we live in, technology is developing rapidly. Inevitably, the technologies used in almost every area of daily life will also reflect in the field of education. Educational technologies, which enable students to grasp abstract concepts more easily and facilitate the teaching process for teachers, have increased their impact in schools. The effects of dynamic geometry software on course success, attractiveness, and concretization in mind have been the subject of different studies. Dynamic geometry software that can visualize algebraic expressions with graphics creates an interdisciplinary working environment with its drawing features. Thanks to Geometer's Sketchpad (GSP), one of this software, students can dynamically create very different patterns and shapes. Students can realize higher-level cognitive learning thanks to the relationships and inferences they make on these shapes. These and similar patterns that emerged thanks to GSP can increase students' awareness in different fields by combining different disciplines such as history, mathematics and art. In this study, the drawing stages of the tulip motif, which we come across in important architectural works in the Ottoman and Anatolian Seljuk history, which have been the subject of ornament art, are shown via GSP using both the transformation geometry and functions.

Keywords: Geometer's Sketchpad, transformation geometry, function graph, tech-assisted math, tulip motif.

1. Introduction

The development of computer technology affects educational technologies as well as different fields. New developments in technology, computers and communication also led to changes in the understanding of teaching and have brought the use of new techniques and methods in today's teaching. In the Information Age we live in, new concepts and technologies such as computers, multimedia, sound, image, animation, Internet and developing Internet technologies have taken their place in education and training (Alakoç, 2003). Today, instructional technology is considered as the development and use of technology to facilitate and improve learning. With the use of educational technologies in learning environments, the tools that help develop the high-level thinking skills expected from a 21st century individual have been the subject of many discussions. In order to raise individuals who can solve real-life problems in our age, it is necessary to gain various skills to individuals first. These skills are reasoning based on knowledge, organizing data, generalizing, proving and problem-solving (Toluk, 2003). Educational technologies are preferred in terms of concretizing abstract concepts, attracting students' interest

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in the lesson and providing effective feedback. These advantages provided to the users of educational technologies provide convenience to the users in the fields of mathematics and geometry as well as in every discipline. Dynamic geometry software with ease of use and great interfaces in mathematics-geometry are more common in classrooms.

- Computer technologies facilitate the learning of mathematics and geometry.
- Interdisciplinary approaches such as mathematics, history and art attract students' attention and increase their motivation.
- Geometer's Sketchpad program is used to acquire transformation geometry topics.
- Different patterns are drawn with function graphs via Geometer's Sketchpad.

Mathematics, a system on its own with its language, consists of structures and relations. Mathematics is an abstract concept that includes the generalization processes formed by these structures and relations. It is also known that mathematics is difficult for students because it is difficult to acquire abstract concepts. For this reason, mathematics teaching methods are a subject that should be especially emphasized in our age. Teaching appropriate to the structure of mathematics helps students understand concepts and operations related to mathematics and establish the links between these concepts and functions (Alakoç, 2003). In recent years, the integration of technology into mathematics and geometry lessons aims to ensure students' active participation and students better understand the achievements of abstract mathematics and geometry. In mathematics education, creating learning environments that include exploratory educational activities in which students can actively participate positively affects innovative and creative thinking skills (Yani & Oikawa, 2019; Azizah et al., 2018). Skills such as creativity and critical thinking expected from 21st century individuals can be developed through interdisciplinary studies and effective use of technology.

With the development of educational technologies, different software has started to replace the education made by using only blackboard-chalk, pencil-paper-ruler in the field of geometry, especially in mathematics lessons in schools. Thanks to information and communication technologies, students can easily understand the background of the abstract concepts they learn through multimedia in mathematics and geometry lessons. Different technological products can help students model the concepts in primary and secondary school mathematics and geometry course outcomes and contribute to the problem-solving stages. In particular, dynamic geometry software has become an important tool for its users due to its ability to visualize abstract concepts. There are studies in which learners contribute positively to their success with Computer-assisted learning with increased functionality via dynamic geometry software (Bedir, 2005; Sulak, 2002; Aktümen & Kaçar, 2003). GeoGebra, Cabri Geometry, Geometer's Sketchpad are the most preferred dynamic geometry software. Dynamic geometry software is very useful because it allows the creation of geometric structures in two and three dimensions and the movement of these structures (Karaarslan, Boz & Yıldırım, 2013). Geometer's Sketchpad (GSP), one of this software, provides a student-centered interdisciplinary work environment by enabling geometric shapes to move, creating different shapes, measurements and patterns (Vatansever, 2007). Geometer's Sketchpad software can be used at all stages of learning, from primary to higher education. The suitability of using Sketchpad software on interactive boards is very useful in the classroom environment. It can be used for ratio-proportion activities, algebra and graphic drawings, modeling of rational numbers, applications on the number axis, and geometry patterns in primary education. In the secondary education stage, GSP software can be easily used in transformation geometry and function graphs (Karaarslan, Boz & Yıldırım, 2013). Transformation geometry includes coating and decorative arts in different branches such as mathematics, geometry, visual arts, and technology design. Transformation geometry, which provides interdisciplinary work, lays the groundwork for developing high-level thinking skills such

as creative thinking skills and critical thinking. Combining the studies created using creativity with educational technologies, GSP can facilitate their learning by attracting attention to subjects such as transformation geometry and functions.

The interdisciplinary approach can be defined as bringing together traditional subject areas in a meaningful way, especially around common concepts. The interdisciplinary teaching process helps both learn the knowledge and skills of certain disciplines and use them in a meaningful way. Although the interdisciplinary approach in teaching is not a new understanding, it has become an approach that has been emphasized in recent years. One of the most important purposes of interdisciplinary teaching is to provide students with a versatile way of thinking. The ability of the student to integrate knowledge in different fields in critical and creative thinking and decision-making processes gains great importance today.

Altun (2005) defined mathematics, saying, "Mathematics is a way of thinking, an art, a study of structures and relationships." Via GSP, which allows learning by experiencing the relationships, harmony and different aspects of geometric shapes, an interdisciplinary application can be made with traditional patterns and motifs. In this study, the "tulip" motif, one of the traditional Turkish patterns, was applied using GSP software.

The tulip, which heralds the spring by blooming with colorful flowers, symbolizes life and fertility for the Turks. It is known that the homeland of the tulip, which is a bulbous and perennial ornamental plant, is Central Asia and spread to Anatolia from there (Altuntaş, 2019). tulip motifs are frequently seen in works from the Seljuk Empire. Tulip lived its heyday in the Ottoman Empire between the 16th and 18th centuries. During the reign of Ahmet III (1673-1736), its use as an ornamental plant and ornamental motif peaked, and it was called the "Tulip Age" between 1718-1730 (İLAV, 2021). In this period, newly built gardens, palaces and pavilions were equipped with tulips, and the love for tulips increased a lot. Spreading from Anatolia to Europe, the tulip attracted attention worldwide and became influential in the fusion of different cultures.

One of the reasons why the Ottomans so accepted the tulip is that it is written in Arabic letters as (ل ل ه) and it is the same as the letters in the word Allah (الله). When the tulip is written in Arabic letters and read backward, the emblem of the Ottoman state (ل ه ل), the Crescent, that is, the Moon appears (İLAV, 2021).

The tulip, which is also included in mythology, was formed by being frozen by a lightning strike on the dew on a leaf. The burn scar from the lightning is hidden in the blackness of his belly. The tulip, which is widely used in poems, is likened to the lover's cheek, the glass of wine, the wound, etc. (Hakverdioglu, 2008).

In history, tulip took place in many works of art such as Sufism, garden culture, wood carving, tile, ceramics, architecture, poetry, literature, weaving culture (Altuntas, 2019). When the literature is reviewed, it is seen that tulip motifs are utilized in Central Asian Turkish Art (Kuru, 1997). Drawings of tulip motifs on the door decorations of Ibrahim, I Madrasa in Samarkand in Kuru's work draw attention. Besides its historical meaning, the tulip, which maintains its value in today's modern lines, has a great place in our culture. In our daily life, a tulip pattern can be seen almost everywhere. Examples of tulip motifs in different areas are given in images 1, 2, 3, 4.

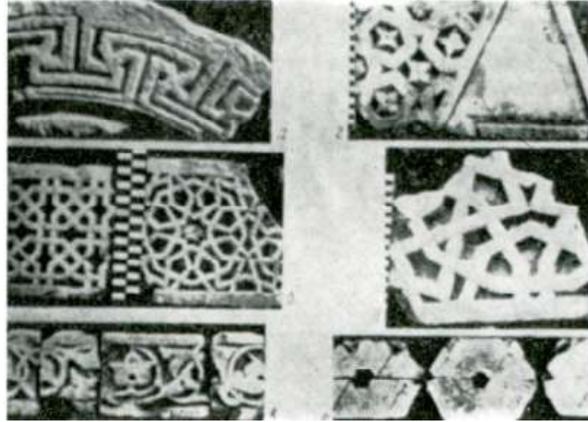


Image 1. Tulip motifs on the door decorations of Ibrahim I Madrasa in Samarkand

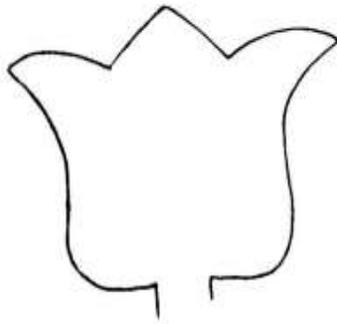


Image 2. Tulip motif drawing in Kuru's essay



Image 3. An example of “tulip motif” in handicrafts



Image 4. An example of Turkish Airline's tulip motif in advertisements

2.Theoretical framework

The National Council of Teachers of Mathematics (NCTM) (2000) emphasizes the importance and necessity of technology in helping students acquire mathematical knowledge and skills from kindergarten to 12th grade. The use of technology in mathematics teaching enriches the teaching environment by presenting multiple representations (numerical, algebraic and graphic) (Erbaş, 2005). With the help of technological tools, students can form their hypotheses with the data they have while solving problems, test their hypotheses and generalize their results to similar situations (Erbaş, 2005; Güveli & Baki, 2000). The use of technology in mathematics lessons makes the lesson interesting and keeps the concepts in mind (Baki & Özpinar, 2007) and helps students move away from memorization (Güveli & Baki, 2000). Dynamic geometry software can visualize drag tools and abstract geometry concepts (Sinclair & Yurita, 2008). In addition, this software provides users with a visualized basis for the proof of theorems by establishing connections between them in the digitization of geometric shapes (Bintaş & Smart 2008). Çalışkan, Gökçe, and Önal (2019) stated that dynamic geometry software would be beneficial in the lesson designs prepared by the teachers by the achievements and target behaviors in their classrooms. This software is very valuable in providing an environment where students can generalize by visualizing mathematical symbols (Güven, 2002). Cabri, GeoGebra, Geometer's Sketchpad programs are frequently preferred among dynamic geometry software in terms of ease of use.

When interdisciplinary studies on combining two different fields are examined, some studies are encountered which examine students' attitudes and indicate that their attitudes towards these disciplines have improved positively (Lou & Chen, 2013; Güder & Gürbüz, 2018; Ürey, Çepni & Kaymakçı, 2015). Another example of interdisciplinary studies is the combination of mathematics and art. Throughout history, geometric shapes have different religious and philosophical meanings. Dönmez (2020) states the frequently used meanings of some geometric shapes as follows.

“The hexagon, which is a shape close to a circle, is the sky symbol. The square shape represents the earth and matter. If the rectangle is used horizontally, it gives a balancing effect, and when used vertically, it gives a caring effect. All these shapes are essentially basic geometric figures that can be derived from the circle.”

Mathematics is intertwined with art both in its discipline and in many artistic applications such as painting, sculpture, music, architecture, and decorative art. (Adam, and

İşleyen, 2005). In teaching mathematics, students' discovery of mathematics in nature and structures and seeing the aesthetic dimension of mathematics will enable them to develop positive attitudes towards mathematics and learn better (Atasay & Erdogan, 2017.) When the literature was reviewed, it was seen that artistic works created with the GSP program were included (Bodner, 2003; Majewski & Wang, 2009; Marani, 1997; Bodner, 2004.) In these studies, the drawing feature of the GSP program was generally used. Studies in which traditional handicrafts combine mathematics and art by using GSP draw attention. For example, banana stem carving, one of Thai traditional handicrafts, is designed with the help of mathematical functions using GSP (Sangwaranatee & Suraprap, 2010).

Drawing the tulip motif, which has such an important place in our history, with Geometer's Sketchpad program can increase students' awareness of technology, history and art relations. In this study, from past to present; the tulip motif, which has been the subject of many branches of art such as mysticism, garden culture, wood carving, tile, ceramics, architecture, poetry, literature, and weaving culture, is drawn in two different ways with the help of GSP.

3. Methodology

In this section, the tulip motif is created in GSP both with the drawing feature of the program and with the help of function graphics.

3.1 *Drawing of tulip motif in GSP using transformation geometry*

The Iznik tile model of the tulip motif given in Image 5 is discussed. Iznik tiles are important in reflecting the characteristics of Roman, Byzantine, Seljuk and Ottoman art in history. Iznik tile art brought a new breath to tile art by adding flower motifs to classical tile patterns in the 16th century. The most beautiful examples of tiles produced in Iznik can be seen in structures such as Süleymaniye Mosque, Kanuni Tomb, Hürrem Tomb, Rüstem Pasha Mosque, Topkapı Palace, Şehzade Mustafa Tomb, Eyüp Sultan Mosque.



Image 5. Iznik tile model

Before determining the process steps in the drawing phase, each motif in the model to be drawn was examined, and motifs that repeated or continued each other were determined. When the Iznik tile model in Picture 5 is examined, it is noticed that there is a vertical axis of symmetry. When a line axis is drawn from top to bottom in the middle of this model, it is observed that the parts on the right and left sides are symmetrical to each other (Image 6).



Image 6. Vertical symmetry axis of Iznik tile model

In creating this model, the whole model was obtained by drawing half of the figure vertically using the GSP features. Then, the circle-like patterns in the four corners of the Iznik tile pattern given in Image 5 were examined. It has been observed that 90-degree rotations and translations form the shapes resembling circle patterns at the corners of the tile motif. For this reason, when starting the process steps, it was started to be implemented by using the circle drawing feature of the GSP so that the frame was a circle and the degrees to be used would resemble the shape aesthetically. The drawing stages of this model are shown below step by step, using the properties of GSP and transformation geometry.

- 1. Step:** To create the frame of the pattern, a full circle is drawn by selecting the “circle” tab from the left menu. To calculate the vertical axis of symmetry and the degrees of rotation, the drawing is started (Figure 1)

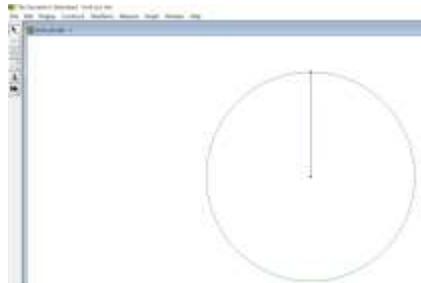


Figure 1. The window in GSP

The small circle-like motifs seen in Figure 3 are located at the four corners of the whole figure. To place these motifs in the figure, a total of 45-degree circle segments are created considering that 360 degrees are divided into four 90-degree parts as in Figure 2,

- determining the radii from the center, using the “Rotate” tool from the “Transform” menu, and rotating 22.5 degrees twice.
- By rotating the radius shown in red in Figure 2 by 22.5 degrees, the locations of the small circle patterns in Figure 3 are determined.

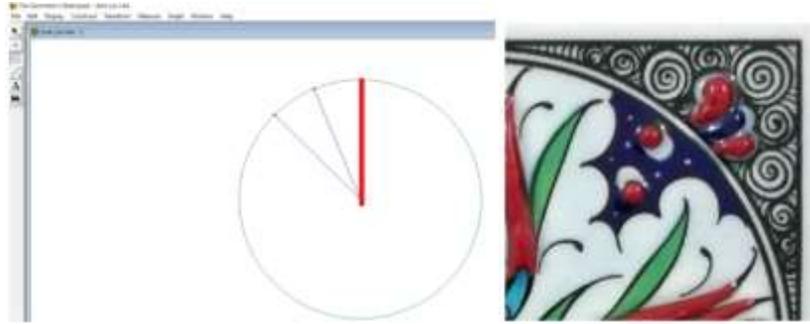


Figure 2. The initial stage of the tile pattern in the GSP Figure 3. $\frac{1}{4}$ visible part of the tile pattern

2. Step: The middle points of the circle segments created in Figure 2 are combined as in Figure 4, and the tile pattern is started to be created. The midpoint between the two radii is selected and joined. Thus, two symmetrical small circle motifs are created.

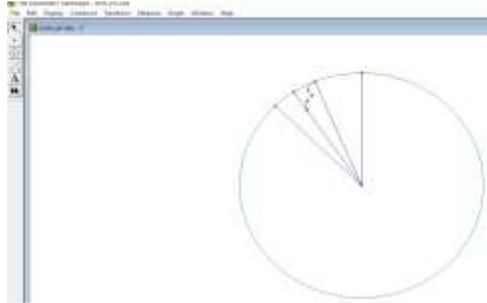


Figure 4. Beginning of symmetrical circle motifs

To complete the small motif given in Figure 3, the half-line segment in the middle is marked as the center, and its mirror image is taken through “Reflect” in the “Transform” menu as in Figure 5. A small circle is drawn in the middle. The reason for drawing the center circle is to assist the formation of the motif symmetrically.

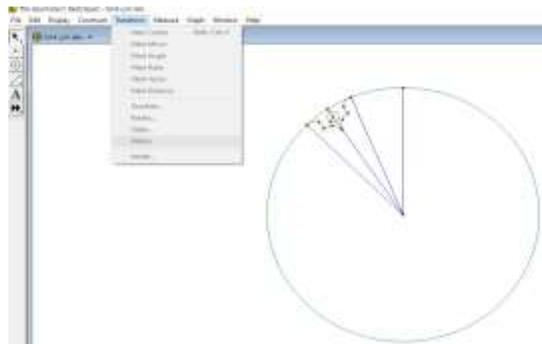


Figure 5. Drawing of the center circle

3. Step: To complete the small circle motifs in Figure 7, a second concentric circle is added around it; as in Figure 6, intertwined circles are drawn on the outer part of the formed slice. Thus, small circles in the tile pattern are created.

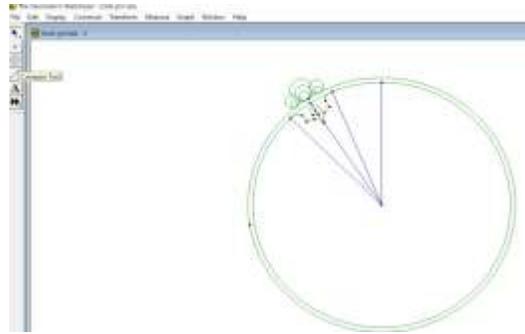


Figure 6. Formation of small circles in the tile pattern



Figure 7: 1/4 part of the tile pattern

4. Step: To proceed to color the Iznik tile pattern in Figure 7, the points in the pattern in Figure 6 are determined, and the first step of the coloring process is started.

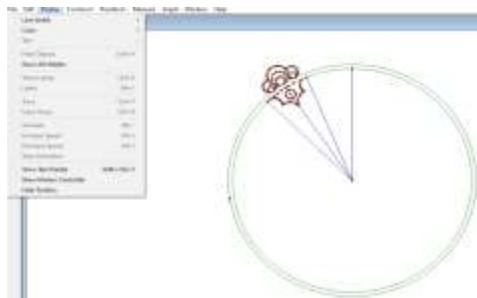


Figure 8. Determination of spots before painting

With the help of the points shown in Figure 8, the colorings are made according to the Iznik tile pattern from the “color” tab in the “Display” menu, as seen in Figure 9.

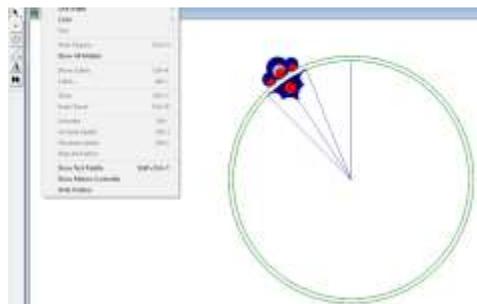


Figure 9. Beginning of the coloring process

5. Step: Since the small circle motifs created are located at the figure's diagonal corners; they are created symmetrically. The pattern in Figure 9 is selected and rotated 112.5-67.5-112.5 degrees, respectively, using the "Rotate" tool in the "Transforms" menu according to the circle's center. Thus, for the same motifs to be located at the four corners of the figure, reflection, translation and symmetry operations using 90' and 45' degree differences are applied using the "Rotate" and "Transform" features in GSP, and Figure 10 is obtained.

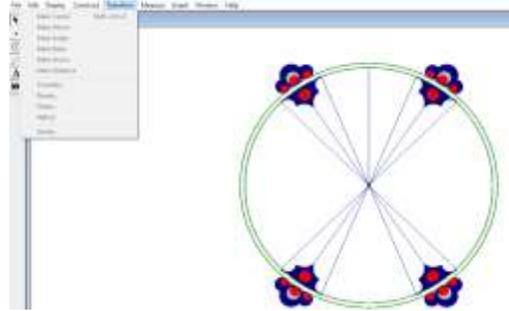


Figure 10. Mirroring and rotating colored parts

6. Step: The Iznik tile model given in Image 5 consists of two equal vertical parts. For this reason, the diameter of the circle is considered the axis of symmetry. For this reason, the motifs in the half of the pattern are drawn first, and then the pattern is completed by performing the reflection process. The points that will form the drawing of motifs such as tulips and leaves in the tile motif are determined and combined. The points determined by the "Arc Through 3 Points" tool in the "Construct" menu are combined, and Figure 11 is obtained.

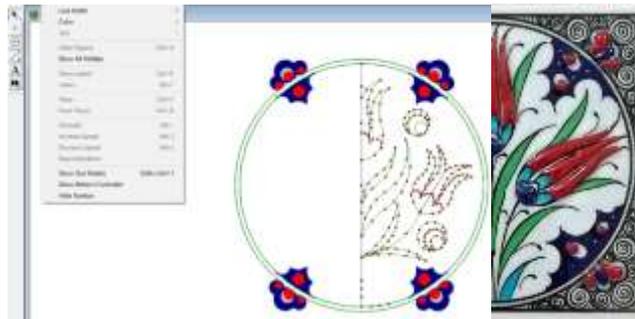


Figure 11. Drawing 1/2 of Iznik tile pattern; Figure 12. 1/2 part of Iznik tile pattern

7. Step: The part whose drawing is completed in Figure 11 is colored following the pattern in Figure 12. Figure 13 is obtained by hiding unnecessary lines and points with the "Hide Objects" tool in the "Display" menu.

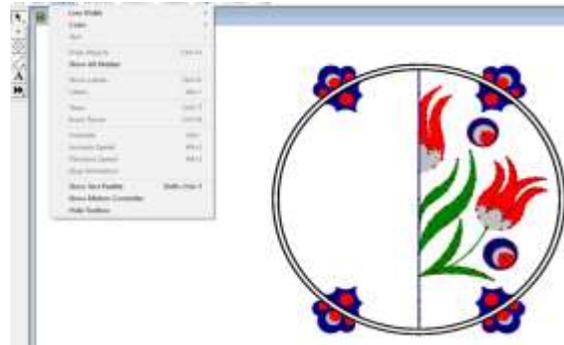


Figure 13. Coloring 1/2 part of Iznik tile pattern

8. Step: The circle's diameter is marked as the center, and the pattern is reflected on the opposite side with the "Reflect" tool in the "Transform" menu. Thus, the whole model is obtained by drawing only half of this model with the help of the drawing feature of the GSP (Figure 14).



Figure 14. Completed view of Iznik tile pattern

3.2 Drawing the tulip motif in GSP with the help of function graphs:

It is seen that the tulip motif is also included in cross-stitch works, which is one of the handicrafts, as in every field of art. Cross-stitch works, which can be found worldwide and exhibited in public museums, also have an important place in Turkish handicrafts, and it is inevitable to use the tulip motif as a cross-stitch. A tulip pattern was created with crosses embroidered on etamine, and cross-stitch work is given in Image 3. To draw the tulip motif, which has an important place throughout history, using functions in the GSP program, it is thought that the symmetry axis passes through the middle of the pattern, as in Image 7.

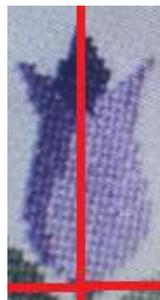


Image 7. The vertical symmetry axis of tulip pattern

Considering the symmetry axis of this tulip motif as the y-axis and the lower end as the origin, it can be said that the three functions given in Image 8 are needed. After taking the

parts of these functions in the specified intervals, the symmetry concerning the y-axis is taken, and the tulip motif is completed by following the steps below.

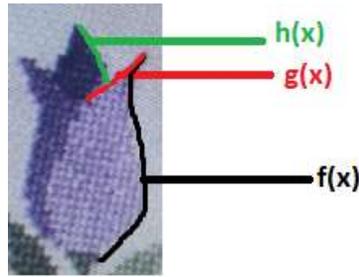


Image 8. Functions determined in tulip motif

1. Step: Figure 8 shows the parts of the tulip to be drawn. After deciding to plot $f(x)$ with a third-degree polynomial function, $g(x)$ with a sine function, and $h(x)$ with a linear function

$$f(x) = (x-1.5)(x-1.5)(x-1.5)$$

$$g(x) = 5 + \sin(x + 4.7)$$

Figure 16 is obtained by determining the $h(x) = -x + 7$ functions and writing them in the GSP program as in Figure 15.

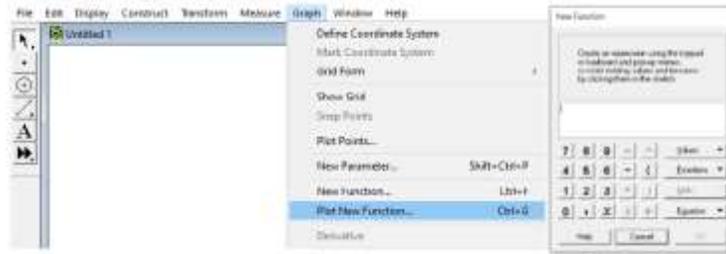


Figure 15. New function writing in GSP

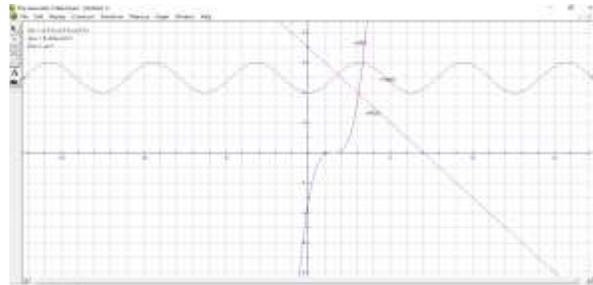


Figure 16. Display of desired function graphs in GSP

2. Step: To get the necessary part of the function graphs in Figure 16, the ranges are determined for the functions. The selected function is right-clicked, and the desired range is written to the Properties tab as in Figure 17. For functions $f(x)$ and $g(x)$, x is selected in the range of $[0, 3.32]$, for function $h(x)$, x is selected in the range of $[0, 1.8]$, and Figure 18 is formed.

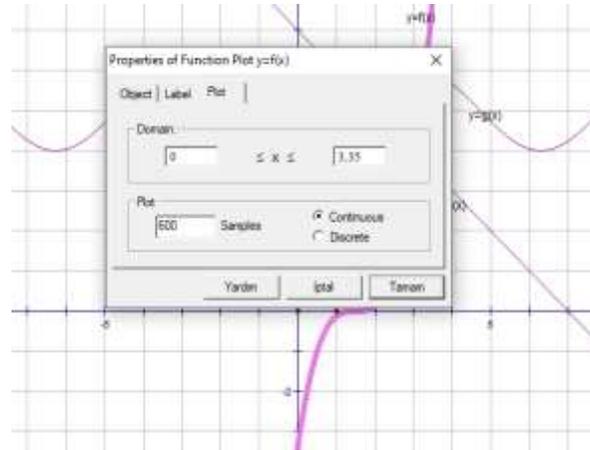


Figure 17. Determining the range of the function in GSP

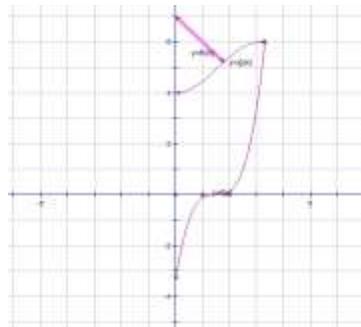


Figure 18. Ranged functions

3. Step: In the resulting form, points are taken on the functions. Then, the points are selected, and the areas created with “Ctrl+P” are right-clicked, and the desired color is painted with the “color” option, and Figure 19 is obtained.

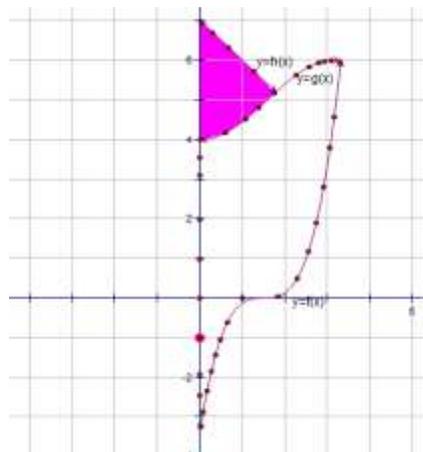


Figure 19. Selecting points on function in GSP

4. Step: After half of the motif is painted, the function names and points are hidden with the hide option by right-clicking, and Figure 20 is formed.

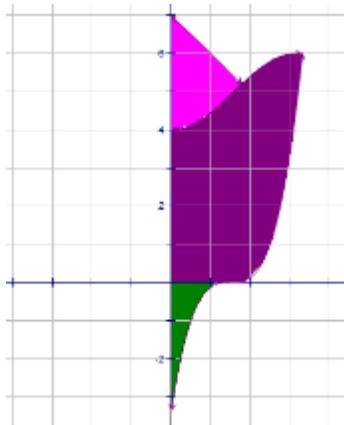


Figure 20. Creation of half of the tulip motif in GSP

5. Step: The painted areas are selected, the y-axis is double-clicked, and the half-formed motif is symmetrized to the y-axis from the transform menu, and Figure 21 is formed.

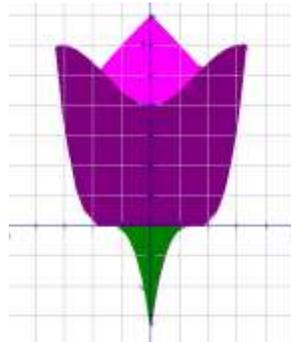


Figure 21. Tulip motif created in GSP

6. Step: Then, leaves are added to the tulip motif obtained in Figure 21 with the help of parabola functions. Similar steps are followed with the tulip motif to draw the leaves.

For leaves,

$$q(x) = \frac{1}{12}x^2 - 3 \text{ ve } r(x) = -\frac{1}{8}(x-3)(x-8)$$

Functions are determined. With the plot new function, Figure 22 is formed.

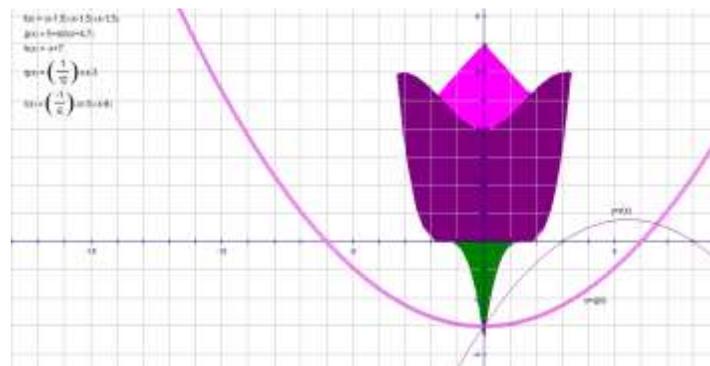


Figure 22. Creating leaves in GSP

7. Step: The intersection of functions $r(x)$ and $q(x)$ in the range of $x [0,6.6]$ is taken and figure 23 is obtained.

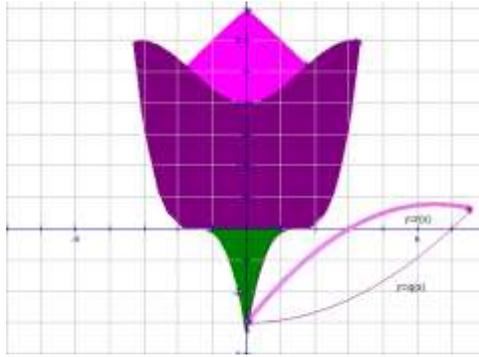


Figure 23. Display of leaves in the desired range

8. Step: Points are created around the leaf. The area is created with the selected points and painted green, and Figure 24 is formed.

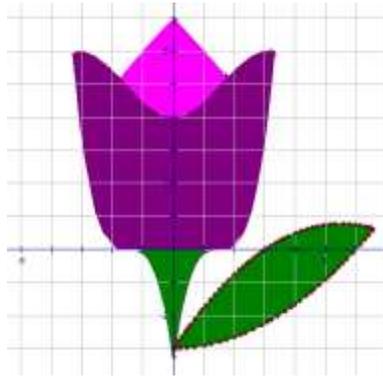


Figure 24. Leaf painted in GSP

9. Step: By selecting the painted leaf, its symmetry concerning the y-axis is taken with reflection from the transform menu, and figure 25 is formed.

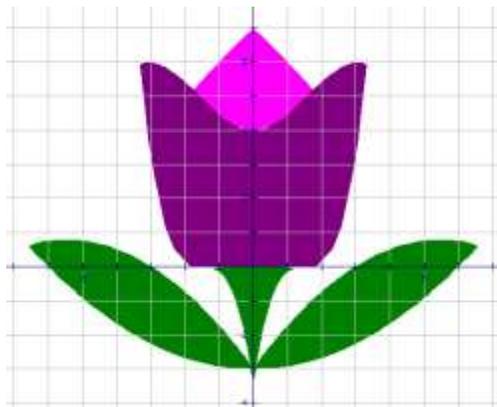


Figure 25. Double leaf tulip motif

10. Step: Then right-click and hide all lines on the plane. A pattern close to Image 3 is created using combinations of tulips in different colors, and Figure 26 is obtained.



Figure 26. Tulip pattern created in GSP

4. Conclusion and recommendations

From Central Asia to the present, tulip has an important place both as a flower and a motif in many art fields. The historical and artistic value of the tulip motif, which we encounter almost everywhere, will motivate secondary and high school students while gaining transformation geometry gains.

According to Bintaş and Akıllı (2008: iii):

“Dynamic geometry programs can be used to make teachers’ learning environments practical, as well as for teachers to create a constructivist teaching environment. These technologies help the student reach a higher cognitive level. It makes it easier for the student to establish relationships and make inferences on geometric shapes. Dynamic geometry programs enable students to reach assumptions and inferences on geometric shapes with the help of a drag-and-drop processor, thanks to a series of constructivist activities and guiding questions in learning environments. Students are encouraged to formulate theorems and form their deductions. Dynamic geometry software allows students to create various geometric shapes in the virtual environment, establish relationships between these shapes, and change this draft according to their wishes. The software also allows the desired measurements and comparisons to be made on this structure”.

According to İpek and Özmüş (2014), it was observed that teacher candidates had a positive attitude in the creation of Anatolian Patterns with GSP, and they could easily benefit from geometric concepts while creating the pattern or motif they chose.

Tulip motif drawing with the GSP program can increase students' motivation about transformation geometry and lead to easier learning. In addition, the fact that high school students can draw tulip motifs with the help of functions they are familiar with will show them that they can create different patterns or motifs with the help of the GSP program, which may increase their interest in function graphics.

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References

- Adem, D., & İŞLEYEN, T. (2005). Matematik ve sanat. *Atatürk Üniversitesi Kazım Karabekir Eğitim Fakültesi Dergisi*, (11), 479-491.
- Aktümen, M., Yıldız, A., Horzum, T., & Ceylan, T. (2011). İlköğretim matematik öğretmenlerinin GeoGebra yazılımının derslerde uygulanabilirliği hakkındaki görüşleri. *Turkish Journal of Computer and Mathematics Education*, 2(2), 103-120.
- ALAKOÇ, Z. (2003). Matematik öğretiminde teknolojik modern öğretim yaklaşımları. *TOJET: The Turkish Online Journal of Educational Technology*, 2(1).
- Alev (Çakmakoglu) Kuru (1997). Orta Asya Türk Sanatında Palmet ve Lâle Motiflerinin Değerlendirilmesi Hakkında Bir Deneme. *Bellekten*, LXI, 037-042.
- Altuntaş, A. (2019) Adına Bir Devir Açtıran Çiçek: Lale. *Plant Peyzaj ve Süs Bitkiciliği Dergisi*. Retrieved from 1 May 2021 from <https://www.plantdergisi.com/dr-ogr-uyesi-arzu-altuntas/adina-bir-devir-actiran-cicek-lale.html>
- Atasay, M., & Erdoğan, A. (2017). Matematik ile sanatın ilişkilendirilmesi: mandala desenlerinin simetri öğretiminde kullanımı. *Journal of Instructional Technologies & Teacher Education*, 6(2), 58-77.
- Azizah, S. N., Dafik, D., & Susanto, S. (2018). The effectiveness of discovery based learning implementation through improving students' innovative thinking skills in solving open-ended task of pattern generalization. *International Journal of Advanced Engineering Research and Science*, 5(8), 74-82.
- Baki, A., & Özpinar, İ. (2007). *Logo destekli geometri öğretimi materyalinin öğrencilerin akademik başarılarına etkileri ve öğrencilerin uygulama ile ilgili görüşleri*. Çukurova Üniversitesi Eğitim Fakültesi Dergisi, 34(3), 153-163.
- Bedir, D. (2005). *Bilgisayar destekli matematik öğretiminin ilköğretimde geometri öğretiminde yeri ve öğrenci başarısı üzerindeki etkisi*. (Yayımlanmamış Yüksek Lisans Tezi). Dokuz Eylül Üniversitesi, Eğitim Bilimleri Enstitüsü, İzmir.
- Bintaş, J., & Akıllı, B., (2008), *Bilgisayar Destekli Geometri*. Öğreti Yayıncılık, Ankara.
- Bodner, B. L. (2003). Constructing and Classifying Designs of al-Andalus. In *Meeting Alhambra, ISAMA æ Bridges Conference Proceedings*.
- Bodner, B. L. (2004). Star polygon designs of La Alhambra's wooden ceilings. In *Bridges: Mathematical Connections in Art, Music, and Science Conference Proceedings*.
- Çalışkan, E., Gökçe, S., & Önal, N. (2019). Uzamsal becerilerin geliştirilmesi için üç boyut içerikli etkileşimli videoların kullanılabilirliğine yönelik bir inceleme. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi*, 13(1), 359-388.
- Dönmez, A. K. (2020). Geometri ve matematik bağlamında tezhip sanatının anlam boyutu. *Lale*, 2(3), 62-71.
- Erbaş, A. K. (2005). Çoklu gösterimlerle problem çözme ve teknolojinin rolü. *TOJET: The Turkish Online Journal of Educational Technology*, 4(4), 88-92.
- Güder, Y., & Gürbüz, R. (2018). STEM eğitimine geçişte bir araç olarak disiplinler arası matematiksel modelleme oluşturma etkinlikleri: öğretmen ve öğrenci görüşleri. *Adyaman Üniversitesi Eğitim Bilimleri Dergisi*, 8(2), 170-198. <https://doi.org/10.17984/adyuebd.457626>
- Güveli, E., & Baki, A. (2000). Bilgisayar destekli matematik eğitiminde matematik öğretmenlerinin deneyimleri. *DEÜ Buca Eğitim Fakültesi Dergisi*, 12, 17-23.

- Güven, B. (2002). *Dinamik geometri yazılımı Cabri ile keşfederek öğrenme. Yayınlanmış yüksek lisans tezi*, KTÜ, Fen Bilimleri Enstitüsü, Trabzon.
- Hakverdioğlu, M. (2008). Lâle devri ve lâle isimleri. *Turkish Studies*, 3(4), 472-498
- İpek, J. & ÖZMÜŞ, P. (2014). Anadolu Süslemelerindeki Geometri. *Ege Eğitim Dergisi*, 15(2), 521-537.
- İstanbul, Lale Vakfı (İLAV), 2021. Geçmişten Günümüze Lale Retrieved from 1 May 2021 <https://www.ilav.org/haber.php?haber=gecmisten-gunumuzelale&no=25#sthash.OP38rIUl.BHJPUNHW.dpbs>.
- Karaarslan, E., Boz, B., & Yıldırım, K. (2013). Matematik ve geometri eğitiminde teknoloji tabanlı yaklaşımlar. *XVIII. Türkiye'de İnternet Konferansı*, 9-11.
- Lou, S. J., Shih, R. C., Diez, C. R., & Tseng, K. H. (2011). The impact of problem-based learning strategies on STEM knowledge integration and attitudes: an exploratory study among female Taiwanese senior high school students. *International Journal of Technology and Design Education*, 21(2), 195-215. <https://doi.org/10.1007/s10798-010-9114-8>
- Marani, S. (1997). Illumination and geometry in Islamic art. *Humanistic Mathematics Network Journal*, 1(15), 12.
- Majewski, M., & Wang, J. (2009). A journey through Chinese windows and doors – An introduction to Chinese mathematical art. In *Proceedings of the Fourteenth Asian Technology Conference in Mathematics* (pp. 17-21).
- Sangwanatee, N. W., Noradee, C., Suraprap, K., & Bussaban, K. (2013). *Designing cartoon characters for string art using the GSP*. In Proc. the International Science, Social Science, Engineering and Energy Conference.
- Sangwanatee, N. W., Sangwanatee, N., & Suraprap, K. (2015). Thai art pattern design from folk wisdom's banana stalk carving using the Geometer's Sketchpad (GSP). *International Journal of Information and Education Technology*, 5(9), 660.
- Sinclair, N., & Yurita, V. (2008). To be or to become: How dynamic geometry changes discourse. *Research in Mathematics Education*, 10(2), 135-150.
- Sulak, S.A. (2002). *Matematik dersinde bilgisayar destekli öğretimin öğrenci başarı ve tutumlarına etkisi*. Yayınlanmış Doktora Tezi, Selçuk Üniversitesi, Fen Bilimleri Enstitüsü, Konya.
- Toluk, Z. (2003). Üçüncü uluslararası matematik ve fen araştırması (TIMSS): Matematik Nedir. *İlköğretim-Online*, 2(1), 36-41.
- Vatansever, S. (2007). *İlköğretim Yedinci Sınıf Geometri Konularını Dinamik Geometri Yazılımı Geometer's Sketchpad ile Öğrenmenin Başarıya, Kalıcılığa Etkisi ve Öğrenci Görüşleri*. Dokuz Eylül Üniversitesi, İzmir.
- Ürey, M., Çepni, S., & Kaymakçı, S. (2015). Fen temelli ve disiplinlerarası okul bahçesi programının bazı sosyal bilgiler öğretim programı kazanımları üzerine etkisinin değerlendirilmesi. *Uludağ Üniversitesi Eğitim Fakültesi Dergisi*, 28(1), 7-30. <https://doi.org/10.19171/uuefd.37602>
- Yani, A. T., & Oikawa, S. (2019). Increasing creative and innovative thinking ability through the strengthening of character education in probability theory course. *JETL (Journal of Education, Teaching and Learning)*, 4(1), 163-168.





Identifying the Problems Experienced by Parents of Children with Special Needs during the COVID-19 Pandemic

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Abstract

This study aims to determine the problems experienced by parents of children with special needs during the COVID-19 pandemic. The phenomenological patterns technique, which is a qualitative research method, was used in the study. Ten parents with children with special needs who were affected by different types of disabilities were included in the study. The data in the research were collected using interview forms consisting of open-ended questions and a semi-structured interview technique. After the data obtained from the interviews were decoded, they were analyzed with the descriptive analysis technique. At the end of the study, the findings of the problems experienced by parents of children with special needs during the epidemic, the problems they experienced with their children, and the problems and expectations related to the education of their children were discussed in detail within the framework of the literature.

Keywords: COVID-19 Pandemic, individuals with special needs, parents.

It can be argued that the entire world was caught unprepared for the pandemic that started in Wuhan, China on 31 December 2019, spread rapidly as a result of human mobility (Sari & Nayir, 2020), and not enough experience had been accumulated (WHO, 2020). For this reason, the COVID-19 pandemic has become a global health problem, a major crisis, and has spread throughout the world. This highly contagious pandemic that causes disease and deaths in humans (Aslan, 2020), also causes an increase in living costs as well as a global health crisis (Ham, 2020). Due to the COVID-19 pandemic, states have started to implement quarantine practices because the increasing number of cases and mortality rates worldwide have required states to take appropriate measures (Wang, Cheng, Yue & McAleer, 2020). This crisis caused by the COVID-19 pandemic has deeply affected humanity in every field; economic, psychological, social and education (Can, 2020; Zhao, 2020).

One of the measures taken due to the COVID-19 pandemic was the closure of schools. Schools in 188 countries around the world have been closed (UNESCO, 2020; Gupta & Goplani, 2020). In other words, it has affected approximately 92% of the student population worldwide (UNESCO, 2020). The schools that were closed caused children to be deprived of their most natural right, which is education. Therefore, states have switched to distance education to ensure

the continuity of learning while taking measures for human health. Children have continued their online classes at home (Telli-Yamamoto & Altun, 2020). While the quality of distance education is questioned by families in general, the families of children with special needs may experience various other problems.

Under normal circumstances, the lives of families of children with special needs are even more difficult than families of children with normal development. That is because the participation of the child with special needs in the family can negatively affect family functions and psychology (Damiani, 1999; Ohaeri, 2003). When the family learns that the child is an individual with special needs, it develops various reactions. The most well-known model that explains these reactions is the staging model. The staging model is based on clinical judgment and categorically examines the temporal and mental development that parents undergo to return to their psychological state before the stress emerges (Ardic, 2010). The stages families go through according to the staging model are shock, rejection, depression, complex emotions, guilt, anger, negotiation, acceptance, and adjustment.

The fact that the child has special needs causes parents to reconsider their expectations from life. Furthermore, problems such as taking care of the child with special needs, deterioration of daily home routines, deterioration of roles among family members, financial problems, a decrease in household income, etc. can be observed (Ohaeri, 2003). Depending on the child's disability, additional needs such as special physical arrangements and special equipment at home bring extra financial burdens to the family (Turnbull & Turnbull, 1995). Furthermore, it can also cause the spouses to divorce (Damiani, 1999).

The factors, such as observing behavioral problems in children in the home environment (Allen, Ciambone & Welch, 2000), the need of the child with special needs for lifelong care, treatment problems (Sari & Altıparmak, 2008), decreased social support, decreased family satisfaction, emotional problems, or not being able to go to the cinema or park (Trute & Hiebert Murphy, 2002) are among the leading issues that put parents or family members into stress and depression (Ohaeri, 2003). Studies conducted in connection with all these problems indicate that problems such as anxiety, emotional distress, low self-esteem, stress and additional health problems are more severe in the parents of children with a disability than in parents with normal children (Hastings & Brown, 2002). Additionally, according to research, it is observed that life satisfaction levels (Can, 2015; Cho & Kahng, 2015), marital adjustment levels (Ince & Tüfekci, 2015; Gau, Chou, Chiang, Lee, Wong, Chou & Wu, 2012) and parental self-efficacy perceptions of parents with children with special needs are low (Altındag Kumas & Sumer, 2019; Ben-Naim, Gill, Laslo-Roth & Einav, 2019). Finally, it is observed that family resilience levels are low especially among mothers (Altındag Kumas & Sumer, 2019).

Looking at all these problems, it is seen how difficult the lives of parents with children with special needs are. Especially during the COVID-19 pandemic, the closure of schools and the distancing of children from education can negatively affect their development. Furthermore, parents can stay at home with children all day long. This situation may increase the stress of the child with special needs and their parents and cause them to experience various problems. Therefore, this study aimed to determine the problems experienced by parents of children with special needs during this period when schools had interrupted education and parents stayed at home with their children due to the COVID-19 pandemic; and to elucidate their expectations for these problems.

1. Purpose and scope of the research

The purpose of this research is to determine the problems experienced by parents of children with special needs during the COVID-19 pandemic. For this purpose, the following questions were sought to be answered:

1. What are the problems that parents with special needs children experienced during the pandemic?
2. What are the problems they are facing with their child?
3. What are the problems they had regarding their child's education?

What are the expectations of parents of children with special needs during the pandemic period?

2. Method

2.1 Research model

In this study, the phenomenological design, a qualitative research method, was used to determine the problems experienced by parents of children with special needs during the COVID-19 pandemic period. A phenomenological study is a strong qualitative research pattern that examines social phenomena in depth by focusing on the experiences of individuals and is frequently used across disciplines (Cresswell, 2018; Capar, 2020).

2.2 Participants

This section includes demographic information about the participants. The sample of the study consists of 10 parents of children with special needs. The two-stage sampling model was used in the study. In the first stage, the criteria sampling method was used. The criteria determined for selecting the participants were that (a) the parent must have a child with special needs, (b) the child with special needs must be enrolled in a school, (c) the child with special needs must attend school except for the pandemic period (must have attended school for at least 6 months) and must not be homeschooled. Of the parents who meet these criteria, 10 parents residing in Sakarya and Antalya provinces, who were selected with the convenience sampling method, constitute the study sample. Demographic information of the participants is given in Table 1.

Table 1. Demographic data of parents

Code Name	Age	Educational Status	Parent's Gender	Employment Status	Child's Age	Child's Gender	Child's Type of Disability
P1	55	High School	M	Retired Civil Servant	19	F	MI
P2	35	High School	F	Medical Secretary	14	F	MI
P3	47	Primary School	F	Not Working	15	F	MI
P4	43	None	F	Not Working	15	F	MI/PI
P5	37	Primary School	F	Not Working	15	M	MI

P6	30	High School	F	Not Working	7	F	DI
P7	52	University	F	Not Working	7	M	ASD
P8	38	University	F	Teaching	10	M	ASD
P9	41	Primary School	F	Not Working	11	M	ASD
P10	39	Primary School	F	Not Working	15	M	MI

MI: Mental Incompetency,
 ASD: Autism Spectrum Disorder,
 PI: Physical Incompetency
 DI: Developmental Incompetency.

Examining Table 1 it is seen that the ages of the parents participating in the study vary between 30 and 55. One of the parents is male and the other nine participants are female, one is illiterate, four are primary school graduates, three are high school graduates, two are university graduates, two parents are employed, and the others are unemployed. The ages of the children with special needs vary between 7 and 19, five are males and five are females. Looking at the types of disabilities of the children with special needs, it is seen that five children have an intellectual disability, three have autism spectrum disorder, one has developmental incompetency and one has multiple types of disabilities.

2.3 Collection of data

The data in the study were collected using the semi-structured interview technique. The interview form, prepared by the researchers by scanning the literature to collect the research data, was finalized by taking the opinions of field experts working in the field of special education.

The interview questions prepared following the semi-structured interview technique were asked to the parents online by conducting audio and video interviews, and their opinions were recorded by asking questions one-to-one. The interviews lasted between 6 and 23 minutes.

Before starting the interview, the researcher introduced himself/herself explained the purpose of the interview, declared that he/she would have audio and video recordings during the interview, and that participants' names would not be mentioned in the research. After the consent of the parents who participated in the study were obtained, the audio video-recording was started and the data were collected.

2.4 Validity and reliability

Validity and reliability studies of the research were conducted. The questions asked to parents within the scope of the research on internal validity, the data obtained and the comments on the data were presented for an expert opinion. Moreover, the findings and comments obtained in the research were shown to 25% of the parents participating in the research, and participant approval was obtained. Regarding the external validity of the research, direct quotations are given in quotation marks by presenting examples of the sentences that the participants expressed their opinions with.

To ensure internal reliability in the research, the field expert was asked to examine the consistency between the data and the results of the research. As a result of the consistency analysis made by the field expert, it was determined through analysis that there is consistency between the research data and the research results. To ensure external reliability, approval of a field expert was obtained for the raw data of the research, the results regarding the data, and the comments made on these data.

2.5 Data analysis

The answers given to questions in determining the problems experienced by parents of children with special needs in the COVID-19 period were transcribed verbatim. The reliability study of the decoding process was performed for 30% of the documents and was calculated as 100%. The descriptive analysis (thematic analysis) method was used in the analysis of the data, and the following steps were followed in the analysis process:

1. The interviews made by the researchers were deciphered.
2. A document with a total of 48 pages were obtained from the audio recordings of the interviews.
3. Codes such as P1, P2, etc. were used to code the parents.
4. The answers of the parents for the same question were grouped.
5. The answers to each question were read several times.
6. The questions were accepted as themes, and codes were created within the framework of these themes.
7. The frequency of the codes expressed by parents was calculated and reported as a frequency.
8. Quotations were made with the parents' own expressions.

In studies where the descriptive analysis technique is used, direct quotations are frequently used to reveal the opinions of the participants (Yildirim & Simsek, 2008). In this research, the words of the parents were included in quotation marks without being changed.

The data transferred to the computer environment were analyzed with the descriptive analysis method, taking into account the frequency and by accepting the research questions as themes. In the research, the statements of the interviewees were stated in quotation marks exactly as they were stated and with participant codes such as P1 and P2.

3. Results

In this section, findings obtained from the interviews to determine the problems experienced by parents of children with special needs during the COVID-19 pandemic are included.

1. Findings regarding the problems experienced by parents of children with special needs during the pandemic period

The findings regarding the individual problems experienced by parents, the difficulties they experienced regarding other members of the family, economic and health-related difficulties they experienced, and the solidarity of family members with each other during the COVID-19 pandemic are given below.

1.a. Findings regarding the individual problems experienced by parents during the COVID-19 pandemic

The parents stated that during the COVID-19 pandemic, they were locked up inside the house because they could not go out (f=7), their responsibilities towards their children increased (f=7), they were inactive because they stayed at home all the time (f=3), they could not find a job during this period (f=2), they had difficulties because they did not meet the demands and needs of their children (f=2), they lived separately from their children (f=1), they contracted

COVID-19 (f=1) and they were anxious about contracting COVID 19. The statements of the parents are given below.

P1. Well... I mean, economically, we don't have problems, but we were locked up inside the house, eating, drinking and resting. We did nothing else like doing sports, that's the way it is, sometimes we go out and take walks.

P6. So, we got over this disease in the end...We were in separate rooms during COVID-19. Then the process was a bit difficult after I was infected with it. The fact that she got over the disease lightly and I got over it heavily affected me a little badly. I had a pretty bad cough.

P2. Well, I worked in the hospital for about two months during the pandemic period because I couldn't find a job. As a janitor, I was separated from the children for two months to avoid COVID infection. Well, I had this difficulty.

P4. Of course, we have a lot of difficulties, they are not like other normal children. We are going through a very difficult period. They cannot go out and come out easily. Normally, I would take her to the shopping centers with her father to clear her head. There is always trouble at home. Well, because there is no school.

1.b. Findings regarding the difficulties experienced by parents towards other family members

Parents stated that the responsibilities of the other members of the family for the child with special needs increased (f=3), siblings remained separated (f=1), and the needs of elderly and dependent family elders increased (f=1). They also added that family members spent time together (f=3) and had the opportunity to get to know their child better (f=1), therefore they did not experience any difficulties regarding the other members of the family during the COVID-19 pandemic. The statements of the parents are given below.

P5. Well, my husband goes to work on weekdays, you know, he stays at home at the weekend, only. My daughter works like that too, she goes to a rehabilitation center in a private school, so she can't help me, either. In terms of Emre, just the two of us stay at home, I'm just struggling with Emre at home.

P2. I did not have any health problems, but you may know that I broke up with my husband, so I am separated from my other children, now we live with Esma.

P3. I go to the market on certain days of the week, and I am in the village on certain days. I'm looking after my dad. I stay in the village for a week, then go to the market, those are my difficulties.

1.c. Findings regarding the economic difficulties experienced by the parents

While some parents in this process stated that they experienced difficulties such as being dismissed (f=4), not being able to find a job (f=2), their workplaces being closed (f = 2), not being able to pay the rent (f=1), and the bills (f=1), some others stated that they did not experience any problems (f=4). The statements of the parents are given below.

P3. I am two months behind in rent, I could not pay it. I cannot work. They were going to give me a job, but they still haven't. Well, the rent was already being paid by my father. My father is also in bad health, his blood pressure is falling and rising. The Social Welfare Center was giving me my supplies, so they paid 250 Turkish Liras every two months, they gave me a card, I can go shopping with it, and nothing else.

P5. It's going well economically. My husband is already retired, thank God, we do not have a problem, we are trying to manage.

P2. Just as you said, I am experiencing economic difficulties. My family is supporting me, and I had a lot of problems with unemployment. I'm trying to survive with the support of my family.

P9. When you become a tradesman, expenses continue all the time, and income decreases. Therefore, we don't hire staff anymore. So that we can manage it ourselves. There has always been trouble. We are a family that always lives on a small income. I mean, we still have problems.

1.d. Findings regarding the health difficulties experienced by parents

Parents stated that they experienced some health difficulties during the pandemic process. They stated that they contracted asthmatic bronchitis (f=1), underwent heart surgery (f=1), and caught COVID-19 (f=1) and they had difficulties in this period, while some parents participating in the study stated that they did not experience any health problems (f=7). The statements of the parents are given below.

P2. No, we didn't have any problems with health.

P3. Well...related to health... I also have asthma and bronchitis. Dust is not good for me. When I get dust, it makes me sneeze and I have allergies. The doctor said you have allergies, you can't stay in the dust.

P1. My children, my nuclear family, my son, my married son, my daughter Seray, my husband, or I did not have any health problems.

1.e. Findings regarding the solidarity of family members with each other

Parents stated regarding the solidarity of family members with each other during the COVID-19 pandemic that the family members supported each other morally (f=9), shared the responsibilities and needs regarding the child with special needs (f=6), supported each other financially (f=3), and their shared dreams for the future increased (f=1). The statements of the parents are given below.

P6. Of course, he (her husband) made Miray do physical exercises like Pilates; he did this kind of thing with her. I also helped with other activities such as motor development activities. I made her do exercises. It was good in that respect, we also had good days.

P4. Well, it's not so frequent but, for example, when I am not at home, it is the nature of a house, you know there are things to do and needs at home, we have our own problems, when I am out, he had to take care of them. I mean it doesn't happen as long as I'm home. He just deals with his own stuff, because he is a boy, it would be different if he were a girl. He doesn't do that much because he is a boy. He doesn't get it, we tell him, he doesn't get it.

P5. So, what can I say regarding solidarity? So, to be frank, we're trying to act shoulder to shoulder. I can say that, what else can I say? To be honest, the burden is on me a little, I bat around, I do everything. Since my husband is outside, he cannot do much with the child's lessons. Usually, the child and I are together and it is mostly on me, frankly.

2. Findings regarding the problems that parents of children with special needs experienced during the pandemic period

The findings regarding the problems experienced by parents of children with special needs related to their children's problematic behaviors, health, eating habits, and communication parent-child communication, sibling relationships, and realization of self-care skills are given below.

2.a. Findings regarding the problems experienced by parents with children with special needs regarding their problematic behaviors

Regarding the problematic behaviors of their children with special needs, parents stated that they exhibit aggressive behaviors (f=6), and that there is an increase in behaviors such as not doing what they are told (f=4), stubbornness (f=3), biting nails (f=1), eating scabs (f=1), tearing apart assigned activities and homework (f=1), hair pulling (f=1), hand biting (f=1), wanting to do activities continuously (f=1), constantly putting toys in their mouths (f=1), being over-emotional (f=1), and repetitive behavior (f=1). The statements of the parents are given below.

P3. Although I tell her otherwise, she bites her nails, she eats her scabs, I still could not make her give it up.

P5. He got very aggressive and angry, he wants to do what he wants, you know, he doesn't want to study much, we forced him to study. He even doesn't want to go to special education, he goes by force. I'm not going, I don't want to study, we try to tell him, if you do it like this or it happens like that and so on. We tell him: if you manage to read you will have a job, but I don't think he understands us right now at all.

P1. Well, at home, due to her being twenty years old, sometimes, of course, she has things related to puberty, let's say. She has special requests at home. So, she can give us some trouble.

2.b. Findings regarding the problems that parents experienced regarding the health of their child with special needs

Some parents stated that during the COVID-19 pandemic their children with special needs experienced allergies (f=1), gallstones (f=1), and heart-related health problems (f=1). While some parents who participated in the study stated that their children did not experience any health problems during this period (f=8). The statements of the parents are given below.

P1. Of course, sometimes she acted aggressively against her mother. She does what her mother doesn't like and doesn't do what she likes, so of course, we had some aggression at this point.

P4. She had stones in her gall bladder, she was uncomfortable. We did not know about it. How many times have we taken her to the hospital and brought her back for so many years? The doctors sent us back saying she had no problems, I told the last doctor we went to that I wanted an ultrasound scan, and as a result, we learned that she had many stones in her gall bladder. It was because of this that she couldn't eat anymore. She was always in pain, she was holding her stomach, she was sick. The doctor said surgery straight away, after corona.

2.c. Findings of the problems experienced by parents regarding the nutritional habits of their child with special needs

Regarding the nutritional habits of their children with special needs during the pandemic, parents stated that they experienced problems such as choosy eating (f=3) and consuming more in quantity (f=2). Some parents who participated in the study stated that they did not experience any problems (f=4) and that their children started eating foods that they had not eaten before (f=1). The statements of the parents are given below.

P4. Well, in terms of nutrition, she chooses her food, but not much, and then it's me who feeds her. I serve her food; she eats her own food. I feed her the morning breakfast, you know, I take care of her like a small child.

P5. He's eating well. We do not have any problems. He's eating very well. After the surgery, he got a super appetite. But he does not gain any weight, so his weight is normal. But he's eating very well He eats everything.

P1. No, we have no problems with nutrition. Well, she did not have any problems.

E10. During this period, we started to feed him fruits. We started to give him something to eat. He doesn't eat everything, but he started to eat some things...compulsorily. I said; don't get sick, you have to eat something. We can't go to hospitals. They won't be able to take care of you, we have to be careful. And I make him eat.

2.d. Findings related to the problems experienced by parents regarding communication with their child with special needs

While some parents stated that their children did not communicate with them (f=4) and their children did not do what they were told (f=2) during the COVID-19 pandemic; some parents who participated in the study stated that they did not have any problems with their children (f=3). The statements of the parents are given below.

P1. We do not have any problems, we are doing good on this point, we do not have any problems with communication.

P3. Well, we had some problems actually. When I shout at her, she cries, is offended, goes away, and blushes. You know you can't really say anything to her. When you say something to her, she blushes from her face to her tongue.

P5. How can I say, the thing between us, sometimes he listens to me, sometimes he makes me angry, sometimes he doesn't do what I want. For example, as I said, you know, he does not want to study or have a bath.

2.e. Findings regarding problems experienced by parents of their children with special needs regarding the relationship between siblings

Some parents stated that their children with special needs could not get along with their siblings during the epidemic (f=2), while some parents who participated in the study stated that their children did not have any problems with their siblings (f=4). Some parents also stated that the COVID-19 pandemic increased positive relationships between siblings (f=3). The statements of the parents are given below.

P5. He's on good terms with his sister, so he doesn't have a problem.

P1. There is a problem like this, for example, because her brother is always with her, she grew up with him here, after getting married, of course, her elder brother calls her every day, when he doesn't she reacts "why didn't he call me?". We have this kind of difficulty. I mean, but her brother usually calls her.

P2. We didn't have any problems, but because she missed her brothers so much, we had some problems on this point. Apart from that, she has good communication with her brothers. She loves her brothers very much.

2.f. Findings of the problems experienced by parents with realizing the self-care skills of their children with special needs

Regarding the realization of self-care skills of their children with special needs, some parents stated that they experienced problems such as not being able to do their personal hygiene (f=5) and not being able to go to the toilet (f=3). In contrast, some parents who participated in the study stated that they did not experience any problems (f=3) and that their children made progress during this process (f=2) because they had the opportunity to constantly practice their self-care skills at home. The statements of the parents are given below.

P2. Well, of course, there have been things that she couldn't do until now in this period. Well, now she can do all of them by herself, she can take care of all her self-care, except for nail cutting.

P1. We have problems with only one thing while going to the toilet, but not much else. There is no other problem.

P3. She cannot do her self-cleaning, she cannot do her self-cleaning by himself, to be frank.

3. Findings regarding the problems experienced by parents with the education of children with special needs during the pandemic

The findings regarding the problems that parents experienced with the educational activities of their children with special needs, their teachers, their teachers in special education and rehabilitation center, physiotherapy specialists, and other people involved in their education (school principal, bus driver, etc.) are given below.

3.a. Findings regarding the problems experienced by parents with the educational activities of their child with special needs

Some parents stated regarding the educational activities of their child with special needs experienced reluctance to participate in distance education (f=6), could not do homework by himself/herself (f = 4), could not continue education due to fear of infection (f=3), had a decline in reading and writing skills (f=3), had a regression in performance (f=2) and experienced a decline in sociality due to the pandemic (f=1). Other parents stated that they did not experience any problems regarding the educational activities of the child during this period (f=2). The statements of the parents are given below.

P1. Well, of course, we're having trouble getting out because of today's virus, so we're fearful, so we're driving our own car when we go out, but sometimes when we're not in our car. I mean, it's a fear for us to take busses, of course, we've had concerns of contracting the disease. So, we tried to do individual training by being meticulous when she takes classes in this rehabilitation center. Other than that, of course, she's always got fear. The fear of being infected by the virus.

P3. I didn't have any problems with the training she received. Of course, there were problems from March until July last year, so she couldn't go to school, of course, we do lessons with her at home every day from time to time, so we ourselves took care of all sorts of things at home from her reading to writing studies.

P5. You know, he couldn't pronounce quite a lot of words, we did something together with him on this. For example, he texts his friend, and his mother tells me that my boy doesn't completely know how to read. She says "He sends texts, I'm reading the messages, and there's a lot of problems with his words, so that's what she's saying."

3.b. Findings regarding the problems that parents experienced with the schoolteacher of their child with special needs

The parents stated that they did not experience any problems regarding the problems their child experienced with their teacher (f=8) during the pandemic. They also stated that their teacher at the school had problems individualizing teaching (f=1) and insisted that they participate in distance education (f=1). Examples of the parents' views on this issue are given below.

P6. No, I didn't have any problems. We're very pleased, yes, she's continuing. If schools open in February, hopefully, she will start school. We didn't have any problems. She's been attending the same school for three years.

P7. He treats us like that as well, he doesn't do any activity, etc. for us, for children with special needs or my child. He treats my child just as he treats other children.

P9. We cannot join online classes. As I said, he has nothing to do with the screen. You know, they want him to join the classes. They say "let's send you activities and you do them at home." Families with children with special needs complain that

these children already have difficulty adapting to the class, and they want to set school as school and be free at home.

3.c. Findings of the problems experienced by parents with the teacher of their child with special needs in special education and rehabilitation

The parents stated that they did not experience any problems with the teacher in the special education and rehabilitation center (f=9) during the pandemic and that they had problems in that family expectations were not reflected in the individualized education program (f=1). Examples of parents' views on this issue are given below.

P6. We haven't experienced any problems. Yes, we continue our education there, but during this period, it was also closed. Likewise, we were having video-meetings with them on the internet.

E10. No, our parents are good, God bless them...

P7. They say that we should have control, for example, my child's needs and requests change in time, the school program is also involved. Because of that, I request changes in the program, or I say that I can do some of them. They do not want to accept this, they say we have special techniques, we cannot leave this up to you, we should have the control.

3.d. Findings of the problems experienced by the parents with the physiotherapist of their child with special needs

The families who continued physiotherapy stated that they did not experience any problems with the specialist working with them (f=3) during the pandemic period. Example parent views on this issue are given below.

P6. We started to receive physiotherapy when she was one and a half months old. We have been going to the same place for five years. We haven't experienced any problems.

3.e. Findings of the problems experienced by parents with other persons (school principal, bus driver, etc.) involved in the education of their child with special needs

Parents stated that they experienced no problems (f=10) with other people involved in their children's education process. Examples of parent views on this issue are given below.

E10. No, we have no problems, thank God.

4. Findings of what parents want to add regarding the difficulties they experience during the epidemic period

Regarding the additional difficulties they experienced, some parents stated that they did not have anything to add about the difficulties they had during the pandemic (f=5), they had fear of catching COVID-19 (f=3), they were unhappy due to the restriction of freedom (f=2), they were concerned about the condition of their children if they caught COVID-19 themselves (f=1) and that they had difficulties in their children's education (f=1). Examples of the parents' views on this issue are given below.

P10. We are affected and wonder if we will or will not catch the virus? If we have a little headache, we ask ourselves "I wonder if something happened?". I mean, it had a great impact on us...

P9. So, it's education. You know, financial troubles come and eventually go. My problem with my own child is related to education.

5. Findings regarding the expectations of parents with children with special needs during the epidemic process

The findings regarding parents' expectations from the classroom teacher and the state in the pandemic period are given below.

5. a. *Findings regarding the parents' expectations from their child's classroom teacher in the pandemic period*

Regarding the expectations from the classroom teacher of their children, parents stated that they did not have any expectations (f=8), they wanted them to focus on academic skills (f=1), having lessons and homework being followed up (f=1), and education should be individualized (f=1). Examples of parent views on this issue are given below.

P7. I'd like them to say: "I sent the following activities. These are the appropriate activities for your child. Please complete them." or would like them to follow up the activities, or to do an activity special to him.

P9. I do not have an expectation because we cannot study. On behalf of Berat, I do not have any expectations since we cannot study by ourselves and he cannot look at the screen.

5.b. *Findings regarding the expectations of parents from the state in the pandemic period*

Regarding their expectations from the state during the epidemic period, parents stated that they did not have any expectations (f=4), requested rehabilitation centers to be inspected (f=1), demanded financial support (f=1), demanded support in finding a job (f=1), wanted the COVID-19 vaccine to arrive (f=1), wanted the number of lessons in special education and rehabilitation centers to increase (f=1), requested language and speech therapy support (f=1), parent support at home (f=1), provision of care services for the children of families infected by the virus, the precautions against the pandemic to be increased (f=1) and their children to be granted the right to repeat a grade (f=1). Examples of parent views on this issue are given below.

P7. Many students cannot attend online classes. Our child can partially join these classes; maybe two hours a week, although difficult in our country, they could have come home to teach for two hours together with the parents.

P8. I want this too, of course, I always tell this to the other parents, they stayed in the classroom last year. I think the state should give that permission again this year, I mean, these children should stay in the classroom, because they can attend very few classes and it has been almost half a term this year. They have to stay in the classroom next year. I think the right to repeat a grade should be given again next year, this is what the state can do.

As a result, parents with children with special needs stated that they were constantly locked up at home because they could not go out during the COVID-19 epidemic, and their responsibilities towards their children increased more. The responsibilities of the other members of the family towards the child with special needs have also increased. Parents also experienced problems during this period such as being dismissed, not being able to find a new job, closure of workplaces, not being able to pay the rent and the bills. Regarding the solidarity between the family members, parents stated that they supported each other morally, they shared the responsibilities towards the needs of the child with special needs, and they supported each other financially.

Regarding the educational activities of their child with special needs, the parents stated that their children experienced unwillingness to participate in distance education, could not do homework on their own, and could not continue their education due to fear of infection. Regarding the problematic behaviors of the children with special needs, parents expressed that their children exhibited aggressive behaviors, and acquired habits such as not doing what they were told, acting stubbornly, and engaging in nail biting. Moreover, parents stated that their

children with special needs could not get along with their siblings during the pandemic period and they had difficulty with personal hygiene during this period. Parents stated that they asked the state to inspect rehabilitation centers, support them financially and assist them in finding employment during the pandemic.

4. Discussion, conclusion and suggestions

The parents in the study stated that they experienced problems individually during the COVID-19 pandemic period. Studies show that parents of children with normal development also experience problems related to social interaction, physical activity and various psychological problems at home (Wang, Zhang, Zhao, Zhang & Jiang, 2020). Therefore, the parents of individuals with special needs will have more desperation and fatigue due to the behavioral problems of the child with special needs (Bell, Boyd, Tweedy, Weir, Stevenson & Davies, 2010; Maltais, Wiart, Fowler, Verschuren & Damiano, 2014). Asbury, Fox, Emre Deniz, Code and Toseeb (2020) and Mengi and Alpdogan (2020) report in their study conducted with special education teachers that parents experience various problems in their homes. According to Aishworiya and Qi Kang (2020), parents of children with special needs traditionally devote themselves to their children. During the pandemic, parents experience more problems in this struggle than ever before, because the lack of access to psychologists and therapists in the COVID-19 period negatively affects the mental health of these children, and this causes behavioral problems.

Parents stated that they experienced problems regarding the difficulties they experienced regarding other members of the family. When the literature is examined, it is seen that the COVID-19 pandemic affects both individuals and society psychologically and socially (Kundi & Bhowmik, 2020). It is normal for parents to experience psychological problems during the COVID-19 pandemic (Jiao et al., 2020). According to Brooks et al. (2020), it is stated that individuals intensively experienced post-traumatic stress disorder, anxiety, anger, depression, insomnia, and disappointment during the pandemic period. For these reasons, the stress levels of parents towards their children have increased (Cluver et al., 2020). It should be kept in mind that domestic violence is likely to increase and children are vulnerable to this issue (Bradbury-Jones & Isham, 2020). For this reason, psychological support should be provided to family members with special needs, albeit remotely, through mobile applications.

According to the results of this research, parents experience financial problems. There are findings in the literature in parallel with these research findings. According to Mengi and Alpdogan (2020), the COVID-19 pandemic affected all countries multidimensionally and economically. According to Kundi and Bhowmik (2020), economic problems will increase significantly during the pandemic process and unemployment will increase accordingly. According to Akkas Baysal, and Ocak & Ocak (2020), the COVID-19 pandemic affects our country in a multidimensional and economic way, as it does so across the world. According to Alpar (2020), people may exhibit undesirable behaviors in times of social and economic crisis. Problems experienced in economic status can also cause domestic violence. Homemakers, the unemployed or low-income families have been disturbed by the pandemic (Bozkurt, 2020). Therefore, it is recommended that the state and employers provide more support to parents who are experiencing financial difficulties.

According to the results of this research, parents stated that they experienced some health-related difficulties during the pandemic period, and similar findings are available in the literature. According to Mengi and Alpdogan (2020), the COVID-19 pandemic brings along various health problems in humans. In their study, Basaran and Aksoy (2020) stated that parents experienced various health problems during the COVID-19 pandemic. According to Goksu and Kumcak (2020), problems threatening the health of individuals during the pandemic also affect their stress and anxiety levels. For this reason, especially during the pandemic period, parents

must pay more attention to hygiene rules and activities, and psychological support should be provided to help parents relive their stress.

This research has revealed findings regarding the solidarity of family members with each other. According to NSPCC (2020), people living in the same house now spend more time together. These individuals have combined work, school, and home in the same environment. Thus, they have started to live in a small area. This situation has resulted in solidarity and cooperation in some families, and while it caused conflict in others (Ozturk, Yilmaz, Demir Erbil & Hazer, 2020). According to Kluwer (2020), it is inevitable that conflicts occur within the family, especially with the triggering of financial negativities in the household during the COVID-19 pandemic. In the process of the COVID-19 pandemic, it is an expected situation that having an individual with special needs at home, will change routines and increase stress and tension in the household. However, according to the results of this study, it is a positive finding that there is solidarity within the family.

According to the results of this research, the parents stated that they had problems with the educational activities of their children with special needs. According to the literature, Kalac, Telli and Eronal (2020) stated that, during the COVID-19 pandemic, the parents of children with special needs experienced various problems with their children's educational needs. According to Aishworiya and Qi Kang (2020) and Atli Yilmaz and Atli (2020), during the COVID-19 pandemic, the parents of children with special needs observed that their children had problems with their educational needs. In their study, Mengi and Alpdogan (2020) stated that during the COVID-19 pandemic period, "the application of distance education was very difficult for students who received special education, and in this process, students moved away from school culture and took less responsibility in the home environment; and that student who received special education could not continue the skills they acquired in face-to-face education in the distance education process". In their study, Sahin, Oz and Singin (2020) concluded that children with autism spectrum disorders had a regression in their motor skills due to lack of education. According to the results of this research, it is difficult to provide distance education for individuals with special needs in a home environment. Parents' insufficient knowledge of teaching an individual with special needs, combined with the learning problems of individuals with special needs, becomes a challenging situation for families. Parents should be provided family education through distance education.

According to the results of this study, parents stated that they had problems regarding the problematic behaviors of their child with special needs. When we look at the literature, we see difficulties specific to the population of children with special needs, according to Aishworiya and Qi Kang (2020). During the COVID-19 pandemic, these difficulties may increase and behavioral problems may be exacerbated. In their study, Mengi and Alpdogan (2020) concluded that behavioral problems of the students with special needs increased significantly during the COVID-19 pandemic. In their study, Asbury, Fox, Emre Deniz, Code and Toseeb (2020) stated that during the COVID-19 pandemic, children with special needs experienced various behavioral problems. Cacioppo, et al, (2020) and Ma, Ao, Shen, and Wang (2020) found in their study that during the COVID-19 pandemic, parents of children with special needs observed that their children experienced behavioral problems at home. The findings obtained in the current research are in accord with the findings of other studies in the literature, and it can be said that there was an increase in the problematic behaviors of students with special needs during the COVID-19 pandemic process.

According to the results of this study, parents stated that they had problems regarding the health of their child with special needs. There are parallel results with the findings of this research in the literature. According to Aishworiya and Qi Kang (2020), health problems can be observed in children with special needs during the COVID-19 pandemic and their parents take care of these health problems more. Cacioppo et al. (2020) stated that during the COVID-19

pandemic, children with special needs experienced limitations in motor skills due to being locked up at home, which negatively affected their health. Besides, the interruption of the medical care of these children will in turn affect the lives of children negatively. Mobile health personnel can be assigned for the health problems of these children.

Parents stated that they had problems with the nutritional habits of their children with special needs. There are also similar findings in the literature. Nutritional disorders are common in children with special needs, especially in children with autism spectrum disorder (Matson & Fodstad, 2009). According to Salaun Berthouze-Aranda (2011), obesity is observed in individuals with mental incompetency due to nutritional disorders. According to Spahis, Vanasse, Be'langer, Ghadirian, Grenier and Levy (2008), children with attention deficit and hyperactivity disorder also have nutritional disorders. According to the results of this study, malnutrition is a common phenomenon in individuals with special needs. In addition, children who stay at home and do not go to school are more likely to have nutritional problems.

Another finding of this study was parents stating that they had problems in communicating with their children with special needs. The literature also indicates that children with special needs experience language and communication problems. For example, it is commonly seen in children with mental disabilities (Moore-Brown & Montgomery, 2006), children with learning difficulties (Bek & Sen, 2014), and children with ASD (Diagnostic and Statistical Manual of Mental Disorders-5 [DSM-5], 2013). In parallel with these, Asbury, Fox, Emre Deniz, Code, and Toseeb (2020) stated in their study that during the COVID-19 pandemic, parents of children with special needs had communication problems with their children. According to Akcay and Basgul (2020) and Cacioppo et al. (2020), it may also cause delays in the development of communication skills of individuals with special needs during the COVID -19 pandemic.

The study found that parents observed that their children with special needs had positive relationships with their siblings. In the literature, there are research results in parallel with these findings. According to Girli (1995), siblings who show normal development develop positive friendship relations with their siblings with special needs. According to Harris and Glasberg (1994), siblings who show normal development play games, communicate with their siblings with special needs, and try to make friends with individuals with special needs. Moreover, siblings teach each other new knowledge and skills, how to live together, and reconciliation culture (Lamb & Sutton-Smith, 2014). Siblings with normal development will improve their friendships by creating a positive interaction with their siblings with special needs through leisure activities. In this way, individuals with special needs learn to live independently by acquiring the knowledge and skills required in the home and school environment without being excluded from society (King et al., 2003).

Parents stated that they observed their children with special needs had problems realizing their self-care skills. Meeting their physical needs by themselves, such as going to the toilet, getting dressed and undressed, eating, washing their hands and face, cutting nails, combing and taking care of their hair, and bathing independently is referred to as self-care skills in the literature (Cavkaytar, 2000). Problems in motor skills are observed in individuals with special needs, which cause problems in exhibiting skills such as getting dressed, combing their hair, and bathing (Chang, Chen & Huang, 2011). These self-care skills are important for individuals with special needs for them to maintain their daily lives independently or semi-independently (Cavkaytar, 2000). The results of this research have revealed the importance of providing family education to the parents of individuals with special needs during the COVID -19 pandemic on how to teach self-care skills to their children.

The parents stated that they had problems with the schoolteacher of their children with special needs and the special education and rehabilitation center in terms of individualizing

education, and the children's participation in distance education. When the literature is examined, it is seen that similar results have emerged in parallel with the findings of the present study. Kalac, Telli and Eronal (2020), in their study with parents, pointed out that parents observed "the problems related to EBA for primary school students in disability groups" regarding distance education. They expressed these problems as "connection problems in logging in and accessing the EBA system, and lack of accessibility to the EBA content; and the lack of contents that students with special needs of sight and hearing can benefit from in the EBA platform". Mengi and Alpdogan (2020), in their study conducted with special education teachers, stated that the teachers experienced problems in planning the special education needs of the students with special needs and in maintaining the education and training activities through distance education during the COVID-19 pandemic; and that the materials and assistive technologies used in special education did not serve their purpose in distance education. Kara and Alsancak (2020) expressed their opinions about the access of students with special needs to distance education as, "In the first month of the pandemic in Turkey, a lack of integration of students with special needs, in particular, to the distance education system, had limited the access of the individuals in this group to distance education and special education."

In addition to the difficulties they experienced, the parents stated that they were afraid of being infected with COVID-19, they were unhappy due to the restriction of freedom, and that they were worried about the situation of their children if they caught COVID-19 regarding the difficulties they had in the pandemic. In fact, it can be considered normal that individuals experience these emotions, undesired thoughts come to mind and daily routines change in the COVID-19 pandemic, which is experienced simultaneously around the world (Ercan, Arman, Emiroglu, Oztop & Yalcin, 2020). According to the study conducted by Goksu and Kumecek (2020), 84% of the participants stated that their anxiety increased during the COVID-19 pandemic. Similarly, Wang et al. (2020) observed in their research that people's anxiety increased during the COVID-19 pandemic. Furthermore, Duan and Zhu (2020) stated that during the COVID-19 pandemic increased stress and anxiety, and consequently mental problems such as insomnia and anger were observed in individuals.

Regarding the pandemic period, parents stated that they had various expectations from the state. Mengi and Alpdogan (2020) stated in their study that parents experienced various problems in the provision of distance education to students with special needs. Similarly, in their research, Kalac, Telli and Eronal (2020) observed problems in the provision of distance education to children with special needs. At this stage, it is thought that teachers should give more importance to the education of parents and even siblings. Considering that students with special needs spend most of their time at home, it is necessary to prepare individualized family education programs as well as individualized education programs for students with special needs. Moreover, it is difficult to provide information security in lessons offered by the video conferencing method. Legal arrangements should be made in this regard.

Since the qualitative research method was used in this study, the results obtained cannot be generalized and are limited to the views of the 10 parents who participated in the study with children with special needs. Based on these limitations, the following suggestions can be made:

- Parents with children of special needs can be provided with distance education support, financial support, and psychological support due to the problems emerging in the pandemic period.
- Further studies in which qualitative and quantitative research methods are used together can be planned with more parents with children with special needs.

- This study was carried out with parents with children with special needs, and in further studies, a single type of disability can be determined and studies can be planned with parents with a child affected by that particular disability.

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References

- Aishworiya, R., & Qi Kang, Y. (2020). Including children with developmental disabilities in the equation during this COVID-19 Salgın. *Journal of Autism and Developmental Disorders*, 20, 1-4. <https://doi.org/10.1007/s10803-020-04670-6>
- Akçay, E., & Başgöl, Ş. S. (2020). Salgın ve özel gereksinimi olan/risk altındaki çocuklar. Ercan ES, Yektaş Ç, Tufan AE, Bilaç Ö. (Eds). *COVID-19 Salgını ve Çocuk ve Ergen Ruh Sağlığı*. 1. Baskı. Ankara: Türkiye Klinikleri, pp. 55-61.
- Akkaş Baysal, E., Ocak, G., & Ocak, İ. (2020). COVID-19 salgını sürecinde okul öncesi çocuklarının EBA ve diğer uzaktan eğitim faaliyetlerine ilişkin ebeveyn görüşleri, *Uluslararası Sosyal Bilimler Eğitimi Dergisi*, 6(2), 185-214. <https://doi.org/10.47615/issej.835211>
- Allen, S. M., Ciambone, D., & Welch, L. C. (2000). Stage of life course and social support as a mediator of mood state among persons with disability. *Journal of Aging and Health*, 12(3), 318-341.
- Alpar, B. I. (2020). COVID-19 salgını sürecinde kadın ve hane içi emeği. D. Demirbas, V. Bozkurt, & S. Yorgun (Eds.). *COVID-19 Pandemisinin Ekonomik, Toplumsal Ve Siyasal Etkileri*, içinde (ss. 171-184). İstanbul: İstanbul Üniversitesi Yayınevi. <https://doi.org/10.26650/B/SS46.2020.005.11>
- Altındag Kumas & Sumer (2019). Özel gereksinimli küçük çocuğu olan annelerin öz yetkinlikleri, yılmazlık düzeyleri ve stres düzeyleri arasındaki ilişkilerin belirlenmesi. *Kastamonu Eğitim Dergisi*, 27(1), 163-173. <https://doi.org/10.24106/kefdergi.2445>
- APA (American Psychiatric Association) (2014). *DSM-5 tanı ölçütleri başvuru el kitabı* (E. Köroğlu, Çev). Ankara: Hekimler.
- Aslan, R. (2020). Tarihten günümüze epidemiler, salgınlar ve COVID-19. *Ayrıntı Dergisi*, 8(85), 35-41.
- Basaran, M., & Aksoy, A. B. (2020). Anne-babaların korona-virüs (COVID-19) salgını sürecinde aile yaşantılarına ilişkin görüşleri. *Uluslararası Sosyal Araştırmalar Dergisi*, 13(71), 668-678.
- Bek, H., & Şen, B. (2014). Öğrenme güçlükleri yaşayan çocukların gelişim özellikleri (pp. 67-78). (Editör: S. Sunay Yıldırım Doğru). *Öğrenme güçlükleri* (2. baskı). Ankara: Eğiten Kitap.
- Bell, K. L., Boyd, R. N., Tweedy, S. M., Weir, K. A., Stevenson, R. D., & Davies P. S. (2010). A prospective, longitudinal study of growth, nutrition and sedentary behaviour in young children with cerebral palsy. *BMC Public Health*, 10, 179. <http://dx.doi.org/10.1186/1471-2458-10-179>
- Ben-Naim, S., Gill, N., Laslo-Roth, R., & Einav, M. (2019). Parental stress and parental self-efficacy as mediators of the association between children's ADHD and marital satisfaction. *Journal of Attention Disorders*, 23(5) 506-516.

- Bozkurt, V. (2020). Salgın döneminde çalışma: ekonomik kaygılar, dijitalleşme ve verimlilik. D. Demirbas, V. Bozkurt & S. Yorgun (Eds.). *COVID-19 pandemisinin ekonomik, toplumsal ve siyasal etkileri*, içinde (pp. 115-136) İstanbul Üniversitesi Yayınevi.
- Bradbury-Jones, C., & Isham, L. (2020). The salgınc paradox: The consequences of COVID-19 on domestic violence. *Journal of Clinical Nursing*, 1-3. <http://dx.doi.org/10.1111/jocn.15296>
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *The Lancet*, 395(10227), 912-920.
- Cacioppo, M., Bouvier, S., Bailly, R., Houx, L., Lempereur, M., Mensah-Gourmel, J., ... Pons, C. (2020). Emerging health challenges for children with physical disabilities and their parents during the COVID-19 salgınc: the ECHO French survey. *Annals of Physical and Rehabilitation Medicine*. 1429, 1-8, <http://dx.doi.org/10.1016/j.rehab.2020.08.001>
- Can, E. (2020). Coronavirüs (COVID-19) salgını ve pedagojik yansımaları: Türkiye’de açık ve uzaktan eğitim uygulamaları. *Açıköğretim Uygulamaları ve Araştırmaları Dergisi*, 6(2), 11-53.
- Can, F. G. (2015). *Özel gereksinimli çocuğu olan ve olmayan ebeveynlerin evlilik uyumu yaşam doyumu ve etkileyen faktörler* (Tez Numarası: 396379) (Yüksek lisans tezi). T.C. Atatürk Üniversitesi Sağlık Bilimleri Enstitüsü. Erzurum.
- Cavkaytar, A. (2000). Zihinsel özel gereksinimlilerin eğitim amaçları. *Anadolu Üniversitesi Eğitim Fakültesi Dergisi*, 10(1), 115-121.
- Chang Y.-J., Chen S.-F., Huang J.-D. (2011). A Kinect-based system for physical rehabilitation: A pilot study for young adults with motor disabilities. *Research in Developmental Disabilities*, 32(6), 2566-2570.
- Cho, S., & Kahng, S. K. (2015). Predictors of life satisfaction among caregivers of children with developmental disabilities in South Korea. *Asian Social Science*, 11(2), 154-166. <http://dx.doi.org/10.5539/ass.v11n2p154>
- Cluver, L. MLachman, J., Sherr, L., Wessels, I., Krug, E., Rakotomalala, S McDonald, K.. (2020). Parenting in a time of COVID-19. *Lancet*, 395: e64, [http://dx.doi.org/10.1016/S0140-6736\(20\)30736-4](http://dx.doi.org/10.1016/S0140-6736(20)30736-4)
- Damiani, B. V. (1999). Responsibility and adjustment insiblings of children with disabilities: update and review. *The Journal of Contemporary Human Services, Families in Society*, 1, 34-40.
- Duan, L., & Zhu, G. (2020). Psychological interventions for people affected by the COVID-19 epidemic. *The Lanset*, 7(4), 300-302. [https://doi.org/10.1016/S2215-0366\(20\)30073-0](https://doi.org/10.1016/S2215-0366(20)30073-0)
- Ercan, S. E., Arman A. R., Emiroglu, İ. N. , Oztop, D. B., & Yalcin, Ö. (2020). *Türkiye çocuk ve genç psikyatrisi derneği covid 19 (korona) virüs salgını arasında aile, çocuk ve ergenlere yönelik psikososyal ve ruhsal destek rehberi*. <https://www.ankara.edu.tr/Covid-19/>, accessed on 11 January 2021.
- Gau, S. S., Chou, M. C., Chiang, H. L., Lee, J. C., Wong, C. C., Chou, W. J., & Wu, Y.Y. (2012). Parental adjustment, marital relationship, and family function in families of children with Autism. *Research in Autism Spectrum Disorders*, 6(1) 263-270.
- Girli, A. (1995). *Normal zekalı kardeşlerin zihinsel özel gereksinimli kardeşe yönelik kabul düzeylerinin belirlenmesi* (Tez Numarası: 43944) (Yayımlanmamış yüksek lisans tezi). Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Eğitim Bilimleri Anabilim Dalı, İzmir.
- Goksu, Ö., & Kumcağız, H. (2020). COVID-19 salgınında bireylerde algılanan stres düzeyi ve kaygı düzeyleri. *Turkish Studies*, 15(4), 463-479. <https://dx.doi.org/10.7827/TurkishStudies.44397>
- Görgü, E. (2005). *3-7 Yaş arası otistik çocuğa sahip olan annelerin algıladıkları sosyal destek düzeyleri ile depresyon düzeyleri arasındaki ilişki* (Tez Numarası: 188722) (Yayımlanmamış Yüksek Lisans Tezi). Marmara Üniversitesi Eğitim Bilimleri Enstitüsü, İstanbul.

- Gupta, A., & Goplani, M. (2020). Impact of COVID-19 on educational institutions in India. *UGC Care Journal*, 31(21), 661-671. <https://doi.org/10.13140/RG.2.2.32141.36321>
- Ham, A. (2020). *Social and economic impact of the COVID-19 and policy options in Honduras*. <https://www.undp.org/content/dam/rblac/Policy%20Papers%20COVID%2019/UNDPBLC-CD19-PDS-Number4-EN-Honduras.pdf> (30.04.2020).
- Harris, S. L., & Glasberg, B. A. (1994). *Siblings of children with autism: A guide for families*. Woodbine house Bethesda, M. D. <https://doi.org/10.3390/ijerph17051729>
- İnce, Z. İ., & Tüfekci, F. G. (2015). Özel gereksinimli çocuğu olan ebeveynlerde evlilik uyumu ve yaşam doyumunun değerlendirilmesi ve etkileyen faktörlerin belirlenmesi. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi*, 4, 102-112.
- Jiao, W. Y., Wang, L. N., Liu, J., Feng Fang, S., Jiao, F. Y., Pettoello-Mantovani, M., & Somekh, E. (2020). Behavioral and emotional disorders in children during the COVID-19. *Epidemic. J Pediatr: Elsevier Public Health Emergency Collection*. (Çevrim içi yayın) <http://dx.doi.org/10.1016/j.jpeds.2020.03.013>
- Kalac, Ö., Telli, G., & Eronal, Y. (2020). *COVID-19 mücadelesi kapsamında uzaktan eğitim sürecinde özel gereksinimli öğrencilerin durumu sorunlar ve çözüm önerileri*. Manisa Celal Bayar Üniversitesi Rektörlük Basımevi Müdürlüğü: Manisa.
- Kara, H. Z., & Alsancak, F. (2020). Koronavirüs salgınında toplumun yaşlı ve özel gereksinimlilere yönelik düşünceleri üzerine bir araştırma. *Pearson Journal Of Social Sciences & Humanities*, 5(8) 133-143. <http://dx.doi.org/10.46872/pj.155>
- King, G., Law, M., King, S., Rosenbaum, P., Kertoy, M. K., & Young, N. L. (2003). A conceptual model of the factors affecting the recreation and leisure participation of children with disabilities. *Physical and occupational therapy in pediatrics*, 23(1), 63-90.
- Kluwer, E. (2020). *Families in time of Corona*. Retrieved on 11 January 2021, from <https://nias.knaw.nl/food-for-thought/families-in-times-of-corona/>.
- Kundu, B., & Bhowmik, D. (2020). Societal impact of novel corona virus (COVID-19 salgını) in India. *SocArXiv*, 1-14. <http://dx.doi.org/10.31235/osf.io/vm5rz>
- Lamb, M., & Sutton-Smith, B. (2014). *Sibling relationships: Their nature and significance across the lifespan*. Psychology Press. New York: Taylor & Francis.
- Maltais, D. B., Wiart, L., Fowler, E., Verschuren, O., & Damiano, D. L. (2014). Health-related physical fitness for children with cerebral palsy. *Journal of Child Neurology*, 29(10), 91-100. <http://dx.doi.org/10.1177/0883073814533152>
- Matson, J. L., & Fodstad, J. C. (2009). The treatment of food selectivity and other feeding problems in children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 3(2), 455-461. <http://dx.doi.org/10.1016/j.rasd.2008.09.005>
- Mengi, A., & Alpdogan, Y. (2020). COVID-19 salgını sürecinde özel eğitim öğrencilerinin uzaktan eğitim süreçlerine ilişkin öğretmen görüşlerinin incelenmesi, *Millî Eğitim*, 49(1), 413-437.
- Moore-Brown, B. J., & Montgomery, J. K. (2006). *Making a difference for America's children: Speech-language pathologists in public schools*. Eau Claire, WI: Thinking Publications.
- Ohaeri, J. U. (2003). The burden of caregiving in families with a mental illness: A review of 2002. *Current Opinion in Psychiatry*, 16(4), 457-466.
- Ozturk, M. S., Yilmaz, N., Demir Erbil, D., & Hazer, O. (2020). COVID-19 salgını döneminde hane halkındaki çatışma ve birlik-beraberlik durumunun incelenmesi. *Turkish Studies*, 15(4), 295-314. <https://dx.doi.org/10.7827/TurkishStudies.44424>
- Sahin, E., Öz, A. O., & Sıngın, R. H. Ö. (2020 Ekim). COVID-19 salgını sürecinin otizm spektrum bozukluğunda motor becerilere etkisi. *EJERCongress 2020 Bildiri Özetleri Kitabı*, Eskisehir.

- Salaun, L., & Berthouze-Aranda, S. (2011). Obesity in school children with intellectual disabilities in France. *Journal of Applied Research in Intellectual Disabilities*, 24, 333-340.
- Sari, H. Y., & Altıparmak, S. (2008). Ebe ve hemşirelerin zihinsel özel gereksinimli çocuklarla ilgili bilgileri. *TSK Koruyucu Hekimlik Bülteni*, 7(2), 127-132.
- Sari, T., & Nayir, F. (2020). Salgın dönemi eğitim: sorunlar ve fırsatlar. *Turkish Studies*, 15(4), 959-975. <https://dx.doi.org/10.7827/TurkishStudies.44335>
- Shafran, R., Coughtrey, A., & Whittal, M. (2020). Recognising and addressing the impact of COVID-19 on obsessive-compulsive disorder. *The Lancet Psychiatry*, 7(7), 570-572.
- Spahis, S., Vanasse, M., Be'langer, S. A., Ghadirian, P., Grenier, E., & Levy, E. (2008). Lipid profile, fatty acid composition and pro- and anti-oxidant status in pediatric patients with attention-deficit/hyperactivity disorder. *Prostaglandins Leukot Essent Fatty Acids*, 79, 47-53.
- Trute, B., & Hiebert-Murphy, D. (2002). Family adjustment to childhood developmental disability: A measure of parent appraisal of family impacts. *Journal Of Pediatric Psychology*, 27(3), 271-280.
- UNESCO (2020a). *COVID-19 educational disruption and response*, <https://en.unesco.org/Covid19/educationresponse>, accessed on 7 April 2020.
- Wang, G., Zhang, Y., Zhao, J., Zhang, J., & Jiang, F. (2020). Mitigate the effects of home confinement on children during the COVID-19 outbreak. *Lancet*, 395, 945-7. [http://dx.doi.org/10.1016/S0140-6736\(20\)30547-X](http://dx.doi.org/10.1016/S0140-6736(20)30547-X)
- Wang, C., Cheng, Z., Yue, X. G., & McAleer, M. (2020). Risk management of COVID-19 by universities in China. *Journal of Risk and Financial Management*, 13, 36-42.
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (covid-19) epidemic among the general population in China. *Environmental Research and Public Health*, 17, 1729.
- WHO (2020). *Past salgıncı*. <http://www.euro.who.int/en/health-topics/communicablediseases/influenza/salgıncı-influenza/past-salgıncı>, accessed on 12 January 2021.
- Zhao, Y. (2020). COVID-19 as a catalyst for educational change. *Prospects*, 1(5). <https://doi.org/10.1007/s11125-020-09477-y>





Intellectual Structure of Mobile Learning Field: Bibliometric Evidence from Turkey (2006-2020)

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Abstract

The aim of present study is to examine the intellectual structure of the reference lists of postgraduate theses on mobile learning in Turkey. In this research, 88 postgraduate theses indexed in the National Thesis Center of the Council of Higher Education were examined. According to the obtained findings, it was determined that the most theses were conducted in 2019. The average number of pages and citations of doctoral theses is higher than that of master's theses. The supervisors of the master's theses are mostly Assistant professors while the advisors of doctoral theses are mostly Associate professors and Professors. In both master's and doctoral theses, citations to journal articles are more common. The most cited journals in master's theses were *Computers and Education*, *Turkish Online Journal of Educational Technology*, *British Journal of Educational Technology*. The most cited journals in doctoral theses were *Computers and Education* and *British Journal of Educational Technology*. Agnes Kukulska-Hulme and John Traxler's book *Mobile Learning: A Handbook for Educators and Trainers* is the most cited book in master's theses. Mohamed Ally's book *Mobile Learning: Transforming the Delivery of Education and Training* comes first in doctoral dissertations. Mike Sharples has been the most cited author in both types of postgraduate theses.

Keywords: mobile learning, intellectual structure, citation analysis, research trends.

1. Introduction

Today, with the advancement and the significant growth in technology adoption, it has naturally become an integral part of the education. Thus, the education-teaching process has entered a period that can be supported and reorganized with the opportunities provided by technology. This situation has led to an increase in research examining the use of technology in education. Meta-analysis studies examining various studies on the use of technology in education show that the use of technology in education has a positive effect on learning (Bolat & Göksu, 2020; Cheung & Slavin, 2012; Dikmen & Tuncer, 2018; Dinçer, 2015; Schmid, et al., 2014; Tomakin and Yesilyurt, 2013).

- The most cited journal in postgraduate theses was *Computers and Education*.
- Agnes Kukulska-Hulme and John Traxler's book *Mobile Learning: A Handbook for Educators and Trainers* is the most cited book in master's theses.
- Mohamed Ally's book *Mobile Learning: Transforming the Delivery of Education and Training* is the most cited book in doctoral dissertations.
- Mike Sharples has been the most cited author in postgraduate theses.

One of the important components of technology adoption in education is mobile learning. Mobile learning has become even more important today with the rapid development of wireless communication and mobile technologies and there has been a tendency towards mobile learning (Chu, Hwang, Tsai, & Tseng, 2010; Çelik, 2012). Quinn (2001) described mobile learning as e-learning that can be accessed with portable technologies; Özdamar-Keskin (2011) defined it as a learning method that increases the productivity and efficiency of individuals through mobile technologies. The basis of mobile learning consists of learning with portable devices of individuals independent of a particular learning environment. Thanks to mobile technology, students were not obliged to the classroom environment and this technology provided convenience and flexibility for students (Yıldırım, 2012).

Mobile learning, which is predicted to reduce the dependence on time and space, has several advantages. Tanriverdi (2011) categorized the advantages of mobile learning as: place and time flexibility, instant interaction, cheapness, prevalence and ease of transportation of mobile devices, internet infrastructure width (Wi-Fi) and attracting students' attention. In addition to these advantages, mobile learning also has various limitations. These limitations are; connection problems and costs, screen size of mobile devices, data security, system incompatibilities and difficulty in tracking students (Corbeil & Valdes-Corbeil, 2007; Kantaroğlu & Akbıyık, 2017).

In the research conducted by Şeylan (2018), it was determined that the effect of mobile learning on academic success was significant in various studies. In addition, in various meta-analysis studies conducted by researchers, it was concluded that the effect size of the contribution of mobile learning to academic success was positive, highly effective and was statistically significant (Guzeller & Üstünel, 2016; Sönmez & Çapuk, 2019). In another meta-analysis study the researchers concluded that mobile learning has a positive effect on students' motivation and attitudes as well as academic success (Gür & Bulut-Özek, 2021).

When the literature is examined, it is seen that there are many studies examining the theses and articles on mobile learning. In Aydoğdu's (2019) study, the methodological dimensions, descriptive features and general tendencies of 47 theses and 180 articles on mobile learning were examined. Göksu (2021) took 5,167 articles as a sample in her study examining the bibliometric map of mobile learning. In the study by Xu, Yang, and Zhu (2018), 2,392 articles indexed in the Web of Science database on mobile learning were handled bibliometrically. Sobral (2020) also evaluated 450 articles scanned in Web of Science and Scopus databases on mobile learning in higher education with bibliometric analysis. Lai (2020) examined the 100 most cited articles in the field in her study on trends in mobile learning. In the study conducted by Uygun and Sönmez (2019), 19 theses and 12 articles were examined in terms of research objectives, method, participant group and data collection instruments. Korucu and Biçer's (2019) study evaluated the descriptive features, methodological dimensions and general trends of a total of 24 articles. In the study conducted by Kavaklı and Near (2019), 44 articles on mobile learning published in three peer-reviewed journals were examined in terms of determining their general trends. In Altunçekiç's (2020) study, 69 articles on mobile learning were discussed in terms of method and descriptive features.

As can be seen, in recent years, many aspects of theses and articles related to mobile learning have been examined. However, in the literature review, no study was found that reveals the citation characteristics of postgraduate theses prepared in Turkey on mobile learning. In this research, besides the descriptive features of the theses related to mobile learning, the citation features of the theses will also be examined. In this way, the intellectual structure of the mobile learning field will be revealed by determining which authors, which books, which journals and which types of sources are cited most in the theses. It is thought that these findings can provide a broader perspective to the studies in the field and can guide researchers in the mobile learning literature.

This research aims to examine the bibliometric features of the citations of postgraduate theses on mobile learning in Turkey. In addition to this, theses are examined in terms of year, genre, advisor and the title of the advisor. In line with the purpose of the present research, answers to the following questions were sought:

1. What is the distribution of graduate theses by year and type?
2. What is the distribution of the number of pages and citations in graduate theses?
3. How are the titles of the supervisors who directed the postgraduate thesis distributed?
4. What is the distribution of the supervisors who lead the postgraduate thesis?
5. What is the distribution according to the type of source cited in the graduate theses?
6. What are the most cited journals in master's theses?
7. What are the most cited books in master's theses?
8. Who are the most cited authors in master's theses?
9. What are the most cited journals in doctoral theses?
10. What are the most cited books in doctoral theses?
11. Who are the most cited authors in doctoral theses?

2. Material and methods

2.1 Design

The present study was quantitative research and in line with this basic research paradigm, the bibliometric citation analysis technique was also used (Becker & Chiware, 2015). Thus, the citation analysis of the theses prepared on mobile learning listed in the National Thesis Center of the Council of Higher Education was tried to be done. "Citation analysis is a type of analysis that helps researchers to know the sources that have reached the guiding feature in their fields. The sources, journals and authors that have a decisive role in the literature related to this analysis can be determined" (Karagöz & Şeref, 2020).

2.2 Data collection and analysis

Theses, which are the data source of the research, were obtained from the National Thesis Center of the Council of Higher Education (<https://tez.yok.gov.tr/UlusalTezMerkezi/>).

Searches were made on 5 January 2021 by choosing the “Advanced Search” tab in the database in question. The searches were carried out with the keywords “mobile learning, mobile, learning, digital, mobile technology, technology” separately, by selecting “all” in the “field to search” section. No limitations were made in the searches, except for keywords. As a result of the search, 109 theses were found. Two of these theses were excluded from the study because their access was restricted by the author. In addition, 19 theses were excluded from the study because they were not related to the subject.

Document analysis method was used to collect data. In this method, it is aimed to analyze the written materials that give information about the research topic (Yıldırım & Şimşek, 2011). Thus, the previously mentioned 88 thesis studies were transferred to the computer environment in pdf. format from the website of the National Thesis Center of the Council of Higher Education. PRISMA (Preferred Reporting Elements for Systematic Reviews and Meta-Analyses) was guided in the collection and analysis of data (Moher et al., 2009). The diagram of the data collection process is given below.

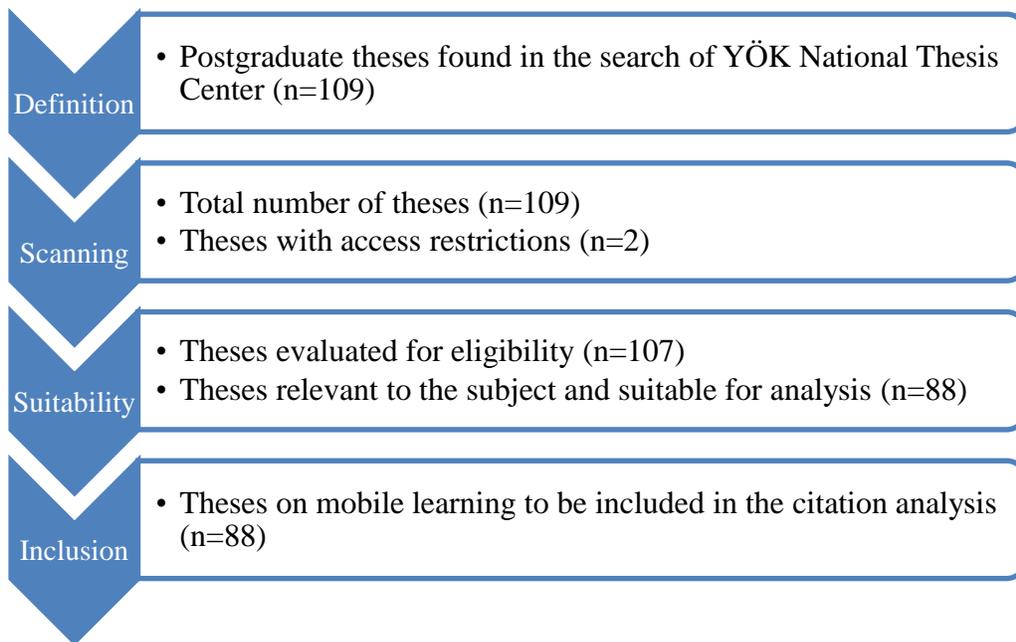


Figure 1. Diagram of data collection

The information about the theses obtained was manually entered into the Microsoft Excel program by the researchers. Each source cited in the theses has been transferred to the Excel program by writing a source on each line. The data obtained from 88 theses were evaluated after the control process. In the citation analysis in the research, theses were examined in two categories as master’s and doctorate. Citations made in theses are categorized as book, article, thesis, other (paper, report, etc.) and e-resource (web). Findings were prepared by producing tables with the obtained data. In the Findings section the distribution of graduate theses by year and type, the distribution of the number of pages and citations, the titles of the advisors, the distribution of the advisors, the distribution according to the reference types; the most cited journals, books, authors in the master’s theses; The most frequently cited journals and authors in doctoral theses are respectively presented.

In Rank to ensure validity and reliability in scientific research, to report the data in detail and to explain how the results are met, it is important for the researcher to approach the subject impartially (Yıldırım & Şimşek, 2011). In Rank to establish the validity and reliability of the research, first of all, detailed information about the data selection and processing process was

tried to be given. It is aimed to allow a second review by storing the examined theses. In the findings, the data are presented directly in the tables. Journals, books and authors were processed by checking from international search engines (Google Scholar) and databases (Web of Science, Scopus, EBSCO, ProQuest, Semantic Scholar). The processed data were checked again by the researchers three weeks later. Thus, the findings were illustrated in their final form.

3. Findings

3.1 Distribution of theses by year and type

The distribution of postgraduate theses on mobile learning by year and type are given in Table 1. These data were considered important in terms of showing the interest in the subject over the years.

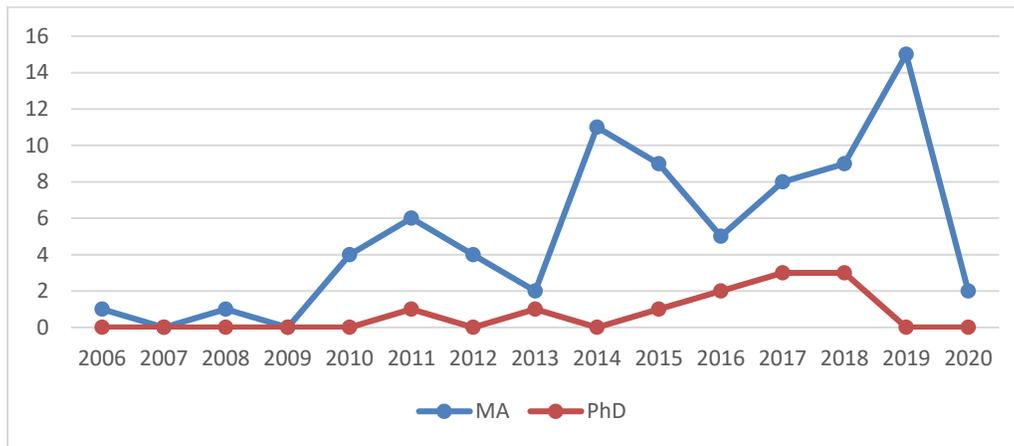


Figure 2. Distribution of theses by years

When Figure 2 is examined, it is seen that the theses about mobile learning started in 2006. A total of 88 theses, including 77 master's and 11 doctoral theses, were submitted on the subject. 1 master's degree in 2006; 1 master's degree in 2008; 4 master's degrees in 2010; In 2011, 6 master's degrees, 1 doctorate; 4 master's degrees in 2012; 2 master's degrees, 1 doctorate in 2013; 11 master's degrees in 2014; In 2015, 9 master's degrees, 1 doctorate; 5 master's degrees, 2 doctorate degrees in 2016; 8 master's degrees, 3 doctorate degrees in 2017; In 2018, 9 masters, 3 doctorate; 15 master's degrees in 2019; In 2020, 2 master's theses were submitted. While the least thesis was submitted in 2006 and 2007, the most theses were submitted in 2019.

3.2 The distribution of the page and citation of theses

The distribution of the number of pages and citations of the examined postgraduate theses is presented in Table 1. In this way, it is aimed to reach the averages of pages and resources contained in the theses and to compare them according to the type of thesis.

Table 1. Distribution of pages and citations

Thesis Type	Number of Theses	Number of pages		Number of Citations	
		n	Average	n	Average
MA	77	8,388	108.93	7,660	99.48
PhD	11	2,254	204.90	1,873	170.27
Total	88	1,0642	120.93	9,533	108.32

The examination of Table 1 illustrates that the total number of pages of master's theses is 8,388, and the total number of pages of doctoral theses is 2,254. It is noteworthy that the average number of pages is 108 pages for master's theses and 204 pages for doctoral theses. While the total number of citations of master's theses is 7,660, the average is 99. Besides, the number of citations of doctoral theses is 1,873, the average is 170.

3.3 Titles of thesis advisors

Information on the distribution of the titles of the advisors is given in Table 2. Graduate theses, prepared under the consultancy of field experts, are the product of a process involving the advisor and the student. In this respect, the expertise of the consultants and their experience in the field are important for the students. For this reason, it was considered important to determine the supervisors and their titles who directed the thesis.

Table 2. Distribution of titles of consultants

MA			PhD		
Title	n	%	Title	n	%
Assistant Professor	35	45.45	Assistant Professor	3	27.27
Associate Professor	27	35.06	Associate Professor	4	36.36
Professor	15	19.48	Professor	4	36.36

The titles of the thesis advisors are given in Table 2. Accordingly, the advisors of 45% of the master's theses were Assistant professors, the advisors of 35% of them were Associate professors and the advisors of 19% of master's theses were Professors. The advisors of 27% of doctoral theses were Assistant professors and 36% of their advisors were Professors.

3.4 Distribution by type of source cited in theses

Distribution data according to the types of sources cited in the theses are given in Table 3. Many types of sources related to the subject examined in scientific studies can be referred to. In this part of the study, the types of sources cited in the theses on the subject were tried to be determined.

Table 3. Distribution by type of source cited

Type of Publication Cited	MA		PhD		Total	
	n	%	n	%	n	%
Book	1,563	20.40	523	27.92	2,086	21.88
Article	3,301	43.09	937	50.02	4,238	44.45
Thesis	687	8.96	137	7.31	824	8.64
E-Resource	933	12.18	142	7.58	1,075	11.27
Other	1,176	15.35	134	7.15	1,310	13.74
Total	7,660	100	1,873	100	9,533	100

Note. E-Source: Web resources, Other: Paper, Report, etc.

When Table 3 is examined, the most common sources in the master's theses are article-type sources (n=3,301), It is seen that references are made to books in the second place (n=1,563), other types of resources (n=1,176) in the third place, e-resources in the fourth place (n=933), and thesis type resources (n=687) at least. In the doctoral theses, the most cited sources were article type (n=937), second place was book type resources (n=523), third place was e-resource type resources (n=142), fourth place was thesis type resource (n=137), the least number of citations was made to other types of sources (n=134). When all postgraduate theses are evaluated together, the most common sources are article type (n=4,238), book type resources (n=2,086), other types of resources (n=1,310), fourth e-resource type (n=1,075), and it was determined that at least thesis type sources (n=824) were cited.

3.5 Journals most cited in master's theses

In Table 4, the most frequently cited peer-reviewed academic journals in master's theses are listed by index, number of citations and impact factor information. Thus, the journals in which the sources of the article type used in the theses are included were examined. The index information of these journals is very important. Although there are many directories today, some directories come to the fore due to various reasons such as the number of citations, publication quality, and process professionalism. For example, directories within the scope of Web of Science are in the foreground for various reasons (Asan, 2017). In addition, impact factors are considered as an indicator of the interest in the studies in those journals. In other words, the examination of the journals in which the cited articles are published will present which quality and type (national, international) journals are followed in theses related to mobile learning.

Table 4. Journals most frequently cited in master's theses

Rank	Journal Name	Index	Number of Citations	TR Index Citation	Impact Factor
1	<i>Computers & Education</i>	SSCI	216	-	5.296
2	<i>Turkish Online Journal of Educational Technology (TOJET)</i>	ERIC	130	-	-
3	<i>British Journal of Educational Technology</i>	SSCI	94	-	2.951
4	<i>Procedia - Social and Behavioral Sciences</i>	closed in 2018	93	-	-
5	<i>Journal of Computer Assisted Learning</i>	SSCI	75	-	2.126
6	<i>The International Review of Research in Open and Distributed Learning</i>	SSCI	47	-	0.734
7	<i>ReCALL (The Journal of the European Association for Computer Assisted Language Learning)</i>	SSCI	46	-	1.842
8	<i>Educational Technology & Society</i>	SSCI	45	-	2.086
9	<i>Computers in Human Behavior</i>	SSCI	43	-	5.003
10	<i>Hacettepe Üniversitesi Eğitim Fakültesi Dergisi</i>	ESCI, TR DİZİN	39	8,607	-

Note: *Procedia – Social and Behavioral Sciences*: It is an open access collection of conference proceedings published between 2009 and 2018 on basic social and behavioral sciences. *Eduacuse Quarterly*: The journal was closed in 2012 and it was stated by the publisher that Educause Review will include its issues from that year onwards.

When Table 4 is examined, *Computers and Education* (n=216), *Turkish Online Journal of Educational Technology (TOJET)* (n=130), *British Journal of Educational Technology* (n=94) are in the first three rows of the journals in which the articles in the type of articles cited in the master's theses are published. *Computers & Education* and *British Journal of Educational Technology* are scanned in SSCI and *Turkish Online Journal of Educational Technology* is

scanned in ERIC. Of the top 10 most cited journals, 7 are indexed in SSCI, 1 in ERIC, and 1 in both ESCI and TR INDEX. The publication life of 1 journal was terminated.

3.6 Most cited books in master's theses

In Table 5, the most cited books and book chapters in master's theses are indicated by the author, the number of citations and the Google Scholar citation number of the book. Books have a vital function in the preservation and dissemination of science and culture (Dalkıran, 2013). As can be seen in the types of sources cited in the theses prepared on mobile learning, sources such as books have been used quite a lot. Determining the most cited books and determining their Google Scholar citation numbers will reveal which types of (national, international) books on the subject are popular.

Table 5. Most cited books in master's theses

Rank	Book-Book Chapter	Number of Citations	GS Citation
1	Kukulka-Hulme, A., & Traxler, J. (Ed.) (2007). <i>Mobile learning: a handbook for educators and trainers</i> . London: Routledge.	21	1,228
2	Karasar, N. (2011). <i>Bilimsel araştırma yöntemi</i> . Ankara: Nobel.	20	17,008
3	Yıldırım A., & Şimşek H. (2008). <i>Sosyal bilimlerde araştırma yöntemleri</i> . Ankara: Seçkin Yayıncılık.	20	22,713
4	Alkan, C. (2005). <i>Eğitim teknolojisi</i> . Ankara: Anı Yayıncılık.	18	944
5	Koole, M. L. (2009). A model for framing mobile learning. In M. Ally (Ed.), <i>Mobile learning: Transforming the delivery of education and training</i> . Edmonton: AU Press.	10	684
6	Ally, M. (2009). <i>Mobile learning: Transforming the delivery of education and training</i> . Edmonton: Athabasca University Press.	8	1,032
7	Crompton, H. (2013). A Historical overview of m-learning: Toward learner-centered education. In Z. L. Berge & L. Y. Muilenburg (Eds.), <i>Handbook of mobile learning</i> (pp. 3-15). New York, USA: Routledge Taylor and Francis Group.	7	
8	Sharples, M., Amedillo-Sanchez, I., Milrad, M., & Vavoula, G. (2009). Mobile learning: Small devices, big issues. In Balacheff, S. Ludvigsen, T., D. Jongand, & S. Barnes (Eds.), <i>Technology enhanced learning</i> (pp. 233-249). California: SAGE Publications.	7	949
9	Kaya, Z. (2002). <i>Uzaktan eğitim</i> . Ankara: Pegem-A Yayıncılık.	7	353
10	Woodill, G. (2011). <i>The mobile learning edge</i> . USA: McGraw-Hill Companies.	7	213

In Table 5, the most cited book/book chapters in master's theses are listed. Accordingly, Agnes Kukulka-Hulme and John Traxler's *Mobile Learning: A Hand book for Educators and Trainers* (21) took the first place. In the second and third place are research methods and books. In the fourth place, Cevat Alkan's book *Educational Technology* (18) was cited. In fifth place is the book chapter A Model for Framing Mobile Learning (10) by Marguerite L. Koole.

3.7 Most cited authors in master's theses

In Table 6, the most cited authors in their master's theses are presented together with the citation numbers in the theses and the citation numbers in their Google Scholar profiles. Determining the most cited authors in the theses about mobile learning is considered important as it will show which researchers are followed in this field.

Table 6. Authors most cited in master's theses

Rank	Writer	Number of Citations	Google Scholar Citation
1	Mike Sharples	114	22,157
2	Giasemi Vavoula	87	9,477
3	John Traxler	86	8,399
4	Agnes Kukulska-Hulme	80	12,072
5	Şirin Karadeniz	45	13,814
6	Nilgün Özdamar-Keskin	41	-
7	Jill Attewell	36	-
8	Josie Taylor	35	-
9	Şener Büyüköztürk	33	39,496
10	Biröl Gülnar	33	1,931

Note. The information about the authors in the blank lines could not be found.

When Table 6 is examined, the first four of the most cited authors in master's theses are Mike Sharples (n=114), Giasemi Vavoula (n=87), John Traxler (n=86), Agnes Kukulska-Hulme (n=80). Mike Sharples, who is in the first place, is an Emeritus Professor of Educational Technology at The Open University, Institute of Educational Technology in England. As can be understood from the author's post, his area of expertise is educational technologies. Giasemi Vavoula, in second place, works at the University of Leicester in England. The author's Google Scholar profile includes technology-enhanced learning and mobile learning tags. Third place author, John Traxler, has been the world's first professor of mobile learning since September 2009 and is currently a professor of digital learning at the University of Wolverhampton Institute of Education, UK. The fourth ranked author, Agnes Kukulska-Hulme, is Professor of Learning Technology and Communication at the Institute of Educational Technology, UK. The first Turkish writer in the list is Şirin Karadeniz. The author continues her academic life with the title of Professor Doctor in the Department of Computer and Instructional Technologies Education at Bahçeşehir University, Faculty of Educational Sciences.

3.8 Journals most cited in doctoral theses

In Table 7, the most cited peer-reviewed academic journals in doctoral theses are given together with the index, number of citations and impact factor information.

Table 7. Journals most cited in doctoral theses

Rank	Journal Name	Index	Number of Citations	TR Index Citation	Impact Factor
1	<i>Computers & Education</i>	SSCI	47	-	5.296
2	<i>British Journal of Educational Technology</i>	SSCI	31	-	2.951
3	<i>International Review of Research in Open and Distributed Learning</i>	SSCI	24	-	0.734
4	<i>Procedia - Social and Behavioral Sciences</i>	Terminated in 2018	24	-	-
5	<i>Journal of Computer Assisted Learning</i>	SSCI	23	-	2.126

6	<i>Turkish Online Journal of Educational Technology (TOJET)</i>	ERIC	20	-	-
7	<i>Computers in Human Behaviour</i>	SSCI	17	-	5.003
8	<i>Educational Technology & Society</i>	SSCI	13	-	2.086
9	<i>Language Learning</i>	SSCI	10	-	3.408
10	<i>Language Learning & Technology</i>	SSCI	8	-	2.473

When Table 7 is examined, the first four of the journals in which the articles in the type of articles cited in doctoral theses are published are *Computers & Education* (n=47), *British Journal of Educational Technology* (n=31), *International Review of Research in Open and Distributed Learning* (n=24), *Procedia - Social and Behavioral Sciences* (n=24) are included. *Computers & Education*, *British Journal of Educational Technology*, and *International Review of Research in Open and Distributed Learning* are indexed in SSCI. 8 of the top 10 most cited journals are indexed in SSCI and 1 in ERIC indexes. The publication life of 1 journal was terminated.

3.9 Most cited books in doctoral theses

In Table 8, the most cited books and book chapters in doctoral theses are indicated by the author, the number of citations and the Google Scholar citation number of the book.

Table 8. The most cited books in doctoral theses

Rank	Book-Book Chapter	Number of Citations	Google Scholar Citation
1	Ally, M. (2009). <i>Mobile Learning: Transforming the delivery of Education and Training</i> . Athabasca: Athabasca University Press.	7	1,030
2	Naismith, L., Lonsdale, P., Vavoula, G., & Sharples, M. (2004). <i>Literature review in mobile technologies and learning</i> . Bristol: NESTA Future Lab.	5	1,485
3	Kukulka-Hulme, A., & Traxler, J. (2005). <i>Mobile learning: A handbook for educators and trainers</i> . London: Routledge.	4	1,225
4	Nation, I. S. P. (2001). <i>Learning vocabulary in another language</i> . Cambridge: Cambridge University Press.	4	11,037
5	Creswell, J. W. (2008). <i>Educational research: Planning, conducting and evaluating quantitative and qualitative research</i> . Boston: International Pearson Merrill Prentice Hall.	4	52,297
6	Yıldırım, A., & Şimşek, H. (2008). <i>Sosyal bilimlerde nitel araştırma yöntemleri</i> . Ankara: Seçkin Yayıncılık.	4	22,644
7	Creswell, J. W. (2009). <i>Research design: Qualitative, quantitative, and mixed methods approaches</i> (3 rd ed.). USA: Sage Publication s.	3	152,875
8	Büyüköztürk, Ş. (2012). <i>Sosyal bilimler için veri analizi el kitabı</i> . Ankara: Pegem Akademi.	3	11,695
9	Büyüköztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2012). <i>Bilimsel araştırma yöntemleri</i> . Ankara: Pegem Akademi.	3	9,051
10	Bogdan, R. C. & Biklen, S. K. (1998). <i>Qualitative research for education and Introduction to theory and practice</i> . Boston: Allyn & Bacon.	3	42,522

In Table 8, the top 10 sources in the type of book/book chapter most cited in doctoral theses are listed. According to the table, Mohamed Ally's *Mobile Learning: Transforming the Delivery of Education and Training* (n=7) is in the first place. In second place is *Literature Review in Mobile Technologies and Learning* (n=5) by Laura Naismith, Peter Lonsdale, Giasemi Vavoula, Mike Sharples. 6 of these books are studies on scientific research methods. 4 of them are books that can be said to be in the field of education and educational technology. 3 of the books/book chapters were produced by Turkish and 7 of them were produced by foreign academicians.

3.10 Most cited authors in doctoral theses

Table 9 presents data on the most cited authors in doctoral theses, the number of citations in theses, and the number of Google Scholar citations.

Table 9. Authors most cited in doctoral dissertations

Rank	Writer	Number of Citations	GS Citation
1	Mike Sharples	39	22,157
2	Giasemi Vavoula	34	9,477
3	John Traxler	22	8,399
4	Agnes Kukulska-Hulme	19	12,072
5	Josie Taylor	16	-
6	John W. Creswell	13	-
7	Jan Herrington	12	15,093
8	Mohamed Ally	10	-
9	Lev S. Vygotsky	10	-
10	Claire O'Malley	9	-

When Table 9 is examined, it is seen that the first four of the most cited authors in master's theses are Mike Sharples (n=39), Giasemi Vavoula (n=34), John Traxler (n=22), Agnes Kukulska-Hulme (n=19). The most cited authors in the master's thesis studies and the first four most cited authors in the doctoral thesis studies are the same. In addition, when the other parts of the lists are compared, it can be said that the most cited authors in master's and doctoral theses are generally similar.

4. Discussion and conclusion

In the present research, it was tried to analyze the citations in the bibliography of the postgraduate theses regarding mobile learning. Thus, in addition to the distribution of the postgraduate theses by year and genre, the number of pages and citations, the titles of their advisors, the names of their advisors, the types of sources they cited, the most cited journals in master's theses, the most cited books in master's theses, and the most cited books in master's theses, the authors, the most cited journals in doctoral theses, the most cited books in doctoral theses, and the most cited authors in doctoral theses were examined.

A total of 88 postgraduate theses, including 77 master's and 11 doctoral theses, were prepared in Turkey between the years 2006-2020 on mobile learning. The number of theses prepared on the subject has started to increase since 2014. In the Household Information Technologies (IT) Usage Survey (TUIK, 2020), it is stated that 86.9% of the households provide internet access with a mobile broadband connection. As can be seen here, mobile device internet usage has become quite high. Accordingly, it can be stated that the use of mobile devices has increased with the development of technology. It can be seen that the number of studies conducted in this study has increased as the present day. Accordingly, it can be said that thesis researches on the subject show a tendency related to daily life. In the researches, it is stated that the number of article studies on mobile learning has increased as the day approaches (Göksu, 2021; Sobral, 2020). However, two theses were found in 2020. The reason for this situation can be shown as COVID-19, which has affected the world in the last year and caused the disruption of scientific activities. It is predicted that the number of studies on mobile learning will increase in the coming years.

When the prepared theses were evaluated in terms of the average number of pages, the number of pages was found to be 108 in the master's theses and 204 in the doctoral theses. Considering the average number of citations, it has been determined that the average number of citations is 99 in master's theses and 170 in doctoral theses. Studies by Al and Tonta (2004), Şeref

and Karagöz (2020), Kushkowski, Parsons and Wiese (2003), also stated that doctoral theses have higher number of pages and citations. This study is similar to other studies. This result can be explained by the fact that doctoral education is a more detailed process. Because the doctorate program, which is the highest education level, can be considered as a situation that is expected to be completed with a detailed thesis study.

The titles of the advisors of the examined theses are mostly Dr. Instructor Although the number of members is similar in all titles at the doctoral level, Assoc. Dr. and Prof. Dr. title is more common. It can be considered as an expected situation that the titles of the advisors of the theses prepared in a higher education level are also higher. In addition, it can be said that the advisors of the theses vary. Because there are six faculty members who have two or more advisors on mobile learning.

It has been determined that the most article type sources are used in postgraduate theses. This is followed by sources in the types of books, other (reports, papers, etc.), e-resources (web), thesis, respectively. In the study conducted by Şerefoğlu-Henkoğlu, Mizanalı and Barutçu (2019), in which the citations of the theses in the field of management information systems were examined, it was found that 52% of the citations were made to the articles. The fewest references were made to sources in the thesis type and other types. In the citation analysis study of the articles on educational sciences and teacher training in Turkey by Karadağ et al. (2017), it was determined that the most used sources were the articles published in scientific journals. In the study by Xu, Yang, and Zhu (2018), in which articles on mobile learning in the Web of Science database were examined bibliometrically, it was stated that all of the top ten most cited works were in the article type. The increase in the number of academic journals has led to an increase in the number of academic studies published in these journals. It can be said that as a result of the increasing number of online databases and the ease of access to academic articles, citations to journals have increased (Karadağ, et al., 2019).

Articles published in *Computers & Education*, *Turkish Online Journal of Educational Technology*, *British Journal of Educational Technology* were mostly cited in master's theses. In the doctoral theses, the most references were made to the articles in the journals *Computers & Education*, *British Journal of Educational Technology*, *International Review of Research in Open and Distributed Learning*, *Procedia-Social and Behavioral Sciences*. The most cited journals are generally indexed in the *Social Sciences Citation Index*. This situation shows that international literature is followed in postgraduate theses on mobile learning. The fact that mobile learning is a global and up-to-date field has created an effect that makes journals scanned in respected international indexes want to include this subject. Göksu (2021) stated that the most active journals about mobile learning are *Computers & Education*, *British Journal of Educational Technology* and *Educational Technology & Society*. It can be said that the journals used in the theses about mobile learning in Turkey show similarities with the international literature. In addition, it is seen that the subject areas of the journals are related to education, technology and computers.

The first three of the most cited sources in the master's these are the following books: *Mobile Learning: A Handbook for Educators and Trainers* (Agnes Kukulska-Hulme and John Traxler), *Scientific Research Methods* (Niyazi Karasar), *Research Methods in Social Sciences*. (Ali Yıldırım and Hasan Şimşek). In doctoral theses, Mohamed Ally's book *Mobile Learning: Transforming the Delivery of Education and Training* is in the first place, followed by the book *Literature Review in Mobile Technologies and Learning* written by Laura Naismith, Peter Lonsdale, Giasemi Vavoula, Mike Sharples. When we look at the most used books, it is seen that there are scientific research books as well as books on mobile learning. In the citation analysis study of articles on educational sciences and teacher training in Turkey conducted by Karadağ, there are books on scientific research methods in the first three of the book-type resources. Although it is not related to the field, the reason for the frequent use of such books can be

considered as the fact that these books guide the authors in the research process. Because graduate students may encounter problems such as choosing the wrong method or technique or inadequacy in scientific ethics while preparing their thesis (Büyüköztürk et al., 2010). In this respect, it can be said that scientific research methods books are very important in carrying out the research process in line with a plan.

Mike Sharples, Giasemi Vavoula, John Traxler, Agnes Kukulska-Hulme constitute the first four of the most cited authors in master's and doctoral theses on mobile learning. When the institutions where these authors work are examined, it is seen that all of them work in England. In the study of Göksu (2021), in which she examined the articles on mobile learning bibliometrically, it was stated that England is among the most effective countries in mobile learning. In the mobile learning trend study conducted by Bhardwai and Jain (2015), England was among the countries that produce the most publications. In this study, the first four authors most cited in master's and doctoral theses are from the UK. This shows that this country has studies that can be considered as qualified in the field of mobile learning. Lai (2020) in his study on trends in mobile learning found that Mike Sharples was the most prolific writer between 2003-07, and Gwen-JenHwang's first and second Sharples's in all times found that. In the study by Xu, Yang, and Zhu (2018), in which articles on mobile learning in the Web of Science database were analyzed bibliometrically, Mike Sharples was identified as the third most cited author. In the so-called research, the most cited author in master's and doctoral theses was Mike Sharples. The author is Professor Emeritus at The Open University UK. It can be said that Sharples was one of the first pioneers in the field of mobile learning, which is already a current field. In addition, Hwang, who is seen as the most prolific writer of all time in Lai's (2020) study, ranked high in the citations made in the theses on mobile learning in Turkey.

The research is limited to 88 National Thesis Center of the Council of Higher Education. For this reason, it is necessity to evaluate the results obtained from the research according to this limitation. When the scope of the research is expanded, different results can be obtained. A comparative examination of the international thesis studies on mobile learning and the articles in Turkey and international journals can provide a broader view on the situation of the literature in Turkey.

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References

- Al, U., & Tonta, Y. (2004). Atıf Analizi: Hacettepe Üniversitesi Kütüphanecilik Bölümü tezlerinde atıf yapılan kaynaklar. *Bilgi Dünyası*, 5(1), 19-47.
- Altunçekiç, A. (2020). 2010-2020 yılları arasında mobil öğrenme çalışmalarının içerik analizi yöntemiyle değerlendirilmesi: Türkiye örneği. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi*, 40(3), 1087-1104.
- Asan, A. (2017). Uluslararası bilimsel dergi indeksleri, önemleri ve Türkiye kaynaklı dergilerin durumu: Bölüm 1: Bilimsel dergi indeksleri. *Acta Medica Alanya*, 1(1), 33-42.

- Aydoğdu, H. (2019). *Mobil öğrenme ile ilgili araştırmaların eğilimleri: bir içerik analizi*. Yayınlanmamış yüksek lisans tezi, Fırat Üniversitesi, Eğitim Bilimleri Enstitüsü, Elazığ.
- Becker, D. A., & Chiware, E. R. (2015). Citation analysis of masters' theses and doctoral dissertations: Balancing library collections with students' research information needs. *The Journal of Academic Librarianship*, 41(5), 613-620.
- Bhardwaj, R. K., & Jain, P. K. (2015). Research trends in mobile learning: A global perspective, *Collnet Journal of Scientometrics and Information Management*, 9(2), 205-224. <https://doi.org/10.1080/09737766.2015.1069960>
- Büyüköztürk, Ş., Kılıç-Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2010). *Bilimsel araştırma yöntemleri* (6. baskı). Ankara: PegemYayınları.
- Çelik, A. (2012). *Yabancı dil öğreniminde karekod destekli mobil öğrenme ortamının aktif sözcük öğrenimine etkisi ve öğrenci görüşleri: Mobil sözlük örneği*. Yayınlanmamış yüksek lisans tezi, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.
- Cheung, A. C., & Slavin, R. E. (2012). How features of educational technology applications affect student reading outcomes: A meta-analysis. *Educational Research Review*, 7(3), 198-215.
- Chu, H. C., Hwang, G. J., Tsai, C. C., & Tseng, J. C. R. (2010). A two-tier test approach to developing location-aware mobile learning systems for natural science course. *Computers & Education*, 55(4), 1618-1627.
- Corbeil, J. R., & Valdes-Corbeil, M. E. (2007). Are you ready for mobile learning? *EDUCAUSE Quarterly*, 30(2), 48-51.
- Dalkıran, Ö. (2013). Kitabın tarihi. *Türk Kütüphaneciliği*, 27(1), 201-213.
- Dikmen, M., & Tuncer, M. (2018). Bilgisayar destekli eğitimin öğrencilerin akademik başarıları üzerindeki etkisinin meta-analizi: Son 10 yılda yapılan çalışmaların incelenmesi. *Turkish Journal of Computer and Mathematics Education*, 9(1), 97-121.
- Dinçer, S. (2015). Türkiye'de yapılan bilgisayar destekli öğretimin öğrenci başarısına etkisi ve diğer ülkelerle karşılaştırılması: Bir meta-analiz çalışması. *Journal of Turkish Science Education*, 12(1), 99-118.
- Göksu, I. (2021). Bibliometric mapping of mobile learning. *Telematics and Informatics*, 56, 101491.
- Göksu, İ., & Bolat, Y. İ. (2020). Teknoloji kullanımı Türkiye'de öğrencilerin akademik başarılarını etkiliyor mu? Bir meta-analiz çalışması. *Eğitim Teknolojisi Kuram ve Uygulama*, 10(1), 138-176.
- Gür, D., & Bulut-Özek, M. (2021). Mobil öğrenmenin öğrencilerin akademik başarıları, motivasyonu ve tutumları üzerine etkisi: Bir meta analiz çalışması. *Trakya Eğitim Dergisi*, 11(1), 1-15.
- Güzeller, C. O., & Üstünel, F. (2016). Mobil öğrenmenin öğrenci başarısına etkisi: Bir meta analiz çalışması. *Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, (23), 528-561.
- Kantaroglu, T., & Akbıyık, A. (2017). İşletme Fakültesi ve Eğitim Fakültesi öğrencilerinin mobil öğrenmeye yönelik tutumlarının karşılaştırılması. *İşletme Bilimi Dergisi*, 5(2), 25-50.
- Karadağ, E., Yalçın, M., Çiftçi, K., Danışman, Ş., Sölpük, N., Tosuntaş, Ş., & Ay, Y. (2017). Türkiye'de eğitim bilimleri ve öğretmen yetiştirme alanındaki bilimsel yayınların atıf analizleri. *Bilgi Dünyası*, 18(1), 9-28.
- Karagöz, B., & Şeref, İ. (2020). Yazma becerisiyle ilgili makaleler üzerine bir inceleme: Web of Science veri tabanında eğilimler. *Ana Dili Eğitimi Dergisi*, 8(1), 67-86.
- Kavaklı, A., & Yakın, İ. (2019). Mobil Öğrenme: 2015-2019 çalışmalarına yönelik bir içerik analizi. *Karadeniz Sosyal Bilimler Dergisi*, 11(21), 251-268.
- Korucu, A. T., & Biçer, H. (2019). Mobil öğrenme: 2010-2017 çalışmalarına yönelik bir içerik analizi. *Trakya Eğitim Dergisi*, 9(1), 32-43.

- Kushkowsky, J. D., Parsons, K. A., & Wiese, W. H. (2003). Master's and doctoral thesis citations: Analysis and trends of a longitudinal study. *Libraries and the Academy*, 3(3), 459-479.
- Lai, C. L. (2020). Trends of mobile learning: A review of the top 100 highly cited papers. *British Journal of Educational Technology*, 51(3), 721-742.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Prisma Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS medicine*, 6(7), e1000097.
- Schmid, R. F., Bernard, R. M., Borokhovski, E., Tamim, R. M., Abrami, P. C., Surkes, M. A., ... & Woods, J. (2014). The effects of technology use in post-secondary education: A meta-analysis of classroom applications. *Computers & Education*, 72, 271-291.
- Şeref, İ., & Karagöz, B. (2020). Citation analysis of graduate theses on teaching of Turkish as a foreign language (1988-2019). *Çukurova Üniversitesi Eğitim Fakültesi Dergisi*, 49(2), 1145-1183.
- Şeylan, F. (2018). *Mobil Öğrenmenin Akademik Başarıya Etkisi Üzerine Yapılan Deneysel Çalışmaların Karşılaştırılması*. Yayınlanmamış yüksek lisans tezi, Yüzüncü Yıl Üniversitesi, Eğitim Bilimleri Enstitüsü, Van.
- Sobral, S. R. (2020). Mobile learning in higher education: A bibliometric review. *iJIM*, 14(11), 153-170.
- Sönmez, N., & Çapuk, S. (2019). Mobil öğrenmenin akademik başarıya etkisi: bir meta-analiz çalışması. *Tarih Okulu Dergisi*, 12(41), 884-924.
- Tanrıverdi, M. (2011). *E-öğrenmeye destek amaçlı mobil öğrenme uygulaması geliştirme ve etkilerinin incelenmesi*. Yayınlanmamış yüksek lisans tezi, Gazi Üniversitesi, Bilişim Enstitüsü, Ankara.
- Tomakin, E., & Yeşilyurt, M. (2013). Bilgisayar destekli yabancı dil öğretim çalışmalarının meta analizi: Türkiye örneği. *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*, 10(1), 248-263.
- TÜİK (2021). Hanehalkı Bilişim Teknolojileri (BT) Kullanım Araştırması. [https://data.tuik.gov.tr/Bulten/Index?p=Hanehalki-Bilisim-Teknolojileri-\(BT\)-Kullanim-Arastirmasi-2020-33679](https://data.tuik.gov.tr/Bulten/Index?p=Hanehalki-Bilisim-Teknolojileri-(BT)-Kullanim-Arastirmasi-2020-33679).
- Uygun, D., & Sönmez, A. (2019). Mobil öğrenme üzerine güncel çalışmalar la ilgili bir içerik analizi. *AU Ad*, 5(1), 53-69.
- Xu, S., Yang, H. H., & Zhu, S. (2018, July). Visualizing and understanding the hotspots and trends of mobile learning. In *2018 International Symposium on Educational Technology (ISET)* (pp. 255-260). IEEE.
- Yıldırım, A., & Şimşek, H. (2011). *Sosyal bilimlerde nitel araştırma yöntemleri*. Ankara: Seçkin Yayıncılık.
- Yıldırım, N. (2012). *Yabancı dil eğitiminde oyun lar aracılığıyla mobil öğrenme*. Yayınlanmamış yüksek lisans tezi, Fırat Üniversitesi Eğitim Bilimleri Enstitüsü, Elazığ.
- Yıldız-Avcı, Z. (2018). *Mobil öğrenme araştırma ları ve uygulamalarına ilişkin bir meta analiz çalışması*. Yayınlanmamış yüksek lisans tezi, Fırat Üniversitesi, Eğitim Bilimleri Enstitüsü, Elazığ.



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