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Comparison of Preservice Science and Social Studies Teachers' Attitudes Towards Socioscientific Issues

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Abstract

In this study, the views and attitudes of pre-service science and social studies teachers towards socioscientific issues were examined. Descriptive research design was used in the study. The quantitative data were collected with the "Attitude Scale towards Socioscientific Issues" and the qualitative data of the research were collected with a questionnaire consisting of 5 open-ended questions. 215 science and 220 social studies teacher candidates participated in the research. While qualitative data were analysed descriptively, SPSS program was used in the analysis of quantitative data. As a result of the research, pre-service teachers did not consider their knowledge of sociological issues sufficient and that there were deficiencies in the education system. As a result of the analyses, a significant difference was uncovered in favour of science teacher candidates in the worry sub-dimension related to socioscientific issues and it was determined that the worry level of science teacher candidates was higher than social teacher teachers.

Keywords: Socioscientific subjects, Attitude, Preservice teachers

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Introduction

Socioscientific issues are complex issues that arise through the transmission of science and technology, often involve ethical, moral, or legal dilemmas, and are not discussed with strict consensus (Nielsen, 2012a; Sadler, Amirshokoohi, Kezampouri and Allspaw, 2006; Walker and Zeidler, 2007). Since these subjects are those that support the cognitive, affective, and social development of individuals in scientific issues that concern society, it is stated that participation of them in the curriculum is a sign of science literacy (Dawson & Venville, 2009). Therefore, it is seen that socioscientific issues are important in the decision-making process of science literacy on social issues related to science. As the content of socioscientific issues consists of situations that we may encounter in daily life, teaching these subjects to students is important in science education (Albe, 2008; Kolsto, 2006; Nielsen, 2012b; Walker & Zeidler, 2007). Understanding socioscientific issues plays an important role in students' making informed decisions on dilemma issues. It has been observed that learning environments based on socioscientific issues make learning science concepts more interesting for students and positively affect the attitudes and motivations towards science lesson (Albe, 2008; Lee & Erdogan, 2007; Parchmann et al., 2006; Zeidler et al., 2009; Klosterman & Sadler, 2010). In the studies conducted Gülhan (2012), Kaya and Sürmeli (2019), it was observed that students' interest in the lesson increased in classrooms where science lessons are taught based on socioscientific issues. North America can be considered where studies and practices on socioscientific issues first appeared. Many studies have been conducted on the teaching of socioscientific issues in North America and these topics have been transferred to science programs in many different states (Topçu, 2015). Since 2013, socioscientific issues have been included in the Science curriculum of the Turkish Ministry of National Education (Topçu et al., 2014). Discussing socioscientific issues in teaching is a way to increase students' interest in science practices. In order to raise students with high social awareness, there is a need for activities integrated with socioscientific issues. Providing teacher education is a prerequisite for our students to participate in scientific discussions on socioscientific issues and to make correct decisions (Cebesoy & Dönmez Şahin, 2013).

Raising individuals who have scientific thinking habits and decision-making skills by using socioscientific issues are among the main objectives of science education. However, when the relevant literature is examined, it is seen that the knowledge and experience of science teachers, who are the practitioners of the program, on socioscientific issues and their teaching are significant. Science teachers stated that their knowledge related to teaching socioscientific issues is insufficient and the reason for this is that the curriculum is not sufficient (Anagün & Özden, 2010). In the study of Yapıcıoğlu (2016), it was emphasized that the acquisitions related to socioscientific issues in the science course curriculum should be increased. Opinions and attitudes of teachers play an important role in the use of socioscientific issues, which have become an important component of science education, in the classroom environment and their appropriate association. It is thought that the

education of the teachers in this subject in their past lives and at the university will have a great impact on their awareness of socioscientific issues and their teaching. Considering that teachers raise individuals who will shape the society, teachers need to be aware and conscious regarding socioscientific issues (Sadler, 2004).

In the studies conducted recently on socioscientific issues, it is seen that science teacher candidates are more prominent in the field of science (Tezel & Günister, 2018; Genç & Genç, 2017). However, although socioscientific issues have a feature that includes the field of science as well as the field of social studies, only science is mainly considered and studied. Although the acquisitions related to socioscientific issues are included in the social studies course curriculum, there are almost no studies determining the opinions and attitudes of social studies teacher candidates on the subject and comparing them with pre-service science teachers (Çepni & Geçit, 2020). In addition, in most of the studies, it is seen that scales are used only within the scope of quantitative research. In this study, it was tried to compare the awareness of both social studies and science teacher candidates against socioscientific issues by using open-ended questions in addition to the scale. Today, when socioscientific issues are so important, it is important to reveal the opinions and attitudes of pre-service science and social studies teachers related to socioscientific issues.

Aim of the Study

The aim of this study is to examine and compare the attitudes of pre-service science and social studies teachers towards socioscientific issues.

Accordingly, perception of socioscientific issues by prospective teachers was seen as a problem. The general problem of the study is the question "What are the views and attitudes of the science and social studies teacher candidates towards socioscientific issues?". In this context, answers for the following sub-problems were sought in the study.

1. What are the opinions of pre-service science and social studies teachers about socioscientific issues?

2. What are the attitudes of pre-service science and social studies teachers about socioscientific issues?

3. Do science and social studies teacher candidates' attitudes towards socioscientific issues differ according to year, department, and gender?

4. Is there a significant relationship between the sub-dimensions of science and social studies teacher candidates' attitudes towards socioscientific issues?

Method

Descriptive research method was used in this study. Descriptive research method is conducted to enlighten a given situation, make evaluations, and reveal possible relationships between events. The main aim of such studies is to describe and explain the situation under study in detail (Yıldırım & Şimşek, 2008). The data in the study were obtained in a quantitative dimension with the attitude scale towards socioscientific issues. In addition, qualitative data were collected from the socioscientific issues opinion survey. The necessary permission document was obtained for the applicability of the study. Data collection tools were applied by the researcher in the classroom for one lesson.

Study Population and Sample

The population of the study consists of the teacher candidates studying at Recep Tayyip Erdogan University Faculty of Education and Trabzon University Fatih Education Faculty in the spring semester of 2018-2019 academic year. The sample of the study consists of 435 pre-service teachers, 215 of which are science and 220 social studies teachers randomly selected from this population. 68.8% of the teacher candidates are female and 31.2% are male. While 49.4% of the teacher candidates participating in the study were science teacher candidates, 50.6% were social studies teacher candidates.

Data Collection Tools

Both quantitative and qualitative data collection tools were used in the study. In the study, "Attitude Scale Towards Socioscientific Issues" developed by Topçu (2010) was used to gather information about the attitudes of teacher candidates towards socioscientific issues. The "Socioscientific Issues Opinion Questionnaire" developed by the researcher was used to gather information about the opinions of the teacher candidates on socioscientific issues. It was aimed to obtain more valid data by using qualitative and quantitative data collection tools.

Socioscientific Issues Opinion Questionnaire

Socioscientific issues opinion questionnaire consists of two parts. In the first part, while information about the gender, department and year variables of pre-service teachers was collected in the personal information form, in the second part, an interview form containing five open-ended questions was prepared in order to determine the opinions of the teacher candidates on socioscientific issues in line with the aims of the study and applied to the pre-service teachers. These questions include what socioscientific issues evoke for them, where they heard from, whether they see their own level of knowledge sufficient or not, whether they can give examples from daily life, whether the courses they have taken in university education are sufficient about socioscientific issues. While preparing the questions regarding this questionnaire, the opinions of two experts in the field of science education were taken.

Attitude Scale Towards Socioscientific Issues

"Attitude Scale Towards Socioscientific Issues" developed by Topçu (2010) was applied in order to determine the attitudes of the teacher candidates participating in the study on socioscientific issues. This scale, which consists of three sub-dimensions and 30 items, is in the 5-point Likert type. It was graded as “1-Strongly disagree”, “2-Disagree”, “3-Undecided”, “4-Agree”, “5-Strongly agree”. Topçu (2010) revealed that the scale consists of three dimensions with Cronbach alpha internal consistency coefficients ranging from 0.70 to 0.90. The internal consistency coefficient of the benefit and importance sub-dimension was 0.90, the internal consistency coefficient in the liking sub-dimension was 0.81, and the internal consistency coefficient in the worry sub-dimension was 0.70 (Topçu, 2010). It is stated that this scale used is valid and reliable by the researcher. In this study, Cronbach alpha internal reliability coefficient was obtained as 0.775. The Cronbach alpha coefficients related to the sub-dimensions are given in Table 1.

Table 1. Internal consistency coefficients by sub-dimensions

Sub-dimension	Items in the Scale	Cronbach alpha
Benefit and importance	1,2,4,9,11,14,15,18,20,21,22,23,25,26,27,28,30	0.786
Liking	6,7,8,10,13,17,24	0.751
Worry	3,5,12,16,19,29	0.762
Whole Scale		0.775

Data Analysis

The answers given in the analysis of qualitative data were analysed descriptively and the results were interpreted. The direct answers given by the pre-service teachers to open-ended questions related to socioscientific issues were expressed as frequencies and percentages. In the analysis of quantitative data, the scores obtained from the scale of attitude towards socioscientific issues were entered into the SPSS software and necessary statistical analyzes were made. The significance level was accepted as 0.05 in the application of statistical processes. t-test was used to determine whether the candidates' attitudes towards socioscientific issues differed, one-way analysis of variance to determine whether the attitudes differ according to class level, two-way analysis of variance to determine whether there is a common effect of department-class level and department-gender in the differentiation of these attitudes. At the same time, Pearson correlation analysis was used to determine whether there was a relationship between the sub-dimensions of attitudes towards socioscientific issues.

Findings

In this study, it was aimed that the views and attitudes of pre-service science and social studies teachers towards socioscientific issues were examined. Findings obtained from the study are presented according to the sub-problems.

Findings Regarding the First Sub-Problem

5 open-ended questions were asked in order to determine the views of pre-service teachers on socioscientific issues. Findings for these questions are given below. The answers given to the Question 1 *"Have you ever heard of socioscientific issues? Where from?"* are presented in Table 5.

Table 2. Responses of pre-service science and social studies teachers to hear about socioscientific issues

	I heard		I haven't heard		Where did I hear
Department/ Year	**f**	**%**	**f**	**%**	**f**
Science 1st Year	12	22.2	42	77.8	Internet (12), television (10), school (6), books (4)
Science 2nd Year	35	68.7	16	31.3	Internet (30), television (25), school (23), books (15)
Science 3rd Year	52	89.7	6	10.3	Internet (47), television (43), project (32), book (23)
Science 4th Year	44	84.7	8	15.3	Internet (41), school (35), television (29), books (15)
Social Studies 1st Year	22	38	36	62	Internet (19), television (15), books (11), school (9)
Social Studies 2nd Year	32	55.1	26	44,9	Television (29), internet (26), school (15), books (12)
Social Studies 3rd Year	25	48	27	52	Internet (22), television (18), school (13), books (11)
Social Studies 4th Year	19	36.6	33	63.4	Internet (17), television (13), school (12), books (10)

According to Table 2, it is seen that teacher candidates heard socioscientific issues at certain rates through various channels such as internet, television, school, project and book. While the percentages of hearing these topics increased from 1st year to 4th year among pre-service science teachers, it was found that social studies teachers remained at a certain rate and did not increase.

The answers given to Question 2 *"What comes to your mind when it comes to socioscientific issues? What does it mean to you?"* are given.

Table 3. The answers of pre-service science teachers about socioscientific issues

	1st Year		2nd Year		3rd Year		4th Year	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Global Warming	45	**83.3**	**45**	**88.2**	**53**	**91.3**	**34**	**65.3**
GMO	48	**88.8**	**38**	**74.5**	**30**	**51.7**	**49**	**94.2**
Science	32	59.2	12	23.5	29	50	13	25
Cloning	9	16.6	**38**	**74.5**	**40**	**68.9**	**34**	**65.3**
Environment	10	18.5	5	9.8	13	22.4	15	28.9
Nuclear Energy	**40**	**74**	**48**	**94.1**	**44**	**75.8**	**43**	**82.7**
Society	14	26	6	11.7	13	22.4	9	17.3
Discussion	12	22.2	14	27.4	11	18.9	9	17.3
HEPP	7	12.9	**30**	**58.9**	**38**	**65.5**	**47**	**90.3**
Geography	4	7.4	9	17.6	2	3.4	1	1.9
Organ Donation	5	9.2	14	27.4	**34**	**58.6**	**38**	**73**

Examining the answers from science teacher candidates in Table 3, it is seen that the important socioscientific issues such as global warming, GMO, cloning, nuclear energy, HEPP, organ donation are expressed at high rates from 1st grade to 4th grade.

Table 4. The answers of pre-service social studies teachers about socioscientific issues

	1st Year		2nd Year		3rd Year		4th Year	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Sociology	23	39.7	25	43.1	20	38.4	17	32.7
Society	21	36.2	21	36.2	32	61.5	13	25
Science	19	32.8	10	17.2	26	50	31	59.6
Geography	19	32.8	21	36.6	21	40.3	21	40.3
Culture	14	24.1	15	25.9	21	40.3	22	42.3
Philosophy	27	46.5	24	41.3	19	36.5	21	40.3
GMO	**17**	**29.3**	**21**	**36.2**	**21**	**40.3**	**19**	**36.5**
History	30	51.8	26	44.9	21	40.3	18	34.6
Global Warming	**19**	**32.8**	**4**	**6.9**	**18**	**34.6**	**27**	**51.9**
Cloning	**7**	**12.6**	**7**	**12.6**	**14**	**27**	**12**	**23.7**
Discussion	10	17.2	14	24.1	32	61.5	25	48.7

When the responses received from social studies teacher candidates are examined in Table 4, it is seen that only topics such as global warming, GMO, cloning, which are among the socioscientific issues, are expressed at lower rates compared to the science teacher candidates from 1st grade to 4th grade. In other answers, they gave more general answers by making associations with the departments.

The answers given to the Question 3 *"As a teacher candidate, how do you evaluate your own level of knowledge on socioscientific issues? Do you see enough? Why is that?"* are presented below.

Table 5. The answers of pre-service science and social studies teachers about their knowledge level on socioscientific issues

	Yes		No		
Department/Year	**f**	**%**	**F**	**%**	**Why?**
Science 1st Year	6	11.1	48	88.9	Lack of knowledge Deficiencies in the education system
Social Studies 1st Year	4	6.9	54	93.1	Lack of knowledge Deficiencies in the education system
Science 2nd Year	9	17.7	42	82.3	Lack of knowledge Not following current issues
Social Studies 2nd Year	8	13.8	50	86.2	Deficiencies in the education system
Science 3rd Year	23	39.7	35	60,3	Lack of knowledge Deficiencies in the education system
Social Studies 3rd Year	4	7.7	48	92.3	Lack of knowledge Not following current issues
Science 4th Year	25	48	27	52	Lack of knowledge Not following current issues
Social Studies 4th Year	6	11.6	46	88.4	Deficiencies in the education system

According to Table 5, as the year increases, there is an increase in the number of pre-service science teachers who think their knowledge level about socioscientific issues is sufficient, while the number of social studies teacher candidates has not increased. The pre-service teachers who did not consider themselves sufficient about socioscientific issues presented reasons such as lack of knowledge, memorization-oriented work for the exam, deficiencies in the education system, inability to follow up-to-date topics, and lack of research as the factors that caused this.

The answers given to Question 4 *"Can you give an example to a socioscientific issue from your daily life?"* are presented below.

Table 6. The answers of science teacher candidates about the place of socioscientific issues in your daily life

	1st Year		2nd Year		3rd Year		4th Year	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**
HEPP-Related Studies	**40**	**74.7**	**38**	**74.5**	**36**	**62**	**40**	**76.9**
GMO-Related Studies	**21**	**38.7**	**29**	**56.9**	**32**	**55.1**	**32**	**61.5**
Organ Donation Studies	10	18.5	17	33.3	19	32.7	**30**	**57.7**
Scientific Applications	12	22.2	14	27.4	21	36.6	15	28.9
Stem Cell Studies	9	16.6	**27**	**52.9**	13	22.4	**21**	**40.3**
Health Studies	7	12.9	13	25.5	26	44.8	**24**	**46.1**
Social Problems	14	25.9	12	23.5	17	29.3	12	28.9

According to Table 6, it is seen that science teacher candidates give more examples including studies on GMO, HEPP, organ donation, stem cell and health from the 1st year.

Table 7. The answers of social studies teacher candidates about the place of socioscientific issues in your daily life

	1st Year		2nd Year		3rd Year		4th Year	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Health Studies	**35**	**60.3**	**29**	**50**	**31**	**59.7**	**29**	**55.7**
Social Problems	19	32.7	**23**	**39.7**	**30**	**57.7**	**27**	**51.9**
Scientific Applications	17	29.3	**27**	**46.5**	**29**	**55.8**	**34**	**65.3**
GMO-Related Studies	7	12.6	8	13.8	6	11.5	8	15.3
HEPP-Related Studies	5	8.6	4	6.9	3	5.8	5	9.6
Organ Donation Studies	4	6.9	7	12.6	5	9.6	6	11.5
Stem Cell Studies	2	3.4	4	6.9	7	13.4	9	17.3

According to Table 7, it is seen that social studies teacher candidates emphasize that they are related to health, society and science rather than GMO, HES, organ donation, stem cell.

The answers given to the Question 5 *"Do you think that the courses you have taken in university education are sufficient on socioscientific issues? Why is that? "* are presented in Table 8.

Table 8. The answers of pre-service science and social studies teachers about sufficiency of courses on socioscientific issues

Department/ Year	Yes f	Yes %	No f	No %	Why?
Science 1st Year	6	11.1	48	88.9	We lack knowledge because we do not follow current topics.
Social Studies 1st Year	18	31,3	40	68.7	Since the theoretical course density is high, we cannot find a medium to discuss such topics.
Science 2nd Year	10	19,6	40	80,4	We heard the concept of socioscientific issues mostly from the projects we participated in.
Social Studies 2nd Year	9	15.5	49	84,5	We lack knowledge on these socioscientific issues because we work with an exam focus.
Science 3rd Year	21	36.2	38	63,8	The courses are handled without any details. There is a system based on memorization, we do not have enough knowledge since there is no discussion environment in the lesson.
Social Studies 3rd Year	5	9,6	47	90,4	We cannot follow current topics. The lecture is taught on the slide, we are not sufficient in socioscientific issues since there is no discussion environment.
Science 4th Year	25	48.7	27	51,3	Since the intensity of the theoretical courses is high, we do not have much information about these subjects.
Social Studies 4th Year	10	19.2	42	80,8	We do not have enough knowledge about socioscientific issues because we work with an exam focus.

According to Table 8, pre-service science teachers' perception of the lessons regarding socioscientific issues as sufficient increases as the year increases. Social studies teacher candidates have a much lower rate of seeing sufficient. However, there is a general deficiency in both cases. Teacher candidates who do not consider the courses taken on socioscientific issues sufficient presented the reasons as failure to follow up-to-date topics, having an education system based on memorization, having a high class intensity for the exam, not having a discussion environment in the lessons, lecturing based on memorization without details, not providing enough information about general concepts.

Findings Regarding the Second Sub-Problem

In order to determine whether the attitudes of science and social studies teacher candidates towards socioscientific issues differed, independent t-test was applied for each sub-dimension. The results obtained are presented in Table 9.

Table 9. T test results of the attitudes towards socioscientific issues based on the variable of the department studied

Sub Dimensions	Science Teacher Candidates			Social Studies Teacher Candidates			Sd	t	p
	N	x̄	SS	N	x̄	SS			
Benefit - Importance	215	3.68	0.47	220	3.63	0.46	433	0.937	0.349
Liking	215	3.25	0.54	220	3.24	0.51	433	0.124	0.901
Worry	215	2.57	0.65	220	2.40	0.71	433	2.575	0.010

According to the analysis results, significant difference was not found in the utility and importance sub-dimension of socioscientific issues [t(433)=0,937, p=0,349>0,05] and in the liking sub-dimension of socioscientific issues [t(433)=0,124, p=0,901>0,05]. On the other hand, a significant difference was observed in favour of pre-service science teachers in the worry towards socioscientific issues [t(433)=2,575, p=0,010<0,05]. Accordingly, it was determined that the worry level of the science teacher candidates towards socioscientific issues was higher than the social studies teacher candidates.

Findings Regarding the Third Sub-Problem

One-way ANOVA test was applied for each sub-dimension in order to determine whether the attitudes of science and social studies teacher candidates towards socioscientific issues differ according to year, department, and gender. The results obtained are presented in Table 10.

Table 10. One-way ANOVA results of attitudes towards socioscientific issues according to the variable of the year of education

Sub Dimensions	Year	N	X	SS	Sd	F	p	The Source of Significant Difference (Tukey)
Benefit and	1st Year	112	3.56	0.45	3	7.557	0.000	3>1
Importance	2nd Year	108	3.56	0.47	431			3>2
	3rd Year	110	3.72	0.42				4>1
	4th Year	105	3.80	0.48				4>2
	Total	435	3.65	0.46				
Liking	1st Year	112	3.13	0.53	3	5.868	0.001	4>1
	2nd Year	108	3.16	0.51	431			4>2
	3rd Year	110	3.28	0.46				
	4th Year	105	3.40	0.55				
	Total	435	3.24	0.52				
Worry	1st Year	112	2.45	0.70	3	0.624	0.600	-
	2nd Year	108	2.46	0.65	431			
	3rd Year	110	2.50	0.73				
	4th Year	105	2.56	0.66				
	Total	435	2.49	0.68				

According to the analysis results, a significant difference was found in terms of year in the utility and importance sub-dimension of socioscientific issues [F (3,431) = 7,557, p = 0,000 <0,05] and in the liking of socioscientific issues [F (3,431) = 5,868, p = 0,001 <0,05]. Tukey analysis was conducted to determine which class or classes the differentiation originated from. As a result of the analysis, it was determined that the scores of the benefit and importance sub-dimension of socioscientific issues of the third and fourth-year pre-service teachers were significantly higher than the pre-service teachers studying in the first and second year. It was determined that the scores of the 4th-year teacher candidates' liking socioscientific issues sub-dimension were significantly higher than the pre-service teachers studying in the first and second year. On the other hand, no significant difference was found in the worry subscale [F (3,431) = 0.624, p = 0.600> 0.05].

Two-way ANOVA test was applied to determine whether there is a common effect of department and year in the differentiation of science and social studies teacher candidates' attitudes towards socioscientific issues. The results obtained are presented below. Table 11 shows the average of the scores the teacher candidates got from the sub-dimensions of attitudes towards socioscientific issues.

Table 11. The average of the sub-dimensions of socioscientific issues related to the department and year variables of teacher candidates.

Department	Year	N	$\bar{x}$(SS) Benefit- importance	$\bar{x}$(SS) Liking	$\bar{x}$(SS) Worry
Science	1st Year	54	3,51(0,503)	3,13(0,591)	2,65(0,670)
Teacher	2nd Year	50	3,53(0,507)	3,16(0,549)	2,63(0,574)
Candidates	3rd Year	57	3,81(0,389)	3,32(0,471)	2,53(0,670)
	4th Year	54	3,83(0,388)	3,35(0,530)	2,50(0,688)
	Total	215	3,68(0,470)	3,24(0,541)	2,57(0,652)
Social Studies	1st Year	58	3,59(0,407)	3,14(0,485)	2,26(0,682)
Teacher	2nd Year	58	3,58(0,446)	3,16(0,491)	2,30(0,689)
Candidates	3rd Year	53	3,62(0,440)	3,23(0,453)	2,46(0,810)
	4th Year	51	3,76(0,568)	3,44(0,577)	2,62(0,632)
	Total	220	3,63(0,469)	3,24(0,513)	2,40(0,715)

Two-way ANOVA test was applied for each sub-dimension regarding whether the difference between the scores obtained from pre-service teachers was significant. Two-way ANOVA results regarding the significance of the scores obtained by the teacher candidates from the benefit and importance sub-dimension for socioscientific issues are given in Table 12.

Table 12. Two-way ANOVA results in the benefit and importance sub-dimension of pre-service teachers for socioscientific issues

	sd	Squares average	F	p
Department	1	0.126	0.602	0.438
Year	3	1.588	7.563	0.000

Department/Year	3	0.395	1.880	0.132

According to Table 12, it was seen that the effect of pre-service teachers on the scores of the utility and importance sub-dimension is not significant [F (1,434) = 0,602, p = 0,438> 0,05], the effect of the course level on the benefit and importance sub-dimension was significant [F (3,434) = 7,563, p = 0,000 <0.05]. Tukey analysis was conducted to determine the classes among which this difference exists. According to the results of the analysis, it was seen that the scores obtained from the benefit and importance sub-dimension of the teacher candidates studying in the 3rd and 4th years were higher than those of the 1st and 2nd years. In addition, it was found that there was no common effect on the benefit and importance sub-dimension of the department-class level interaction [F (3,434) = 1,880, p = 0.132> 0.05].

The results of two-way ANOVA regarding the significance of the difference between the scores obtained by the teacher candidates from the subscale of liking socioscientific issues are given in below.

Table 13. Two-way ANOVA results in the liking sub-dimension of pre-service teachers for socioscientific issues

	sd	**Squares average**	**F**	**p**
Department	1	0.001	0.002	0.962
Year	3	1.583	5.867	0.001
Department/Year	3	0.141	0.524	0.666

According to Table 13, it was seen that the effect of pre-service teachers' departments on the scores of the liking sub-dimension towards socioscientific issues was not significant [F(1,434)=0,002, p=0,962>0,05], it was seen that the effect of year on the liking sub-dimension was significant [F(3,434)=5,867, p=0,001<0,05]. Tukey analysis was conducted to determine the classes among which this difference exists. According to the results of the analysis, it was seen that the scores of the 4th-year teacher candidates from the liking sub-dimension were higher than those of the 1st and 2nd years. In addition, it was found that there was no common effect on the subscale of liking in the department-year interaction [F (3,434) = 0.524, p = 0.666> 0.05].

Two-way ANOVA results regarding the significance of the difference between the scores of the pre-service teachers in the worry sub-dimension towards socioscientific issues are given in below.

Table 14. Two-way ANOVA results in the worry sub-dimension of pre-service teachers for socioscientific issues

	sd	**Squares average**	**F**	**p**
Department	1	2.879	6.209	0.013
Year	3	0.256	0.551	0.648

Department/Year	3	1.488	3.209	0.023

According to Table 14, it was seen that the effect of pre-service teachers on the worry sub-dimension scores of their departments is significant [F (1,434) = 6,209, p = 0,013 <0,05], the effect of year on the worry sub-dimension was not significant [F (3,434) = 0.551, p = 0.648> 0.05]. In addition, the common effect of the department-class level interaction on the worry sub-dimension was found to be significant [F (3,434) = 3.209, p = 0.023 <0.05]. Considering the average of the department in the worry towards socioscientific issues given in Table 14, it was seen that the science teacher candidates were 2.57, and the social studies teacher candidates average was 2.40. It was found that the worry level of science teacher candidates towards socioscientific issues was higher.

Two-way ANOVA test was applied for each sub-dimension in order to determine whether there is a common effect of department and gender in the differentiation of pre-service teachers' attitudes towards socioscientific issues. The average of the scores they got from the sub-dimensions of the attitudes towards socioscientific issues are given in Table 15.

Table 15. The average of the sub-dimensions of socioscientific issues related to the department and gender variables of teacher candidates.

Department	Gender	N	x̄(SS) (Benefit-importance)	x̄(SS) (Liking)	x̄ (SS) (Worry)
Science Teacher Candidates	Female	147	3,69(0,452)	3,20(0,514)	2,52(0,636)
	Male	68	3,64(0,508)	3,34(0,589)	2,68(0,679)
	Total	215	3,68(0,470)	3,24(0,541)	2,57(0,652)
Social Studies Teacher Candidates	Female	152	3,67(0,449)	3,24(0,494)	2,30(0,677)
	Male	68	3,55(0,504)	3,22(0,555)	2,64(0,748)
	Total	220	3,63(0,469)	3,24(0,513)	2,40(0,715)

According to the data in Table 15, a two-way ANOVA test was applied for each sub-dimension regarding whether the difference between the scores obtained from pre-service teachers was significant or not. Two-way ANOVA results regarding the significance of the scores obtained by the teacher candidates from the benefit and importance sub-dimension for socioscientific issues are given in below.

Table 16. Two-way ANOVA results in the benefit and importance sub-dimension of pre-service teachers for socioscientific issues

	sd	Squares average	F	p
Department	1	0.290	1.318	0.252
Gender	1	0.706	3.212	0.074
Department/gender	1	0.110	0.500	0.480

According to Table 16, it was found that the departments of the teacher candidates [F(1,434)=1,318, p=0,252>0,05], the gender variable [F(1,434)=3,212, p=0,074>0,05] and the department-gender interaction [F(1,434)=0,500, p=0,480>0,05] had no significant effect on the benefit and importance sub-dimension.

The results of two-way ANOVA regarding the significance of the difference between the scores obtained by the teacher candidates from the subscale of liking socioscientific issues are given in below.

Table 17. Two-way ANOVA results in the liking sub-dimension of pre-service teachers for socioscientific issues

	sd	Squares average	F	p
Department	1	0.120	0.431	0.512
Gender	1	0.288	1.039	0.309
Department/gender	1	0.595	2.145	0.144

According to Table 20, it was found that the departments of the teacher candidates [F(1,434)=0,431, p=0,512>0,05], the gender variable [F(1,434)=1,039, p=0,309>0,05] and the department-gender interaction [F(1,434)=2,145,p=0,144>0,05] had no significant effect on the liking sub-dimension.

Two-way ANOVA results regarding the significance of the difference between the scores obtained by the teacher candidates are given in Table 18.

Table 18. Two-way ANOVA results in the worry sub-dimension of pre-service teachers for socioscientific issues

	sd	Squares average	F	p
Department	1	1.657	3.630	0.057
Gender	1	5.649	12.374	0.000
Department/gender	1	0.782	1.714	0.191

According to Table 18, it was seen that the effect of pre-service teachers on the worry sub-dimension scores of their departments is not significant [F (1,434) = 3,630, p = 0.057> 0.05], The effect of gender variable on worry sub-dimension was significant [F (1,434) = 12,374, p = 0,000 <0,05]. Considering the averages given in Table 18, it was seen that the scores of males in the sub-dimension of worry towards socioscientific issues were higher in both departments. In addition, it was found that the department-gender interaction [F (1,434) = 1714, p = 0.191> 0.05] did not have a significant effect on the worry sub-dimension.

Findings Regarding the Fourth Sub-Problem

Pearson correlation test was applied to determine whether there is a relationship between the sub-dimensions of science and social studies teacher candidates' attitudes towards socioscientific issues. The results obtained are presented in Table 19.

Table 19. Pearson correlation analysis results of the relationship between the sub dimensions of teacher candidates' attitudes towards socioscientific issues

		Benefit-Importance	Liking	Worry
Benefit-Importance	r	1		
	p			
Liking	r	0,597**	1	
	p	0.000		
Worry	r	-0,228**	0.016	1
	p	0.000	0.743	

**0,01 N=435

When the results of Pearson correlation analysis between sub-dimensions of science and social studies teacher candidates' attitudes towards socioscientific issues are examined according to Table 19, a moderately positive (0.597) significant relationship was found [r (435) = 0.597, p <0.05] between benefits and importance of sub-dimensions of socioscientific issues and liking. A negative and low level (-0.228) relationship [r (435) = - 0.228, p <0.05] was found between benefits and importance of sub-dimensions of socioscientific issues and worry. No relationship was found between liking and worry [r (435) = 0.016, p> 0.05], which are sub-dimensions of socioscientific issues.

Discussion and Conclusion

In this part of the research, science and social studies teacher candidates' views and attitudes towards socioscientific issues were presented with discussed in the context of sub-problems.

Discussion and Results Regarding the First Sub-Problem

In the first question, it was observed that 55.4% (143 science, 98 social studies) of a total of 435 pre-service teachers who participated in the study had heard about socioscientific issues before, and 44.6% (72 science, 122 social studies) did not. However, it is noteworthy that pre-service science teachers are more likely to be aware of the subjects than social studies teacher candidates are. In both departments, pre-service teachers stated that they heard information about socioscientific issues from the internet, television, school environment, magazines and books, and the projects they participated in. When the data obtained are examined, it is seen that the pre-service teachers learned about socioscientific issues from many different sources, but mostly from the media (internet, TV), and least from books and magazines. In the study conducted by Eş et al. (2016), it is stated that the most important source of information for teacher candidates on socioscientific issues is the media, and the least information is obtained from scientific sources. In the studies of Atasoy et al. (2018), which is a similar study, they stated that the information related to socioscientific issues was mostly learned

from the media. In the study conducted by Alaçam-Akşit (2011), it was determined that, in parallel with the findings obtained, classroom teacher candidates mostly used the internet to obtain information on socioscientific issues. As seen in previous studies, most of the information on socioscientific issues is obtained from the media.

When the answers given to the second question are examined, it is seen that the answers given by pre-service science teachers mostly are GMO, HEPP, organ donation, global warming, cloning, nuclear power plants, while the answers given by the pre-service social studies teachers are culture, philosophy, history, geography, global warming, GMO, organ donation, nuclear energy. Here, it is seen that pre-service teachers associate socioscientific issues with their own departments. It was observed that pre-service science teachers used more specific conceptual expressions to associate the subjects with socioscientific issues, while social studies teacher candidates used more general and superficial expressions. The common answers given in both departments are issues such as GMO, nuclear energy, and HEPP. In parallel with this finding, Bakırcı et al. (2018) stated in their study that subjects such as nuclear energy, HEPP, GMO were frequently featured in the media and that their students had an idea about these issues.

When the answers to the third question were examined, it was seen that the rate of those who considered their knowledge level about socioscientific issues sufficient was 19.3% (62 science, 22 social studies), while the rate of those who did not consider it sufficient was 80.7% (153 science, 198 social studies). While it was observed that as the year of science teacher candidates increased, the sufficiency of their knowledge level increased, while no significant difference was observed in the knowledge level sufficiency of social studies teacher candidates as their year increased. It can even be said that there is no change in the sufficiency of social studies teacher candidates regarding socioscientific issues during the four-year education period. The pre-service science and social studies teachers presented reasons such as the deficiencies in the education system, the teaching of memorization-oriented lessons, and the lack of research and knowledge on the subject as the reasons for the deficiencies in their knowledge. In the study conducted by Anagün and Özden (2010), it was stated that teachers lacked knowledge and experience on socioscientific issues. Similarly, in the study conducted by Turan (2012), it is seen that there is no significant difference in the comparisons between the classes regarding the knowledge levels of social studies teacher candidates about socioscientific issues.

When the answers to the fourth question are examined it was determined that social studies teacher candidates gave superficial answers such as history, education, society and health fields without going into in-depth concepts, while the science teacher candidates stated that socioscientific issues are involved in social problems in daily life, wherever science exists, issues related to nuclear power plants, GMOs, cloning, organ transplantation, drug use, which create dilemmas and

controversial events. This fact consistently overlaps with the answers received from pre-service teachers in other questions. In the study conducted by Kapıcı and İlhan (2016) on nuclear power plants, it was stated that different departments dominate the subject from different bases. For this reason, they stated that pre-service teachers had more knowledge about scientific subjects and that social teacher candidates mainly looked at the subject as economical and useful.

When the answers to the fifth question were examined, it was determined that the rate of those who considered university education sufficient was 23.9% (62 science knowledge, 42 social studies), while the rate of those who did not consider it sufficient was 76.1% (153 science, 178 social studies). This situation shows that science teacher candidates are more competent than social studies teacher candidates than the education they received at university. The answers given by the teacher candidates who regard university education inadequate as a reason for this show similarities with each other. The answers given are mostly in the form of not following the agenda, the lessons being far from current issues, focusing on exam-based memorization, not including topics related to socioscientific issues in the books, and not creating a discussion environment on socioscientific issues in courses. In a similar study by Kılıç (2019), it was revealed that socioscientific issues are cursory in the lessons, teachers and students do not have sufficient knowledge on these issues, and sections on socioscientific issues are missing in the textbooks. In a study conducted by Yapicioglu and Aycan (2018), it was determined that the activities that pre-service science teachers participated in related to socioscientific issues improved their reasoning and reasoning.

Discussion and Results Regarding the Second Sub-Problem

In order to determine whether the science and social studies teacher candidates' attitudes towards socioscientific issues differed, the t-test was performed and the findings were interpreted. When the data were examined, it was determined that there was no significant difference on the benefit and importance and liking sub-dimension of socioscientific issues according to the department variable studied. On the other hand, a significant difference was observed in favour of pre-service science teachers in the worry towards socioscientific issues. In the study conducted by Tekin and Aslan (2019), it was stated that pre-service science teachers had a higher attitude in terms of benefit and importance from the sub-dimensions of socioscientific issues and the dimensions of worry. Unlike the findings of this study, Yerdelen et al. (2018) concluded that there is a difference between the benefit, importance and liking dimensions of socioscientific issues according to the department variable, and there is no difference in the worry sub-dimension. If the results obtained in this study are summarized, it was seen that the science and social studies teacher candidates benefit from the sub-dimensions of socioscientific issues, and there is no difference between their importance and liking levels, and the pre-service science teachers have a higher attitude in the worry sub-dimension. The high level of worry of pre-service science teachers may be due to the fact that they realized the

socioscientific issues in the courses they took at the university and realized their difficulties and that these issues are controversial and dilemma issues. It is also understood from the detailed answers they gave to open-ended questions that pre-service science teachers were more familiar with the subjects related to socioscientific issues.

Discussion and Results Regarding the Third Sub-Problem

ANOVA test was conducted for each sub-dimension in order to determine whether year, department, and gender had an effect on the attitudes of science and social studies teacher candidates towards socioscientific issues and the results were interpreted. According to the results, a significant difference was found between the scores obtained from the benefit and importance sub-dimension and the year. According to this differentiation, it was determined that the attitudes of the teacher candidates studying in the 3rd and 4th years in the dimension of benefit and importance were significantly higher than those studying in the 1st and 2nd years. In the beginning, it was observed that social studies teacher candidates had a higher average in the benefit and importance sub-dimension of socioscientific issues, but when it came to the fourth year, it was determined that the differentiation among pre-service science teachers was higher. A significant difference was found between the scores obtained from the another sub-dimension, liking, and the year. According to this differentiation, it was determined that the attitudes of the teacher candidates studying in the 4th year were significantly higher than the ones studying in the 1st and 2nd year. While a sudden increase was observed in the liking sub-dimension scores of pre-service science teachers studying in the 3rd year, this increase was observed in the pre-service teachers studying in the 4th year. According to the results, it is seen that as the class level increases, the interest and importance of socioscientific issues increase. Similar to the findings of this study, Yolagiden (2017) stated that there is a meaningful differentiation when the attitudes of teacher candidates towards socioscientific issues are examined according to the level of education. On the contrary, no significant difference was found between the scores obtained from the worry sub-dimension and the year. Sıbıç (2017) conducted a study with 3rd and 4th-year science teacher candidates in order to determine the opinions of pre-service science teachers about socioscientific issues. As a result of the study, it was revealed that most of the pre-service teachers had an idea related to socioscientific issues and were able to define socioscientificity. As a result of Türksever's (2019) study, it was determined that the attitudes and opinions of students studying in science and social studies teaching departments towards socioscientific issues are more positive as their year increases.

Two-way ANOVA test was applied to determine whether there is a common effect of department and year in the differentiation of science and social studies teacher candidates' attitudes towards socioscientific issues for each sub-dimension. It was determined that the department-year interaction had no effect on the benefit and importance and liking sub-dimension, whereas it had an

effect on the worry sub-dimension. Considering the average scores of both departments given in Table 14 from the worry sub-dimension, it was found that the pre-service science teachers' level of worry towards socioscientific issues was higher. In the study conducted by Tekin and Aslan (2019), it was concluded that the worry level of pre-service science teachers was higher than the pre-service teachers in other departments. The higher awareness of pre-service science teachers related to socioscientific issues as a result of the courses they took at the university may have led to a high level of worry.

Two-way ANOVA test was applied to determine whether there is a common effect of department and gender in the differentiation of science and social studies teacher candidates' attitudes towards socioscientific issues for each sub-dimension. As a result of the analysis, it was determined that the department-gender interaction of the teacher candidates did not have a significant effect on the benefit and importance, liking and worry dimensions of the sub-dimensions of socioscientific issues. Similar to the findings of these studies, Cebesoy and Dönmez Şahin (2013) found in their study that the gender and year variables of pre-service teachers had no effect on attitudes towards socioscientific issues. Similarly, Keefer (2003) concluded that gender is not very effective in making decisions about socioscientific issues.

Discussion and Results Regarding the Fourth Sub-Problem

In order to reveal the relationship between the sub-dimensions of science and social studies teacher candidates' attitudes towards socioscientific issues, Pearson correlation analysis was performed and the results were interpreted. When the data are examined, it is seen that there is a moderately positive significant relationship between the benefit and importance dimensions and the liking dimension. A low level negative relationship was found between the benefit and importance dimensions and the worry dimension. However, no significant relationship was found between the liking sub-dimension and the worry dimension. Similar to these results, Cebesoy and Dönmez Şahin (2013) found a positive and significant relationship between benefit and importance and liking sub-dimensions, while a negative and low-level relationship was found between benefit and importance and worry sub-dimension.

Accordingly, the results obtained from the study can be summarized as follows:

1. It was determined that the science and social studies teacher candidates participating in the study learned the information about socioscientific issues mostly from the media (internet, television).

2. It was concluded that the awareness of science teacher candidates is higher than social studies teacher candidates. The fact that a larger proportion of social studies teacher candidates compared to science teacher candidates stated that they did not see their knowledge level on socioscientific issues sufficient, which supports this situation. They attribute this situation to

justifications such as the deficiencies in the education system, the existence of an exam-based memorization system, and the fact that current issues are not followed.

3. According to the department variable, there was no significant difference between the benefit-importance sub-dimension and the liking sub-dimension of socioscientific issues. On the other hand, a significant difference was observed in favor of pre-service science teachers in the worry.

4. According to the year variable, a significant difference was found in the benefit-importance sub-dimension and liking sub-dimension of socioscientific issues. According to the analysis results, it was determined that the benefit and importance sub-dimension scores of the third- and fourth-years pre-service teachers were higher than the pre-service teachers studying in the first and second years. It was found that the liking sub-dimension scores of the fourth-year teacher candidates were higher than those who were studying in the first and second year. On the other hand, no significant difference was found in the worry sub-dimension.

5. While it was observed that the interaction of department and year had no effect on the benefit-importance and liking sub-dimension, it was found that it had a significant effect on the worry sub-dimension and the worry level of pre-service science teachers was higher.

6. It was determined that the joint effect of department and gender does not have an effect on the levels of benefit-importance, liking and worry from the sub-dimensions of socioscientific issues.

7. From the subscales of socioscientific subjects, a significant positive relationship was found between utility importance and love and a negative relationship was found between utility importance and worry.

Recommendations

1. In the lectures given at the university, science and social studies teacher candidates should be given more space to develop their decision-making skills towards socioscientific issues in order for them to look at socioscientific issues from different perspectives.

2. In order to increase the awareness of social studies teacher candidates and teachers, more sample activities related to socioscientific issues can be included in the curriculum.

3. Qualitative studies can be conducted by selecting the gender distribution of candidates in the science and social studies teaching departments closer to each other.

4. The sample of this study is only pre-service teachers. More detailed studies can be conducted with teachers and students at different levels, in which quantitative and qualitative data collection tools are used together.

5. In order to increase the awareness of teachers, students, and teacher candidates about socioscientific issues in related departments, project studies and seminars with the content of activity development can be organized.

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Psychological Mindedness in ELT: Exploring Contributions of Comparative Literature to Pre-Service English Language Teachers' Psychological Mindedness

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Abstract

This qualitative research aimed to explore the significance of the development of psychological mindedness, especially during the COVID-19 Pandemic, for pre-service English Language Teachers and the use of comparative literature to facilitate it. The research was conducted in the context of an undergraduate ELT program in Turkey and data was gathered through narrative inquiry at the end of the semester under the title of a selected literature course. Thematic analysis of the collected 39 narrative frames shed light on the development of pre-service teachers' psychological mindedness which emerged in three overarching themes; self-awareness, empathy, and the importance of mental and physical well-being of a teacher which are all the necessary conditions for psychological mindedness. Findings suggest that these pre-service teachers were strongly influenced by the comparative analysis of the literary texts that facilitated the development of psychological mindedness.

Keywords: Psychological Mindedness, Comparative Literature, COVID-19, English Language Teacher Education, Pre-service Teacher Education.

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Introduction

It would not be misleading to say that the key words of the year 2020 was the term "the Great Reset", the title of Time Magazine's November issue. The term was first used in the World Economic Forum (WEF) as a proposal to highlight the rebuilding of the economy after the COVID-19 pandemic. At first sight, the term refers to economic expansions however, with a deeper insight it signifies radical changes in human life both socially and psychologically. Lockdowns all around the world, the necessity of social distancing, fear, anxiety and depression are the few elements of the Great Reset, which illustrates a completely different life for each of us. In relation, education systems around the world have been directly affected by the pandemic as an integral part of social life. Teachers, the main locomotives of the education system, are therefore not only expected to adapt themselves into the radical changes of daily life, but also to help their students become accustomed to the hardships of the pandemic days. That is the reason why promoting teachers' well-being and emotional awareness, has gained importance (MacIntyre et al., 2016; Gkonou & Mercer, 2017). Hence, the question of "How can teachers integrate themselves into this new order both professionally and psychologically?" has become an important issue.

Consequently, this qualitative study, which used narrative frames to examine participants' stories about their lived experiences, aims to explore the concept of psychological mindedness, which refers to "seeing/interpreting life through a psychological lens" (www.psychology.com), within the context of pre-service teacher education. This psychological lens could contribute to pre-service teachers' both mental and physical well-being in the light of global changes in which preserving mental and physical health is much more vital than before. As psychologically-minded people are "interested in, and responsive to, the inner needs, motives, and experiences of others" (Gough, 1957, p.11), pre-service teachers could empathize more with their students during unexpected times like the COVID-19 pandemic.

In the first part, the study first aims to underline what is psychological mindedness and why it is necessary for a teacher in 2020's. It then displays the methodological aspects of the study, analyzes how the comparative analysis of the selected novels could impact the psychological mindedness of pre-service English teachers at a university in the West of Turkey and depicts findings in relation to teacher education programs.

What is Psychological Mindedness? Why Do We Need a Psychologically Minded Teacher?

Although psychological mindedness is a poorly demarcated subject it has begun to be widely-used within psychology and other fields (Krupp et al. 2020; Uzun et al., 2020; Kadra-Scalzo et al., 2021; Kassim et al., 2021). According to Applebaum, 1973, Psychological mindedness (PM) is "a person's ability to see relationships among thoughts, feelings and actions, with the goal of learning

the meanings and causes of his experience and behavior" (p.36). It can be assumed that the psychologically-minded individual has the capacity to understand the psychological processes and inner motives of the self as well as others that results in better social relations in life (Hall, 1992). Therefore, "extraversion, openness, agreeableness, and conscientiousness and a negative correlation with neuroticism" as well as "problem-focused coping strategies" (Nyklicek, I., Poot, J. C., & Van Opstal, 2010, p.34) are the few positive traits that the psychologically-minded individual carries. In addition, PM as a term has been associated with "psychodynamic thinking" (Appelbaum, 1973; Bagby, Parker & Taylor, 1994) which can be defined as "the awareness of one's psychological states and processes as well as others" (Hall, 1992). Therefore, it can be regarded as an opportunity to develop positive relations both with the self and with others. Moreover, an awareness of one's own emotions as well as the emotions and psychological processes of others can be interpreted as a really valuable feature when considering the modern world. It is argued that the development of psychological mindedness helped the individuals not only to prepare themselves mentally but also physically for social life as it promotes physical and mental well-being (Le Boutillier & Barry, 2018). It can be claimed that adaptation into the realities of the new global changes requires a certain amount of awareness, especially for a teacher, both for herself and for her students as it is not easy to control our feelings in such an ambiguous world. However, if a teacher can be aware of the inner needs of oneself and her students' a better learning environment can be established. It is at this point the crucial question arises: "Why do we need a psychologically-minded teacher?".

Today's teachers not only have to deal with various obstacles including online education, preparing a new curriculum for the new system but also the effects of the pandemic; societal factors, the anxiety of parents and the last but by no means the least, stress. When considering the COVID-19 pandemic, the well-being of a teacher has gained greater importance and since 2020, several studies have focused upon teacher burn-out as one of the prominent problems of the instructors (Asbury & Kim 2020; Chang, 2020; Meidani et al., 2020; Ghasemi, 2021; Madigan & Kim, 2021). In addition, various studies focus upon the effects of COVID-19 on education (Ellis, Steadman, & Mao, 2020; Hammond & Hyler, 2020; Hadar et al., 2020) which underline the psychological and professional obstacles that teachers have faced. It becomes patent that psychology has stood at the center of human life and a psychologically-minded teacher will not only have the potential to become aware of the present-day realities and current experiences (Ryan & Brown, 2003) but also will have the power to overcome them.

Although this qualitative study was conducted in 6 weeks, under the title of one course, it can be a useful practice for teacher training programs. On the whole, the course module enabled the pre-service teachers to develop psychological mindedness, that is they became aware of the psychological states and processes of other people as well as becoming aware of their own feelings, thoughts and emotions. The comparative analysis of the literary works encouraged the pre-service teachers to

become aware of how they had felt since last year. As psychological mindedness refers to an understanding of psychological processes, it can be assumed that the pre-service teachers' capacity to examine their own feelings helped the development of self-awareness which refers to a "heightened awareness of ongoing mental processes" (Fenigstein, 1997, p.117) and the narrative frames used for the current study helped the pre-service teachers to "make sense of their lived experience' and to 'understand it, give it coherence, make connections, and unravel its complexity" (Barkhuizen, 2011, p. 393).

Methodology

Research Design

In this study, narrative inquiry is used as a research design as it encourages both a social and a cultural perception of language teaching that defines "human learning as a dynamic social activity" (Johnson, 2006, p. 237). This cognitive experience or sense-making activity results in them becoming more aware of, and thus understanding better, themselves and their practices (Barkhuizen, 2011). The narrative approach is well suited to the present-day teacher education as it allows the researchers to examine pre-service teachers' stories about their profession and their social lives. It also permits the researchers to postulate significant questions about teaching in the future (Clandinin et al., 2007, p. 357). As "a way of understanding experience" (Clandenin & Connelly, 2000, p.20) narrative practices encapsulates "intentional, reflective human actions, socially and contextually situated, in which teachers with their students, other colleagues, or researchers, interrogate their teaching practices to construct the meaning and relationship between teacher stories and encouragement of learner autonomy interpretation of some compelling or puzzling aspect of teaching and learning through the production of narratives that lead to understanding, changed practices, and new hypotheses" (Lyons & LaBoskey, 2002, p. 21).

Through gathering "small stories" from the participants, narrative inquiry seemed to be a proper methodology for the current study as it provided the mean to the researcher "to understand the inner or subjective world of the person, how he or she thinks about her own experience, situation, problems, life…"(Lieblich, et al., 1998, p.172). In addition, the personal stories gathered through the narrative frames can also be regarded as "a portal through which a person enters the world and by which their experience of the world is interpreted and made personally meaningful"(Connelly and Clandinin, 2006, p.375). As a narrative inquiry was required to provide in-depth information about pre-service teachers' perceptions and experiences in COVID-19 pandemic, it was an ideal fit for this study for it made it easier to learn about the experiences of pre-service teachers and how the course module altered their perceptions about their current psychology and their carrier.

Contexts and Participants

The present study was conducted in the context of a four-year pre-service English Language Teacher Education Program in Turkey. Within the framework of the course entitled Selections from British Literature, 39 pre-service teachers were assigned to analyze the selected literary texts comparatively from British and American literature. For the current study, "Selections from British Literature" course was chosen as it gave flexibility to the instructor while organizing the syllabus of the course. The participants were chosen from the fourth class as up to that year they had taken various literature courses and they were able to analyze the texts in detail. In addition, as they will be teachers next year, their perceptions, anxieties and expectations about their career provided a richer source for the data. The six-week module prepared was embedded into the course and as a sampling method narrative inquiry was used. For the current study, narrative inquiry promoted a way for organizing knowledge (Bruner, 1986) and it also enabled the participants to express their world-views through the autobiographic account of their perceptions.

The participants who were involved in this research comprised of 39 ELT pre-service teachers (20 females and 19 males). Regarding the characteristics of the pre-service teachers, their ages ranged between 21 and 40 and students came from all backgrounds from different cities in Turkey. The participants were informed about the focus and intention of the research. They confirmed that the narrative frames were understood by them and they all provided verbal and written consent to participate in the study. In order to prevent coercion, they were informed that participation in the study would not affect their grading in the course. To ensure anonymity, the names of the participants in the study are reflected in numbers.

Course content

Historically speaking, the First World War years are very similar to the COVID-19 pandemic period. Anxiety, depression, loss of our beloved ones are the few obstacles that humanity faced during the First World War (Grayzel, 2013; Strachen, 1998). In order to encourage pre-service teachers to become aware of their feelings, actions and emotions, which is the development of psychological mindedness, for the two-hour course conducted on Wednesdays, Virginia Woolf's novel To The Lighthouse (1927) and T.S. Eliot's poem The Waste Land (1922) were chosen for the comparative analysis.

Comparative literature not only analyzes two different works either from the same country or different countries but also analyzes the literary works from a multidisciplinary perspective focusing upon psychology, history and sociology, etc. "Comparative literature is an intellectual and methodological perspective founded precisely on wide temporal and spatial horizons. It considers literature as a system of simultaneous relations…" (Dominguez et al., 2015, p.136). Hence, the

selected works for the present study can act as a mirror of the year 2020 socially and historically as they are the very examples of the modernist literature that successfully reflect the traumas of the war period. Comparative literature fits well into the idea of psychological mindedness as it encourages individuals to empathize with the thoughts, feelings of others that will result in the awareness of the self (Kefeli, 2000, p.7). Comparative literature therefore, promotes the ability to understand both others and the self and helps the development of an awareness that increases both tolerance and empathy.

In the first week, the pre-service teachers were expected to understand the social and psychological environment of the First World War period both in European and American culture. They focused upon the history of these years and how cultural differences affected the way individuals experienced and responded to the war years. In the second week, we analyzed the modernist movement and literary modernism in British and American Culture. In the third week, we concentrated on psychoanalytic criticism in order to analyze the literary works through a psychological lens. In the fourth week, the pre-service teachers were ready to analyze To the Lighthouse from British Literature. In the novel, the story of the Ramsey Family is portrayed, which is the very reflection of the traumas of the World War years in Britain. The family members lose their lives one by one and the happy old days are no longer possible. In the fifth week, we studied the war years from the perspective of American culture and we analyzed the poem The Waste Land. While To the Lighthouse sheds light upon the life of a family, The Waste Land depicts the observation of a narrator in the war years. In the sixth-week we were ready to analyze the texts comparatively and in the final week of the course we had a discussion on the pre-service teachers' takeaways and reflections on the psychological aspects of the texts.

Data collection and Analysis

Although, thematic analysis does not have specific borders and is rarely acknowledged, due to its theoretically-flexible approach, it can be assumed that it has been widely-used as a qualitative analytic method both in psychology and in other fields (Boyatris, 1998; Roulston, 2001). In this study thematic analysis was used, as described by Braun and Clarke (2006), to analyze, identify and report the themes within the data. For this study thematic analysis was adopted as it gave the researcher a certain kind of flexibility to access a detailed account of data that provided a rich source for the researcher (Braun & Clarke, 2006). It illuminated the similarities and differences among the perspectives of different participants that enabled a useful way for finding out key features of a large data set (King, 2004). Therefore, thematic analysis was regarded as a useful method for the current study as it supported a clear and well-organized final report (King, 2004) that helped the production of trustworthy and insightful findings (Braun& Clarke, 2006).

In relation, a narrative frame was given to the participants (see Appendix) at the end of the six-week module. The narratives were sent through the distant online education platform of the university. In their narratives the participants described their previous experiences during the COVID-19 Pandemic, their current feelings, their psychological state, their future expectations and their possible action plans both as an individual and as a pre-service teacher. The data was first familiarized, then the initial codes were generated, the themes were searched and reviewed and finally they were defined and named. The participants not only reflected the psychological and social aspects embedded in the reported experiences but also created links between their past, present, and future experiences. The participants all agreed that the themes the researcher identified were accurate.

Findings

The analysis of the narrative frames written by the participants revealed three overarching themes: self-awareness, empathy, the importance of mental and physical well-being, which are all the important dimensions of the concept of psychological mindedness (Fenigstein, 1997; Beitel, Ferrer, & Cecero, 2005; Le Boutillier & Barry, 2018). Below these themes are discussed with excerpts from the pre-service teachers' narrative frames.

Self-Awareness

Self-awareness is one of the necessary conditions for psychological mindedness (Fenigstein, 1997). As an awareness of oneself, self-awareness can be defined as a condition in which the whole attention is directed towards the self (Fenigstein, Scheier & Buss, 1975). In relation, the majority of the participants in the study described their inner journeys with the selected literary works as a process of self-awareness. Narrative frames highlighted the positive effects of the comparative analysis of the literary works upon the pre-service teachers to become aware of their feelings, emotions and responses during the COVID-19 pandemic. Student 37 expressed this clearly in the following quotation:

> After we had analyzed the literary works comparatively, I could become aware of my repressed feelings. I realized that I had been ignoring my feelings and emotions during these hard times. When I read the story of the Ramsey family I became aware of how I have been afraid of losing my beloved ones. On the other hand, the narrator in the Waste Land helped me to face myself. I understood that anxiety, depression and pessimism I have been feeling is a normal state and I should become aware of them in order to get well.

Another participant (Student 8) indicated:

> The comparative analysis of the texts enriched my personal growth journey. The first world war days reflected in the literary texts encouraged me to understand why I have been feeling

> so anxious, unhappy and depressed. The little son of the Ramsey family helped me to become more aware of what is happening in my mind. Just like the little child, I have been focusing on making collages during the COVID -19 pandemic days, which I regard as a third-world war. After having read the novel, I realized that cutting images from magazines and making collages are the reflections of my war psychology as I cannot go out freely. On the other hand, the narrator in the Waste Land while walking on the streets of London helped me to face my inner feelings. I realized that I felt the same things while I am walking in my city, but rejected my feelings. I begin to think why I have been denying my feelings and acting as if everything was ok. Now I am ready to confront the situation and look inwards to understand my feelings more.

As noted by the participants, the comparative analysis of the literary works helped them to face their inner feelings as the settings of the works referred to the First World War days. The majority of the pre-service teachers associated the war years with the year 2020 and noted that they became aware of their feelings and emotions during the pandemic period, as Student 30 noted:

> While the Ramsey family acted as a projection for me to become aware of my feelings as a family member, the narrator in The Waste Land uncovered how I have been feeling in my city full of fog, despair, empty streets and decay. As a pre-service teacher the online education and my duties were so hard that I realized that I had never taken into consideration my own feelings. I thought that I exaggerated my feelings but the characters in the works helped me to recognize that they are normal in a state of war.

Most of the pre-service teachers associated the First World War years with the COVID-19 pandemic. After reading and discussing the stories of the Ramsey family and the narrator in the poem, Student 22 expressed how she was impressed by the impacts of the comparative analysis; “During the comparative analysis I became aware of how I have been feeling since last year. The analysis of the characters’ psychological state helped me turn to my emotions. I began to examine myself more deeply”.

The majority of the participants indicated that the analysis of the works through a psychological lens promoted a kind of self-awareness among them. As Student 12 mentioned; “The literary works helped me to focus on my emotional states and my desires. I decided to read psychology and history books more. I recognized how my inner feelings are important as the stories of the characters helped me to face my inner thoughts that I have been trying to escape.” In addition, Student 27 underlined; “While I was reading the Waste Land, the narrator forced me to question why I have been feeling depressed or unhappy during 2020. I learned that the narrator in the poem experienced the same traumas in the twentieth century.”

Empathy (Awareness of others)

"We are living in the age of "global culture"" (Güven, 2019, p.66) and the participants considered empathy as an essential component of the new global changes and teaching respectively. The comparative analysis of the selected works not only promoted the pre-service teachers perception of the importance of empathy in social life, but also its significance for teachers, as student 15 highlighted:

> I empathized with the Ramsey Family and thought about my own family and life in general. I deeply felt the trauma of the family and associated them with my family during the pandemic I lost family members, too. I faced my traumas while empathizing with them. I deeply understood the narrator in the poem, as he is the very voice of my inner feelings. What impressed me most is my enlightenment about the importance of empathy for a teacher. I should be aware of the feelings of my students and understand them so as to develop a strong relationship with them.

The majority of the participants associated the war years with the 2020 pandemic year as most of them identified 2020 as a different form of war, as Student 37 explained; "I felt as if I were a psychologist listening to the traumas of the war. Next year as a teacher I should be empathic too, otherwise I do no not think that I could be a good teacher". Most of the pre-service teachers mainly associated themselves and their students in the following year with the little child of the Ramsey Family, as exemplified by one of the pre-service teachers (Student 15):

> James's story impressed me a lot. He cuts images from magazines to make a new life as he loses his family. I identify myself with him. I have been under so much pressure during the pandemic that to escape my feelings I keep reading magazines. On the other hand, the narrator of the poem really affected me. While he was walking down the streets I deeply felt his sorrow. The empty streets and the dull city reminded me of my feelings. I need to say that next year the psychology of children will probably be very bad. As a teacher I should empathize with them. The child James and the narrator forced me to see why a teacher should be an empathic person.

The Importance of Mental and Physical Well-Being

In relation to psychological mindedness, the pre-service teachers mentioned the importance of mental and physical well-being of a teacher. The participants' awareness of their feelings, emotions and thoughts evidently made a contribution to their awareness of the importance of mental and physical well-being especially for a teacher. For instance, on reading the stories of the Ramsey Family and the narrator of the Waste Land, Student 21 indicated:

> To be honest, the pandemic year is a time of illness and anxiety. Reading the stories of the characters in both texts forced me to accept my current situation. I have been very intolerant and angry. The traumas of the literary characters helped me to confess that my current psychology is natural, however, should be altered. First, I should improve my mental and physical well-being as a teacher. If not, how can I tolerate my students? or how can I understand them?

In a similar fashion, Student 12 mentioned: "I realized that I should improve my mental and physical well-being because next year I should be ready for my students. Also, I decided to start doing exercise to improve my physical health too". It can be asserted that the majority of the pre-service teachers became aware of the importance of mental and physical well-being both as an individual and mainly as a teacher, as Student 12 described:

> Since last year I have been very depressed and stressed. The stories of the characters from different cultures made me confront my feelings. I decided to awaken because I don't have the luxury of starting my professional life in such a depressive mood. I cannot imagine having such a depressed teacher. I promised myself to improve my mental well-being immediately. I do not want to have regrets like Mr. Ramsey.

The data indicated that the majority of the participants associated their current moods with their professional lives, as Student 10 noted; " I saw that the aftermath of war is not easy, but I decided to do something for myself. If these feelings are normal I can change them. Both physically and mentally I should improve my current situation". It might not be misleading to say that the stories of the characters in the texts assisted the pre-service teachers to face up to their current situations and encouraged them to create solutions. For instance, Student 19 noted: "The stories really helped me to alter my perceptions about my situation. I will be a teacher next year; I will not have the luxury to stay at home like this. I decided to lose weight and try to face my problems immediately."

Discussion and Implications

A new life has begun for billions of people since 2020. Teacher education, as an integral part of human life is also affected by the pandemic (Carrillo & Flores, 2020; Ellis, Alonzo, & Nguyen, 2020; Cutri & Mena, 2020; Flores & Swennen, 2020) and teachers worldwide have been facing numerous changes (Reimers & Schleicher, 2020). Apparently, the virus has changed the way we live, learn, study and work. Last but not the least, the virus has changed how we feel. It is not difficult to surmise that the general well-being of teachers has become much more important than before. In relation, developing psychological mindedness of pre-service teachers can be a powerful tool to promote self-aware, empathic, and physically and psychologically healthy teachers.

Psychological mindedness has been the subject of various studies and theorists have devoted considerable attention to it (Applebaum, 1973; Hall, 1992; Bagby, Parker & Taylor 1994; Nyklı´cˇek & Denollet, 2009; Rai et al., 2015, Şahin & Yeniçeri, 2015). PM not only promotes the self-awareness of an individual but also promotes the development of the ability to understand and analyze the feelings of others (Farber, 1985). Psychological mindedness is seen as a trait that facilitates both a healthy personality structure and a person's adaptation to new environments (Roxas & Glenwick, 2014) such as the one we have been experiencing since 2020. In this study, Virginia Woolf's novel To the Lighthouse and T.S. Eliot's poem The Waste Land from modernist literature were analyzed comparatively. The findings of the study indicated that the comparative analysis of the literary works encouraged the participants to develop psychological mindedness which assisted them to develop a sense of self-awareness, empathy and a realization of the importance of well-being, especially for a teacher as an integral part of PM.

The data from the participant students' narrative frames revealed that they developed psychological mindedness in three ways. First, they developed a sense of self-awareness, which is an integral part of psychological mindedness (Applebaum, 1973) as PM involves awareness of emotions of oneself and others (Beitel, Ferrer & Cecero,2005, p.739; Guy & Brown, 1992). Furthermore, the majority of the participants mentioned that the comparative analysis of the stories revealed their repressed feelings and emotions and encouraged them to face them. As literature is a way to learn about life, it evidently supports both personal growth and the maturation process of the readers (Aerila & Merisuo-Storm, 2017). The pre-service teachers noted that after having read the stories comparatively they became aware of how they were feeling. This indicated that they questioned how they felt during the COVID-19 pandemic and became aware of the social and psychological forces that affected them. That kind of a self-awareness is related to the development of their psychological mindedness that involves an awareness of psychological processes which can be identified as "the disposition to reflect upon the meaning and motivation of behavior, thoughts, and feelings of oneself and others" (Farber, 1985, p.170). The analysis of the literary works encouraged the participants to understand the psychological processes in themselves and others. While preservice teachers practice self-awareness, they also develop empathy (McAllister & Irvine, 2002).

It can be assumed that "becoming a teacher is an emotionally charged journey" (Anttila et al., 2016, p.466) and the comparative analysis of the literary texts enabled the majority of the participants to define empathy as an essential component for a teacher especially during the pandemic. "Empathy in the broadest sense refers to the reactions of one individual to the observed experiences of another" (Davis, 1983, p.113) and identified by the participants as a very crucial competence for today's teachers. As "empathy provides access to the data of interest to a psychologically-minded person, i.e., the thoughts and feelings of others" (Beitel, Ferrer & Cecero, 2005, p.742), it is regarded as very important by the participants. While they generally identified the story of the Ramsey Family with

their families, they associated themselves directly with the narrator in the Waste Land. Most of the participants reported that their ability to empathize with other people had been developed via reading the stories of Woolf and Eliot. The majority of the participants associated empathy as a healthy personality construct that is essential especially for a teacher. The participants underlined that an emphatic teacher can seek to understand the beliefs and personal values of their students. (Warren, 2018). They mentioned that understanding others and especially their students is a crucial element for them. As mentioned by Conte & Ratto (1997), PM is a powerful tool in life that helps individuals to develop the ability to establish peaceful and healthy relationships. Scientific literature indicates that psychologically-minded people have more higher self-awareness. As underlined by Conte Buckley, Ficard, & Karasu (1995), high psychological mindedness is significantly associated with ego strength and mastery competence (p.251). That is the reason why the participants defined being empathic as one of the prominent issues of teacher education nowadays. Moreover, the student teachers also talked of empathizing with their students next year and mentioned empathy as an essential component of the classroom. Developing students' social-emotional competencies can help them to cope with stress and other problems. Therefore, the training of teachers in competencies is a vital element to improve the quality of education (Arrebola et al., 2017). The development of self-awareness of the participants promoted the importance of an empathy-focused teacher as most of the participants indicated that understanding others will lead to better student-teacher relationships. In addition to self-awareness and empathy another concept that the participants underlined is the importance of well-being of a teacher. PM is positively related to mental well-being therefore health of an individual as a high degree of PM promotes a general well-being of an individual (Beitel & Cecero, 2003; Beitel, Ferrer & Cecero, 2005). Their self-awareness not only promoted an awareness of the importance of the empathic teacher but also the importance of the well-being of a teacher, which are all related to PM.

Most of the pre-service teachers underlined that the comparative analysis of the tales promoted an awareness of the importance of mental and physical well-being of a teacher and they identified the stories as mirrors that reflected their current degree of their well-being. Becoming aware of their negative emotions evidently lead them to question the possible ways to develop positive ones, especially since 2020 and "this diminished and often debilitating loss of hope and well-being is a reason for making well-being a key aspect of teacher education programs" (McCallum & Price, 2010, p.22) as the majority of the participants underlined fatigue, depression, anxiety as the main features of their daily lives. In relation, PM contributed an awareness of the feelings of others which lead to the development of empathy - one of the components of PM, and that kind of a quality "may be considered a trait which has at its core the disposition to reflect upon the meaning and motivation of behavior, thoughts, and feelings of oneself and others" (Farber, 1985, p.170). The comparative analysis of the selected works encouraged the participants to associate the First World War years in the selected works with the COVID-19 pandemic and understand how individuals from other cultures

experienced similar events. Self-awareness, empathy, and the importance of teacher's well-being are the components of PM that calls for taking action to enhance both physical and mental well-being. As PM has been associated with reduced personal distress (Beitel, Ferrer, & Cecero, 2005), awareness of the importance of well-being for a teacher is another finding of the study.

This study aims to use comparative literature to investigate how pre-service teachers' comparative analysis of the selected literary works in a university classroom influenced their development of self-awareness, empathy and the importance of well-being as key components of psychological mindedness. In particular during the COVID-19 pandemic, such mediation affords pre-service teachers to become aware of their own feelings and emotions and those of others in addition to becoming aware of the importance of well-being for a teacher. As the findings of the study reveal, developing pre-service teachers' socio-emotional competencies enhances their ability to cope with the negative impacts of social life. The study suggests several implications for teacher educators who define psychological mindedness (PM) as an essential component of pre-service teacher education programs. A course module which provides the comparative analysis of literary works from different cultures can contribute to the development of psychologically-minded pre-service teachers by preparing them to face major global changes such as the effects of the COVID-19 pandemic. Similar modules can be integrated into pre-service education programs so that teachers can be both mentally and physically prepared for the classroom and social life.

Limitations

English Language Teaching Programs include courses that develop social, emotional, psychological and intercultural competencies of pre-service teachers. With its qualitative design, the aim of the current study was not to make hasty generalizations about pre-service teachers or comparative literature or not to seek absolute truths about psychological mindedness. The current study aims to shed light upon different perspectives on comparative literature and psychological mindedness that can help the researchers to gain insight into how these two concepts promote general well-being of pre-service teachers especially during the COVID-19 pandemic or for the other forthcoming disasters. Therefore, the study aims to postulate an exemplary model for the literature courses in English Language Teacher Training Programs. The available data could be interpreted or analyzed differently by other researchers. However, in order to increase the validity and credibility of the findings, several measures were taken.

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Appendix (Narrative Frame Prompts)

Your story / Part I

Since 2020 as an individual my psychology……

This is because…..

Your story / Part II

The social and historical analysis of the Age of Modernism helped me to realize the psychological aspects of 2020 in certain ways such as;……

Your story/ Part 3

As an individual, the Comparative analysis of the To The Lighthouse and The Waste Land encouraged me to become aware of….

Your story/ Part 4

As a pre-service teacher, the Comparative analysis of the To The Lighthouse and The Waste Land encouraged me to become aware of……

Your story/ Part 5

I think it could be better if teacher education encapsulates….. This is the end of my story

Your story/ Part 6

If you wish, please tell me another story about your experiences in Selections from British Literature

Course in relation with your personal developments in history and psychology….

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The Effect of Direct Instruction Model on Teaching Musical Play (Round) Skills to Children with Intellectual Disabilities

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Abstract

Play is a very effective tool in the development of the child's personality, cognitive skills, social-emotional structure, communication and interaction skills. In this study, it was aimed to determine the effect of teaching with the Direct Instruction Model on the teaching of musical play (round) skills in students with moderate intellectual disability. The study was designed with the multiple probe model with probe phase between subjects five girls and four boys with intellectually disabled, aged between 9-11, participated in this study. The research findings show that the Direct Instruction Model, which was used to a limited extent in teaching play skills to children with intellectual disabilities, was effective in teaching butterfly round play skills to students with moderate intellectual disabilities. It is undestood that the participants continued their butterfly round play skills 7, 14, and 21 days after the end of the instruction. It also showed that all of the participants were able to generalize their round play skills to different environments, times and people. In addition, the teachers of the students included in the study also expressed positive opinions about the teaching model used in the research and the changes on their students.

Keywords: Intellectual disabilities, Musical play, Direct instruction model.

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Introduction

Children begin to take an active part in life by entering the process of interaction with their environment by their birth. These interactions of young children constitute the beginning of the process of adapting to the world. In this process, as children begin to interact with their environment, they also begin to recognize and understand the world they live in. One of the most important tools in children's attempts to recognize and understand the world they live in is plays. While play is seen as an important exercise that prepares the child for the culture he lives in (Jordan, 2003), Piaget (1962) defines play as a bridge between concrete experience and abstract thought (Ustundag, 2017). Froebel (1887), on the other hand, defined play as the occupation that determines the whole life of the child and provides the purest and most spiritual satisfaction in the pre-school period (Ilhan Ildiz et al., 2017; Ozmen, 2019). The play is a tool that can be played with or without a certain purpose, with or without rules, and which contributes to the physical, cognitive, language-speech and social-emotional development of the child willingly under any circumstances (Ozturk, 2018), also it is a tool where they discover their environment and learn while having fun (Barton & Wolery, 2008).

Plays are a universal and motivating activity in which children have fun, relax and their development is supported in many ways. Play is very effective in the development of the child's personality, dreams, social-emotional structure, communication and interaction skills (Sevinc, 2004). With this aspect, the play not only supports all development areas of the child as a whole, but also increases the adaptation to the cultural environment in which he lives. Considering the relationship between play and developmental skills, three aspects of play can be mentioned: (a) diagnostic, (b) experiential and (c) developmental. Plays are also a diagnostic tool that enables us to obtain information about the developmental levels of children (Kuguoglu & Kurktuncu-Tanir, 2006). Plays, while giving clues about the behavior and developmental characteristics of the child with the observations made in the play, can also reflect the emotional states of the child. In this respect, plays also show the feature of being a diagnostic tool in which the developmental differences of young children are seen and determined. Plays create contexts to make it easier for children to get to know their environment and adapt to it. Children get the opportunity to get to know their bodies and try their acquired skills through play. Moreover, through plays, children discover in which activities they can be successful and in which situations they have limitations (Oncu & Ozbay, 2007). At this point, it can be said that plays create very important experience opportunities for children. The most important contribution of plays is that they play an active role in the development of children. In this context, plays develop and support children spiritually, socially, physically and mentally (Goksen, 2014).

Children reflect their emotional reactions to the plays by enacting the events they feel, see or experience (Kiye & Yalcin, 2021). Thus, children learn to observe emotional changes in their own

lives and to control their emotional reactions. Children's independent movement and achievements in plays not only improve their self-confidence and increase their motivation, but also improve their ability to play, take responsibility and fulfill, especially with other children (Durualp & Aral, 2010). The fact that children act collectively with their friends in plays teaches them to solve problems, obey the rules and respect their friends, while also providing them with rules that support social relations such as trusting themselves and others, making decisions, sharing and cooperating (Durualp & Aral, 2010; Oncu & Ozbay, 2007).

Plays also greatly support children's cognitive skills. Children learn various concepts and information through their interactions with their peers and by observing others (Kurt & Tortamis-Ozkaya, 2015). Plays also support children's cognitive learning of new concepts, strategies and skills, and the development of memory, attention, speed, problem solving and imagination skills. In addition, plays support children's matching, grouping, sequencing, similarity and discrimination skills, and in this context, they also improve their senses (Coban & Nacar, 2006; Kiye & Yalcin, 2021). Moreover, the plays support both receptive and expressive language skills. Thus, children learn new words in plays and express themselves verbally or behaviorally (Goksen, 2014). The fact that plays develop and support children's development in all aspects is a clear proof that plays are a social structure (Frasca, 2007). In this respect, it can be thought that plays provide a social life model for children. In conclusion, it should be noted that plays are an important need for the healthy physical and social development of children.

Plays are a very important tool for typically developing children as well as for children affected by developmental disabilities. Play is an important tool in recognizing and determining the developmental delays of children affected by developmental disabilities (Lifter et al., 2011). In addition to this, play is one of the important arguments in the lives of children affected by disability in interacting with other children and learning many concepts and skills in an informal way. For this reason, children's play skills, initiatives and experiences related to this should be supported from an early age.

One of the types of plays in which the development of children is supported is round which are musical plays. The dictionary meaning of round is game played as a ring. Round is defined as a group of entertaining rhythmic movements accompanied by music (Unutkan, 2006). While playing round, rhythm, sound and movement are displayed as a harmonious whole, making the play more fun for the child. Moving according to music is as natural as breathing in children. Before children learn to speak or sing, they learn to react to music with their whole body and then to move to the rhythm. Such studies give children the habit of listening to music. In addition, children develop their muscles and learn to control their bodies. Musical plays also allow children to spend their energies in a healthy way and make it easier for them to express themselves in this way (Ozturk, 2018; Unutkan, 2006).

It is known that children affected by intellectual disability have difficulty in playing plays containing movement. The negative effects of inadequacy on development, cognitive limitations of mental children negatively affect the quality of movements in plays. Significant limitations are observed in the display of play skills, symbolic play skills and manipulative plays of children affected by intellectual disability (Hellendron, 1994; Jennings, 2017; Sevinc, 2004; Tufekcioglu, 2013). Through play, children's symbolic play, language-speech and cognitive skills and their ability to understand the emotions of others develop (Barnett, 1990). For this reason, although it is important to develop play skills in terms of cognitive, physical, language-speech, symbolic play and social-emotional development of children with intellectual disability, these skills should be systematically acquired with scientifically proven teaching methods. One of the scientifically based applications that can be effective in gaining play skills is the Direct Instruction Model (Ciftci & Sucuoglu, 2004). The Direct Instruction Model includes the analysis of the skills to be taught, the systematic withdrawal of the clues and the corrective feedback from the teachers (Dagseven-Emecen, 2011). The Direct Instruction Model consists of three stages: (a) being a model, (b) guided practices, and (c) independent practices. In this model, it is aimed to gradually withdraw the hint of being a model offered to the child affected by disability, and to reach the child's independence in the skill aimed at teaching (Dagseven-Emecen, 2022).

Studies examining the effect of the Direct Instruction Model in the teaching of play skills mostly focus on teaching different concepts, independent play, communication and different play skills to children affected by autism (Arntzen et al., 2003; Boutot et al., 2005; Odluyurt, 2013). The number of studies in which the Direct Instruction Model is used to develop the play skills of children with intellectual disabilities is quite limited in the national literature. For this reason, more experimental research is needed to improve the play skills of children with intellectual disability. This research aims to determine the effect of direct instruction model on the acquisition of round skills in students with moderate intellectual disability. In this study, it was aimed to determine whether the Direct Instruction Model is effective in teaching "Butterfly Round Play" skills to individuals with moderate intellectual disability. Within the framework of this purpose, answers to the following questions were sought:

1. Is teaching with the Direct Instruction Model effective in teaching butterfly round skills to individuals with moderate intellectual disability?

2. Do the participants continue their playing skills 7, 14 and 21 days after the butterfly round play skill teaching is over?

3. Can the participants generalize their butterfly round play skills to another environment, to their friends, and to other teachers?

4. What are the teachers' views (social validity) on the acquisition of butterfly round play skills through the Direct Instruction Model teaching process?

Method

Research Model

In this study, the effectiveness of teaching with the Direct Instruction Model in teaching the butterfly round play to children with moderate intellectual disability was investigated. The independent variable of the research is the effect of the teaching applied through the Direct Instruction Model. The dependent variable of the study is the level of the subject groups in playing the butterfly round play. In the study, multiple probe model with probe phase between subjects, one of the single-subject experimental research models, was used. The multiple probe model with probe phase between subjects is a model that is carried out with at least three participants and examines the effect of the independent variable on the dependent variable (Tekin-İftar, 2012). This model can be organized with at least three participants or groups. In this research, the experimental study was carried out with three groups of nine children.

In the multiple probe model with probe phase between participants, the fact that the participant includes many repetitions within himself and among the participants increases the internal validity of this model. The fact that the participant characteristics are independent from each other and the number of repetitions is high also increases the external validity (Tekin-İftar, 2012). Experimental control is established according to the principle of diachrony in multiple probe models (Tekin & Kırcaali-İftar, 2001). In other words, experimental control is a change in the level or trend of baseline and practice data for the subject or behavior to be administered, it is established by the fact that there is no change in the level or tendencies of the data of the subjects or the baseline level of the behaviors that have not yet been implemented (Tekin-İftar, 2012).

Participants

The participants of the study consist of 9 students diagnosed with moderate intellectual disabilities in 3 different groups of 3 people, aged 9-11 years, attending the Special Education and Rehabilitation Center in a central district of Istanbul. Participating students were asked to have the following conditions: (a) having been diagnosed with moderate intellectual disability, (b) fulfilling instructions of at least 2-3 words, (c) imitating movements, (d) not having behavioral problems, (e) landing movement ability to perform bending, falling, coming and hand movements, (f) not having any additional commorbite. Teachers and parents of children with moderate intellectual disability who had suitable prerequisites were informed about the study by interviewing the rehabilitation center where they received support education services to determine the participants. Among the children whose prerequisites were suitable and whose informed consent form was filled out by their parents,

the children who would be included in the study by impartial assignment were determined. Afterwards, a child information form was filled in for the teachers of the children who will participate in the research. The characteristics of the children included in the study are shown in Table 1.

Table 1. General Characteristics of the Children Included in the Study

Participant	Gender	Age	Year of Special Education	School Level
Group 1				
P1	Girl	9	4	Special Education Classroom
P2	Boy	9	5	Special Education Classroom
P3	Girl	10	5	Separate Education Environment
Group 2				
P4	Boy	11	8	Special Education Classroom
P5	Boy	11	6	Separate Education Environment
P6	Girl	10	6	Separate Education Environment
Group 3				
P7	Girl	10	3	Special Education Classroom
P8	Girl	9	4	Special Education Classroom
P9	Boy	10	4	Special Education Classroom

Practitioner and Observer

The practitioner who carried out the research works as a faculty member at Canakkale Onsekiz Mart University, Faculty of Education, Department of Special Education. Practitioner has a previous history of providing systematic instruction for the Direct Instruction Model. In order to collect the application and inter observer reliability data of the research, two observers, one with a graduate degree and the other with a special education teacher, who had a previous systematic teaching background for the Direct Instruction Model, were assigned. Observers were given a one-hour training in which necessary information about the research was conveyed and how to code each item in the observation system was explained with examples. After the training, the observers were made to watch two video recordings from each session of the research until at least 80% agreement was achieved in their coding. Observers met the 80% criterion in two sessions. Inter observer reliability was calculated using the formula "Reliability= [Consensus/ (Agreement + Disagreement)]x100" (Erbas, 2012). During the trainings, the mean inter observer reliability (IOR) coefficient was calculated as 97% (range = 95-98) for baseline sessions and 89% (range = 86-94) for practice sessions.

Experimental Process

In the research, the skill analysis of the butterfly round to be taught was made according to the forward chain method and a measurement tool was prepared in this context. The experimental process of the research consists of baseline, full probe, daily probe, teaching, maintenance and generalization sessions. Probe session data were collected according to the single opportunity method by applying

the butterfly round skill measure tool. In order to teach the butterfly round skills to each group, a "Round Teaching Plan" was prepared for the three stages of the Direct Instruction Model: (a) being a model, (b) guided applications and (c) independent applications, and a preliminary practice was made. Before the experimental application of the research, the prerequisite skills (movements of the round) of the participants were evaluated and the movements (landing movement, happiness movement, bending movement, falling to the ground, sighing movement, coming movement, giving hand movement and rescue movement) which are included in the skill analysis of the butterfly round were taught. During these teachings, the movements were directly modeled and the hint was withdrawn, allowing the participants to reach independence in the movements. After all the participants achieved independence in the movements of the butterfly round, the experimental process (data collection process) of the research was started.

While applying the multiple probe model with probe phase between subjects, baseline data (at least five sessions) is collected simultaneously from all participants before the application. At the baseline level, after the data stabilizes, the planned intervention is performed in the first participant and no data is collected from the other participants. After the criterion is met in the first participant, the intervention is terminated for the first participant. After the intervention is terminated in the first participant, full probe data is collected simultaneously with the other participants and the second participant is intervened. The intervention is repeated similarly to the other participants (Dunlap, 2011; Tekin-İftar, 2018). Experimental control in this study was provided by the fact that there was a change in the level of butterfly round skills of the first subject group whose teaching was started, and there was no difference in the level of butterfly round skills of the other subject groups whose teaching was not started.

All sessions were held for 2 hours, 3 days a week, in the hall of the rehabilitation center where group activities were held. Food reinforcers such as pretzels and core reinforcers were used in the subjects' baseline, daily probe, practice, maintenance and generalization sessions. In all sessions of the research, a continuous reinforcement schedule was used in the practice sessions. Reinforcers that could be effective in the research process for the subjects were determined by obtaining the necessary information from the family and the teachers of the subjects.

In all sessions of the research, before the session, the participants were asked whether they needed wc and water, and it was tried to prevent negative situations that may arise during the study. Afterwards, the practitioner reminded the subjects of the rules of the study (eg, during this study, there are some rules that I want you to follow: he will look when I say look, he will do when I say do, he will watch when I say watch) and then "now we will play the butterfly play with you, I see you ready to play this game" He drew the attention of the participants to the study.

Baseline Sessions

Before the baseline sessions, the researcher had a short conversation with the participants and motivated the participants to study. Afterwards, the researcher explained the rules by saying, “Today we are going to play a game with you, there are some rules that I want you to follow during this study”: for example, you will look when I say look, you will play when I say play, and then the reward (e.g., pretzel) that your participants will receive if the rules are followed) has been explained. After the researcher said “I see you ready to work”, he turned on the music of the butterfly round and presented the target stimulus (eg, play the butterfly play). 5 seconds after the target stimulus is given. Participants were expected to start playing the butterfly round, and if the children's play skills were correct, the researcher coded the relevant box in the data form as (+). If the children did not respond or gave an incorrect response after the target stimulus (instruction) was given, the researcher coded the relevant steps in the data form as (-). At the end of the baseline session, the researcher reinforced the participants' working behaviors by describing them (eg, well done, you looked when I said look, you played when I said play) and the participants were given the reward that was said before the study.

Full Probe and Daily Probe Sessions

Data in full probe sessions were collected in a similar way to baseline sessions. The collective probe session was organized for all participants after the practice session was completed with the first group of participants. The third and last full probe session was held for all participant groups after the teaching of the last participant group was completed. Full probe sessions were held simultaneously with each participant group.

After the first practice session, daily probe sessions were held before each practice session. Daily probe sessions were conducted as in the baseline level sessions (a study was said to be done, the rules were told, the materials were introduced, the reward was explained). In the daily probe sessions, after the correct responses of the participants were marked as (+) and the incorrect responses and unresponsive steps were marked as (-), the daily probe sessions were ended by giving a reward to the participants. Daily probe sessions continued until 100% correct response was received in three consecutive sessions regarding the target play. Correct response percentages in the sessions were calculated by dividing the number of correct steps by the total number of steps and multiplying by 100 (Tekin-İftar & Kırcaali-İftar, 2012). In the daily probe sessions, all correct responses of the participants were reinforced with a continuous reinforcement schedule, and wrong responses were ignored. Daily probe sessions were conducted separately at all stages of the direct instruction model.

Practice Sessions

The practice sessions of the research were carried out at the stages of being a model, guided practices and independent practices, which are the stages of the Direct Instruction Model. After obtaining stable data at the baseline level, the practice sessions were started with the first participant group. In the practice sessions, the practitioner tried to prevent the negative situations that would arise during the teaching by asking whether the participants needed wc and water before starting the sessions, as at the baseline level. Then, before starting the teaching, the researcher briefly chatted with the participants (eg, hello, how are you today) and drew the participants' attention to the play. Afterwards, the participants were reminded of the rules, the prize was told, and then we will play the butterfly play with you, now I see you ready to play, and the participants' attention was drawn to the study. Then, the main instruction of the play in the form of play the butterfly play was presented by the practitioner. The practitioner waited for the participants to do the steps that they could do independently, the play and music were stopped for the children who could not do the steps, the children's positions were returned to the previous position and the model was modeled for the movement that could not be done. For example, the teacher is accompanied by music, children look at me and watch me carefully, well done, you are watching very well. I open my arms to the sides, now you open your arms to the sides, well done, you opened it very well. Now I move my arms up and down, now you move your arms up and down like me. Well done, you moved very well. I now put my hands on the daisy and bow my head, now you, like me, put your hands on the daisy and bow your head. It is a model for children who cannot do the movements by saying, "Well done, you landed on the daisy very well." In the guided practices step, in the movements that the participants could not do, the researcher provided reminders for the movement without a model and made the participants do the movement. While the correct responses of the participants were recorded, in the wrong responses, the participants were remodeled by returning the previous position of the play. In the guided practices phase, after enough teaching attempts were made, the independent implementation phase was started. At this stage, the main instruction of the skill is presented (eg, play the butterfly round), then reinforced by describing the correct responses of the participants. In case of incorrect responses, a reminder tip is presented to the participants by returning to the guided practices phase. The practice sessions lasted until the participants met the 100% criterion for at least three consecutive sessions in their daily probe sessions. The correct responses of the participants were reinforced by describing them with a continuous reinforcement schedule, and their incorrect responses were ignored. Probe (evaluation) data was taken before starting each new practice session. Practice sessions were applied similarly in the guided and independent practices stages of the Direct Instruction Model.

Maintenance and Generalization Sessions

It was carried out 7, 14 and 21 days after the end of the last probe sessions, which were held after the end of the practice sessions, to examine the level of protection of the butterfly round play skills of the participants. No tips were given to the participants in any of the maintenance and generalization sessions. The correct responses of the participants were coded as (+) and incorrect responses (-), and at the end of the session, the correct responses and working behaviors of the participants were described and reinforced.

The generalization sessions of the research were carried out after the last full probe session at the end of the teaching. Generalization data was made in the form of generalizing to the environment and the presence of other people. In the research, generalization sessions were carried out with a different teacher in a different educational environment. In the generalization sessions, the correct responses of the participants were described and reinforced. Incorrect responses were ignored, and the generalization sessions were terminated without saying anything. In the generalization sessions, the correct responses of the participants were recorded as (+), the wrong responses and non-reactions were recorded as (-).

Data Collection Tools

In this study, three different data were collected, namely effectiveness, reliability and social validity. Within the scope of the research, data form, social validity and reliability data forms were developed for each of the student demographic information form, baseline, practice, maintenance and generalization sessions. Within the scope of effectiveness data, a data collection form was developed for baseline, daily probe, full probe, practice, generalization and maintenance session. Within the scope of reliability data, inter observer and practice reliability data forms were developed.

Baseline, diary probe, full probe, generalization and maintenance session data collection tool used butterfly round skill analysis in order to observe the change in the participants' butterfly round skills. The data form for baseline, diary, full probe, generalization and observetion consists of sections in which the butterfly round skill steps presented as notifications, the criterion and the child's reactions will be recorded. In order to collect the social validity data of the social validity data collection tool, the opinions of two experts were taken for the social validity data form developed by the researcher for teachers. The social validity data form was finalized in the teacher social validity data form, consisting of 10 open-ended questions (eg., Do you think that the skills taught to your student will contribute positively to other games?; Would you consider teaching different games or skills in the classroom and school environment by learning the Direct Instruction Model?), in line with expert opinions. The social validity data were obtained in the rehabilitation center where the teachers worked, and each interview lasted an average of 16 minutes. Reliability data form, in this

study, two different reliability data forms were developed, namely application and inter observer reliability. The application reliability data form consists of a total of 19 items in four parts: preliminary preparation, preparation for teaching, teaching and end of teaching.

Analysis of Data

In the study, the data were analyzed under three different headings: effectiveness, reliability and social validity. In the study, effectiveness data were collected at (a) baseline level, (b) practice, (c) maintenance and (d) generalization sessions. The data in the sessions were analyzed using the (Number of Correct Responses/Total Number of Responses) x100 formula (Bilmez & Tekin-İftar, 2014). In single-subject studies, data were analyzed graphically and data paths were interpreted. In this context, the number of sessions on the horizontal axis and the percentages of correct responses regarding the skill levels of the butterfly round are on the vertical axis.

Reliability Data

In order to calculate the reliability coefficient between the practice and the observer in the research, 30% of the video recordings of all sessions were determined by impartial assignment and the video recordings were watched. While calculating the application reliability coefficient, the formula "observed practitioner behavior / planned practitioner behavior X 100" was used. The reliability coefficient for the application of the butterfly round was calculated as 100% for the baseline level, 97% for the daily probe sessions, 91% for the full probe sessions, 94% for the generalization session, and 90% for the maintenance session. Consensus/ (consensus + disagreement) x 100 formula was used to calculate the inter observer reliability coefficient. Accordingly, the inter observer reliability coefficient was calculated as 100% for the baseline level, 95% for the daily probe sessions, 90% for the full probe sessions, 92% for the generalization session and 90% for the maintenance session.

Effect Size Value

The effect size value of this study was calculated using the Tau-U method, which is one of the non-overlapping data-based methods. The Tau-U value is defined as the ratio of the number of overlapping data pairs obtained as a result of comparing the baseline data points with the data points at the practice stage, and the value obtained by subtracting the non-overlapping data pairs to the total number of data pairs compared (Parker et al., 2011; Rakap, 2015; Rakap et al., 2020). Briefly, Tau-U is a method used to measure non-overlapping data between baseline and practice phase (A and B). The formula [(Kendall correlation number (S) / Total number of pairs) x 100] is used to calculate the Tau-U value (Rakap, 2015). It is emphasized that the Ta-u value obtained as a result of the calculations should be between 0 and 1 (Rakap et al., 2020). Accordingly, if the Tau-U value is between 0 and 0.65, it indicates a low level of effect, between 0.66 and 0.92 a medium level of effect, and a value of 0.93 and above indicates a high level of effect (Parker et al., 2011; Rakap et al., 2020).

In this study, the effect size Tau-U value was calculated using the calculation engine at the http://singlecaseresearch.org/calculators/tau-uwebaddress As a result of the calculation, the effect size of this study was calculated as Tau-U value of "1". The Tau-U value shows that the effect of the Direct Instruction Model in the teaching of butterfly round skills is high compared to the initial level.

Results

In this section, the findings regarding the effectiveness, generalization, continuity and social validity of the Direct Instruction Model in teaching butterfly round skills to children with moderate intellectual disability are included. In this context, the findings of the research are summarized under two main headings: effectiveness and social validity.

Findings Related to Efficiency Data

In this section, the data collected in the baseline, full probe, practice, generalization and maintenance sessions regarding the butterfly round skill levels of the three groups included in the study are shown in Figure 1. Sessions of the research are indicated on the horizontal axis in the graph, and the response percentages related to the butterfly round skill are indicated on the vertical axis in the graph. Daily probe sessions were held before the practice sessions in order to structure the research's withdrawals of being a model (guided practices and independent practices). In addition, the number of sessions regarding the experimental process of the research and how long the sessions lasted are shown in Table 2.

Table 2. Number of Sessions and Duration of Butterfly Round Skill

Participant	Baseline		Practice Session		Full Probe		Maintenance		Generalization	
	No.	*Time*	*No.*	*Time*	*No.*	*Time*	*No.*	*Time*	*No.*	*Time*
Group	5	8,05	6	84,25	12	48,08	3	9,08	2	7,17
Group	5	7, 47	8	70,27	12	49	3	9,56	2	6,15
Group	5	8,17	7	68,27	12	53,28	3	8,13	2	7,01
Total	15	24,09	21	223,2	36	150,4	9	27,49	6	20,33

Note. time is expressed in minutes. No.= represents the number of sessions.

The baseline level sessions of the butterfly round teaching process average 1.53 minutes for the first group. It took 1.49 minutes for the second group. It took 1.55 minutes for the third group. it took. Practice sessions average 14.04 minutes for the first group. It took 8.78 minutes for the second group. It took 9.69 minutes for the third group. it took. full probe sessions take an average of 4 minutes for the first group. It took 4.08 minutes for the second group. It took 4.44 minutes for the third group. it took. Generalization sessions average 3.38 minutes for the first group. It took 3.07 minutes for the second group. It took 3.30 minutes for the third group. it took. Maintenance sessions average 3.02 minutes for the first group. It took 3.18 minutes for the second group. It took 2.71

minutes for the third group. it took. The change in the butterfly round skill levels of the participants is shown in Figure 1.

Before starting the practice in the first group, five session baseline data were collected for the butterfly round play. In the first group, the starting level in the butterfly round play is 0% for all participants. With the determination of the baseline level, teaching started in the first group. In the practice sessions, the first participant among the group members was 50% in the first session, 75% in the second session, 90% in the third session; second participant in the first session 65% in the first session, 80% in the second session, 90% in the third session; the third participant received 70% in the first session, 85% in the second session, 90% in the third session; all participants met the 100% criterion in the last three sessions. In the first group, the practice sessions were completed in six sessions.

After the completion of the practice sessions in the first group, full probe data were collected in all three groups. In the second group, with the stability of the baseline data, the practice sessions were started. In the second group, the baseline data of all participants was measured as 0%. In the practice sessions, the first participant among the group members was 65% in the first session, 85% in the second session, 95% in the third session; 100% in the fourth session; 95% in the fifth session; second participant in the first session 75% in the first session, 90% in the second session, 90% in the third session; 95% in the fourth session; the third participant received 70% in the first session, 80% in the second session, and 95% in the third session; 90% in the fourth session; all participants met the 100% criterion in the last three sessions. Practice sessions for the second group were completed in eight sessions. In the practice sessions, the practitioner played the butterfly round play with the participants.

Following the completion of the practice sessions in the second group, full probe sessions were held for all participants. The baseline data of the participants in the third group is 0%. After the baseline data showed stability in the third group, practice sessions were held for the third group. In the practice sessions, the first participant among the group members was 65% in the first session, 75% in the second session, 85% in the third session; 100% in the fourth session; 70% of the second participant in the first session, 80% in the second session, 90% in the third session; 95% in the fourth session; third participant 75% in the first session, 85% in the second session, 95% in the third session; 90% in the fourth session; all participants met the 100% criterion in the last three sessions. Practice sessions for the third group were completed in seven sessions.

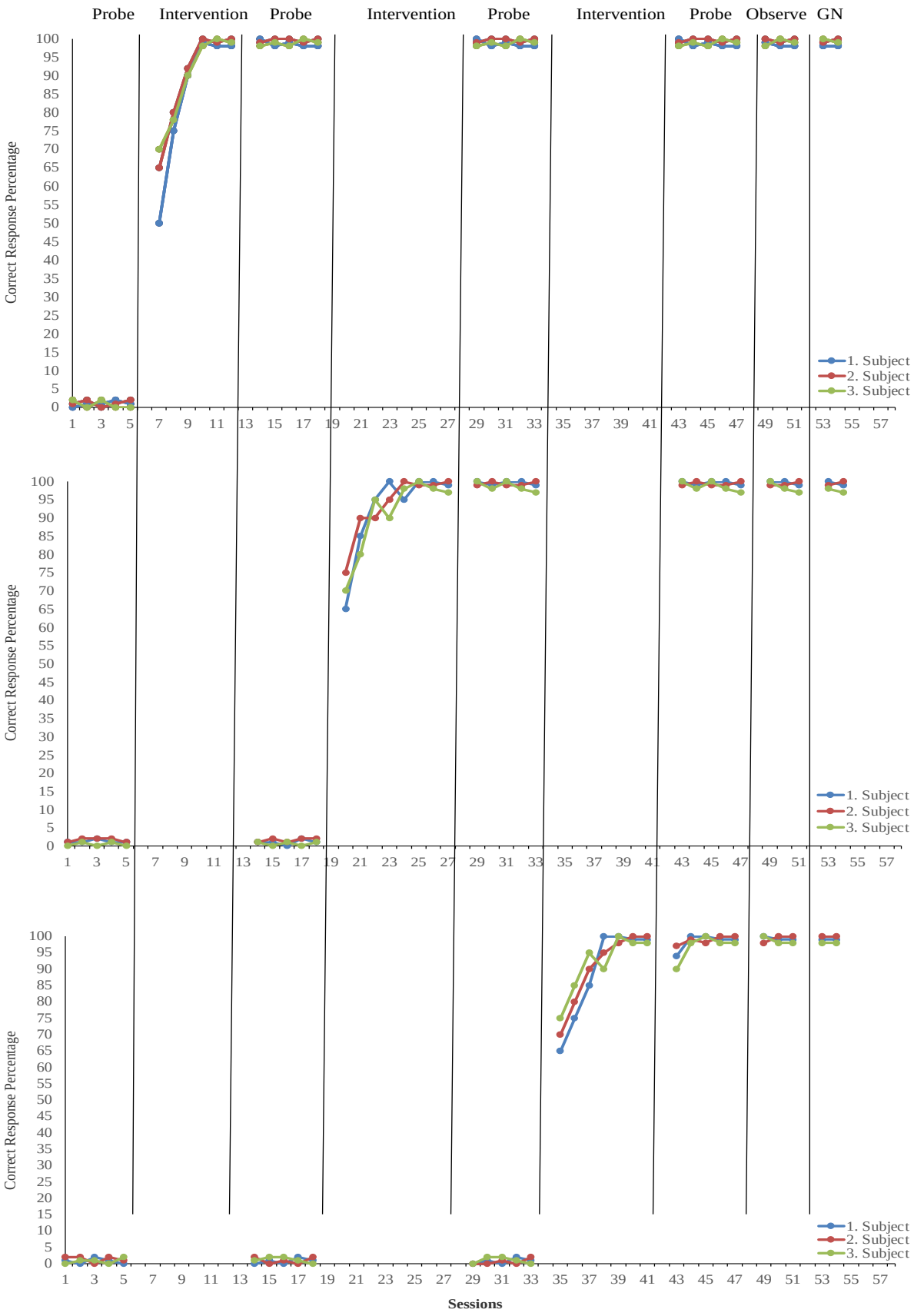

Figure 1. Correct response percentages for butterfly round skill collective probe, daily probe, monitoring, and generalization sessions

Maintenance and Generalization Data

In the study, maintenance (MA) and generalization (GN) data were collected from all participants. In the study, maintenance data were collected 7, 14, and 21 days after the last group probe sessions of the butterfly round. The correct response level of the participants in the maintenance sessions is 100% for all participants. In the research, generalization sessions were also held with different environments, different times and different people. While the performance of the participants in the generalization sessions was 0% for all participants in the pre-test collected before the instruction, it was 100% for all participants in the post-test session. These results of the study show that all participants in the study were able to generalize the butterfly rondel to different environments, times and people.

Social Validity

Social validity data were collected from the teachers of the participants included in the study. Social validity data showed that teachers' views on the Direct Instruction Model were positive. All of the teachers answered “yes” to the first six questions about the teaching model used in the research and expressed a positive opinion about the effects of the teaching model on the development of students. In addition, in their answers to open-ended questions, they stated that the effect of the study on the students was positive (eg., it increased their motivation, they participated in the activities more willingly).

Discussion, Conclusion and Recommendations

In this study, it was aimed to determine whether the Direct Instruction Model is effective in teaching butterfly round play skills to students with moderate intellectual disability, whether the skill is preserved 7, 14, and 21 days after the end of the instruction, and whether it can be generalized to different environments, times, and people. Within the framework of this purpose, the effects of the method used in the research on children and the opinions of teachers about the method (social validity) were determined. The research findings show that the Direct Instruction Model, which was used to a limited extent in teaching play skills to children with intellectual disabilities, was effective in teaching butterfly round play skills to students with moderate intellectual disability, and that the participants continued their butterfly round play skills 7, 14, and 21 days after the end of the instruction showed that all of the participants were able to generalize their round play skills to different environments, times and people. In addition, the teachers of the students included in the study also expressed positive opinions about the teaching model used in the research and the changes on their students.

At the end of the instruction with the Direct Instruction Model, it is observed that there is an upward increase in the slope of the data obtained about the butterfly round play skills compared to the

baseline level. In other words, it shows that the instruction with the Direct Instruction Model is effective in reaching the 100% level for three participants in each group in the teaching of butterfly round play skills. The number and duration of sessions held in order to reach the targeted level of independence in teaching butterfly round play skills differ between groups. In this context, six practice sessions were held in the first group, eight in the second group, and seven in the third group. The same number of practice sessions took place for the participants in the same group. It can be said that the reason for this and the low number of practice sessions is that the clue presented to a child in the group is also instructive for other children, they model their play skills from each other during the play, and the practitioner plays together in the play. While the duration of the groups' initiation, full probe, maintenance and generalization sessions are similar, the duration of the practice sessions differs. Accordingly, the first group's practice sessions are 84.25 minutes, the second group's practice sessions are 70.27 minutes, and the practice sessions of the third group are 68.27 minutes. it took.

The findings show that while there is a gradual increase in the correct response levels of the participants in the first and second groups, there is a small decrease in the correct response level of the first and second participants from the third group after the first session, an increase in the maintenance sessions, and a gradual increase in the third participant. It can be said that the change in the skill levels of the participants is rapid. It can be said that the participants' previous special education background supports the acquisition of butterfly round play skills. The generalization data of the study showed that the butterfly round skill, which was taught, could be generalized to different environments, times and people in all participants. The results of the study show that the Direct Instruction Model is effective in teaching comprehensive play skills such as round to individuals with intellectual disabilities in different age groups, the skill is maintained after the end of the teaching and the play-based skills can be generalized to different environments, times and people (Elinc & Kaya, 2016; Guzmán et al., 2020; Matson, 2007; Odluyurt, 2013; Ramdana & Sari, 2020; Sagotsky, 1981; Smith, 2015) and other research findings in which different skill concepts are taught using the Direct Instruction Model (Dagseven Emecen, 2011; Ekergil, 2010; Kesci, 2014; Turer, 2010; Yenioglu, 2019; Yikmis & Varol Ozcakir, 2019; Yozgat et al., 2018; Zepeda et al., 2015).

The answers given by the teachers to the questions in the social validity data form in the research show that their views on the effectiveness of the teaching model used in the research and its effects on children's development are positive, the motivation of the children increases after the teaching, and they are willing to participate in other educational activities. This output in the social validity data of the study is also emphasized by some researchers (eg, Pratt, 1991) in the literature. Pratt (1991) states that providing musical skills to individuals with special needs increases the success and motivation of these children, their self-confidence and they participate willingly in other activities. Considering the social validity data of the research, it can be said that the social validity of the research is high. It can be thought that the determination of the reinforcers used in the research in

line with the opinions received from the children and teachers supports the participation of the participants in the study (Sewell et al., 1998). The results of this research and other studies in the literature show that (a) Direct Instruction Model is a scientifically based method that can be applied systematically and its effectiveness has been proven once again, (b) Direct Instruction Model, which was used at a limited level in teaching play skills to children with intellectual disabilities is effective, (c) teachers working with children with intellectual disabilities can easily use the Direct Instruction Model. In addition, it is thought that reinforcing the correct responses of the participants with a continuous reinforcement schedule until the criterion is met in the practice sessions of the research helps to prevent the emergence of inappropriate behaviors that may occur during teaching and increases the interaction between the participant and the practitioner. In addition, the fact that the research was conducted with nine participants affected by moderate intellectual disability provided a significant advantage in supporting the external validity, in other words, the generalizability of the research results. However, it is thought that testing the teaching model used in the research with children affected by different inadequacies in supporting comprehensive play skills such as round and other play skills will both strengthen the external validity and contribute to obtaining more evidence regarding the teaching model. For this reason, more research is needed to support the play skills of children with intellectual disability, and it is recommended to compare the Direct Instruction Model and another teaching method in terms of effectiveness and efficiency in teaching chained skills.

In studies using single-subject experimental designs, the number of group studies is limited. For this reason, it can be considered as an advantage to include group training in the research. In addition, it is stated that the organization of practice sessions in one-to-one teaching is a waste of time and creates a limitation in its implementation in general education environments (Yucesoy-Ozkan & Gursel, 2006). In this context, it can be said that the planning and execution of the research as a group study prevents the loss of time that may occur in practice sessions and supports the effective use of this teaching model in general education environments.

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Re-thinking Multigrade Classrooms as an Alternative Educational Environment

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Abstract

The same content and learning environments offered to students from different cultural backgrounds in schools, as well as the lack of diversity, fail to address different learning needs, isolate learners from the society. For this reason, there has always been a search for alternative education models. Mixed age groups are taught together in multigrade classes, which is a primary school practice in Turkey that arises from necessity. Thus, the positive effects of this practice can be benefited from considering the multigrade class practice as an alternative education environment for teachers. This study aims to present suggestions to the educators to help them carry out their multigrade classroom activities more effectively and to draw attention to the advantages of the multigrade classroom practices. 14 pre-service teachers took part in the study as participants. The data were obtained through semi-structured interviews held in 2020-2021 academic year. The results of this study emerged in two different categories as physical arrangements and practice-based arrangements. The participants presented suggestions both for the inside and outside the classroom, and for the decoration and materials and instructional process, the institutional functioning of the school, and the type of communication in the classroom.

Keywords: Multigrade schooling; Alternative education; Mixed age; Teacher training.

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Introduction

The UNESCO Convention Against Discrimination in Education was adopted in 1960, drawing on the articles of the Universal Declaration of Human Rights (1948) that declared the prohibition of discrimination and the right to education for everyone. The term "education" in this convention refers to all types and levels of education and comprises access to education, the quality of education, its standards and the conditions under which it should be delivered. The education system should be sufficiently diverse, inclusive and flexible to meet the learning needs of children from differing socioeconomic backgrounds, which requires the education system to be adaptable (Tomasevski, 2004, as cited in Pigozzi, 2008). Schools that aim to shape the society around an ideal are obliged to act and provide education in line with the targets set by the central authority. Schools under the strict control of social classes dominated by the state can also be called "mainstream" schools (Kaya & Gündüz, 2015). The same content, method, and learning environments offered to students from different cultural backgrounds in these schools, as well as the lack of diversity, fail to address different learning needs and isolate learners from the society, labeling them as a "failure". Therefore, there have always been criticisms, resistances, reactions and quests for alternatives for non-formal school education, which protects, both with its content and functioning, the interests of the politically, economically and culturally powerful class (Aksoy, İnce, & Çoban Sural, 2020). While the literature refers to formal education as "mainstream", "standard/customary" or "traditional", terms such as "alternative", "second-chance", "re-participation" and "democratic" are used for schools that are restructured outside of this paradigm (McGregor et al., 2017). Definition of alternative education varies by learning environments, the reasons why students are placed in these environments, and the content of the education service. The emergence of alternative education, on the other hand, was born out of the need for educational practices that adopt a child-centered approach, autonomy in learning speed, and non-competitive assessment system, based on the idea that some students can learn better in a different structured environment than in traditional public schools (Lange & Sletten, 2002). Many educators, such as J. J. Rousseau, I. Illich, L. N. Tolstoy, A. S. Neill, P. Freire, aim to free schooling from the total control of dominant groups and to give this process a more liberal structure.

The climate of the schools affects their success at fulfilling the duties assigned to them by the society (Şenel & Buluç, 2016). As the civil rights movement gained momentum with the emphasis on human rights and democracy, educational priorities were shifted to the innovative education movement by those who were dissatisfied with the traditional curriculum (Conley, 2002). Alternative schools emerged in the United States in the late 1960s and 1970s (Kim & Taylor, 2008). Reilly and Reilly (1983) state that there are three types of alternative schools, which are (1) non-state schools (such as church schools, military schools), (2) upper socio-economic preparatory schools for the children of wealthy families who have reached college age, and (3) compensatory schools for students who are not successful in traditional schools (Aydın, 2015). Since the Fifth Five-Year Development

Plan published in 1984, that the education service in Turkey cannot be met with only public resources and the share of the private sector in education services should be increased has been regularly emphasized (Ardakoç, 2021). However, companies and politicians in their rush to privatize public schools have shrunk their school budgets, replaced teaching with standardized tests and put the blame on teachers and students (Paton, 2014). As alternative education has developed over the last 50 years, the public sector has seen the need for alternative pathways for students and has attempted to solve the growing educational problems. Quinn et al. (2006) state that students learn best in schools with alternative learning environments where they believe that the teachers, employees and administrators care about and respect them, value their ideas, support them, set fair rules, are flexible when trying to solve problems, and adopt a non-authoritarian approach. There are many types of schools that implement alternative practices, among which Waldorf, Montessori, Regio Emilia Inspired, Summerhill, Contract, Magnet, Small schools and Home schools are the most notable. These student-centered schools have different philosophies, curricula, teaching methods and techniques, learning environments, and materials. These alternative schools are not widespread enough in Turkey, and the research conducted in this field has mostly focused on Montessori schools offering pre-school education (see Büyüktaşkapu, 2012; Danişman, 2012; Durakoğlu, 2011; Hesapçıoğlu, 2006; Kayılı and Arı, 2011; Oğuz and Köksal Akyol, 2006) and Waldorf schools (see Akdağ, 2006; Bayhan and Bencik, 2008; Gürkan and Ultanır, 1994; Kayahan Yüksel and Kartal, 2020; Kotaman, 2009), and home school (see. Aydın and Pehlivan, 2000; Aymen Peker and Taş, 2017; Çivici and Özaslan, 2021; Hendek, 2019; Taşdan and Demir, 2010; Taşdemir and Bulut, 2015; Tösten and Elçiçek, 2013).

While some alternative school types are structured by age groups (e.g. 0-3, 3-6, 6-12, 12-15, 15-18 years old in Montessori schools), all of these school types include children from different age levels in a learning environment/class, in other words, there is a mixed age practice. Mixed age groups are taught together in multigrade classes, which is a public school practice in Turkey that arises from necessity. Multigrade classes are the classrooms where students in different age groups are taught by a single teacher, formed by combining more than one classroom (Berry, 2000; Erbaş and Karakaş, 2021; Erdem, 2008; Sağ, 2010; Şahin, 2003). This practice, called multigrade class teaching in the literature, is applied only at the primary school level by traditional schools in Turkey. Multigrade class teaching has emerged as a necessity rather than a choice due to the inadequacy of the number of teachers and classrooms/school buildings as well as the low number of students in rural school districts (Dursun, 2006; Köksal, 2005). Driven by a negative view towards the multigrade class teaching, the multigrade schools were closed and the students were bussed to the schools in the nearest province/district center. “Transported education is a practice aiming to ensure that primary and secondary school students who have problems in accessing school for various reasons are transported to the designated schools on a daily basis to receive education” (MEB, 2021, p. XXI). Although this method attempts to solve the problems, the students who are transported to another

school, experience problems of adapting to their social environment at school, wasting much time for the commute, and having to get up very early in the morning, as well as experiencing some important safety problems such as traffic accidents due to the poor road conditions (Tektaş and Yurdabakan, 2013), which have both physically and psychologically adverse effects on the students (Arı, 2003; Yengin Sarpkaya and Dal, 2020).

Since there is usually only one teacher in schools with multigrade classrooms, this teacher assumes the duties, authorities and responsibilities of a principal as a 'principal authorized teacher' as well as the responsibility of teaching. According to Aksoy (2008), this increases the workload of the teacher. The studies conducted (e.g. Doğan, 1995; Dursun, 2006; Sağ & Sezer, 2012; Schreglmann, 2019; Şahin, 2003) highlight the difficulties experienced by teachers working in multigrade classes and their disadvantages, but also point out that the teachers in these schools can turn these into an advantage. There may be opportunities where the peer learning process can be used effectively due to the mixed age order, and the classroom teacher has a more free environment in her classroom activities, considering that she is also the school principal. Thus, the positive effects of this practice can be enjoyed by considering the multigrade class practice as an alternative education environment for classroom teachers. İnce and Şahin (2016) state that the development of teaching practices that will make the classroom functioning effective for teachers working in the multigrade classroom, and the organizing curriculum in line with the principles that are important for teaching in multigrade classrooms, such as individualized teaching and working with groups by level, may have a significant positive impact on teachers' job satisfaction. Here, it is crucial that pre-service teachers, who have not started their teaching yet but have some theoretical knowledge about alternative education, can see multigrade classrooms as an alternative learning environment. As such, the subject of this study is to determine the opinions of the pre-service primary school teachers on their ability to use the alternative education activities they learned during their undergraduate studies. Thus, this study aims to present suggestions to the educators to help them carry out their multigrade classroom activities more effectively and to draw attention to the advantages of the multigrade classroom practices. For this purpose, the answers to the following questions were sought:

1. Which alternative education practices can be used by classroom teachers who work/will work in schools where multigrade class teaching is implemented?

2. For what reasons can these alternative educational practices be used?

Method

This study, which aims to determine the opinions of pre-service primary school teachers, was carried out using a qualitative research design. The case study design was adopted to find an answer to the research question. Creswell (2002/2013) defines case study as a qualitative approach in which

researchers collect in-depth information about one or more constrained systems in real life with multiple sources of information at a given time. Criterion sampling, one of the purposive sampling methods, was used in the study. This sampling method is defined by Patton (2014) as the "routine determination of all states in the data system that show the characteristics of predetermined criteria for an in-depth qualitative analysis".

Participants

The criterion of having taken the elective course called "Alternative Education Models in Primary Schools" in the primary school teaching undergraduate program was used in selecting the pre-service teachers to participate in the study. Before the data collection, the participants were informed about the subject and scope of the research and were asked whether they wanted to volunteer for participation. 14 volunteer teacher candidates who met this criterion took part in the study as participants. All of the participants were in their third year in the primary school teaching program. 11 female and 3 male participants were aged between 20 and 23. Ethical approval of the research was given by Hacettepe University Ethics Commissions (dated 13 April 2021 and numbered 1546607). In addition, since the pre-service teachers who made up the participant group were over the age of 18, their consent to participate in the study was obtained through their written permission.

Data Collection and Analysis

The data were obtained through semi-structured interviews held in March of the 2020-2021 academic year (22.03.2021-28.03.2021). Due to the ongoing Covid-19 pandemic on these dates, the interviews were conducted via Zoom and all the interviews were recorded to avoid any data loss. The data obtained from the records were written down by the researcher without any data elimination. The opinions of the pre-service teachers were obtained by asking the semi-structured interview questions prepared by the researcher. The interviews with the participants lasted an average of 20-25 minutes. The transcripted interview records were analyzed by the researcher by applying the content analysis method. After a portion of the data was analyzed, another researcher who is an expert in the field was asked to analyze some of the data to ensure the reliability of the analysis. Based on the exchange of views between the two researchers during the data analyses and comparisons, the categorization and coding process was finalized.

In qualitative research, the validity of the data and the accuracy of the results are very important. Reporting the data in detail and explaining how the researcher has obtained the results are two key criteria of validity in a qualitative research (Yıldırım & Şimşek, 1999/2011). In the current study, the detailed explanation of the findings is one of the factors affecting the validity. In the next part of the study (see the Results), the research process is presented in a transparent manner by presenting the participant views regarding each category, without modification. To strengthen the

validity of the research and to minimize the "data collector bias" (Fraenkel & Wallen, 1990/2012), the interview question created by the researcher was clarified by taking the opinion of another researcher who is an expert in the field of educational sciences. One of the ways to ensure the reliability of a research is to ensure the adequacy of technical processes at the data collection phase. Therefore, the interviews were recorded to avoid any data loss during the interviews. Another factor affecting reliability is the adequacy of transcriptions. During the transcription of the collected data, all the statements expressed by the participants were written down and included in the analysis without any modification or elimination.

Results

The data analyses revealed two categories regarding alternative education practices, which is the focus of the study. The categories and codes revealed by the data coding process and some code examples are shown in Table 1 below.

Table 1. Categories and Codes Obtained Through the Analysis

Categories	Codes	Examples
Physical arrangements	Classroom spaces	Corners, centers
	Out-of-class spaces	School building, yard, surroundings
	Decoration	Wall color, mirror, carpet, proportionally-appropriate furniture
	Materials	Map, activity papers
Practice-based arrangements	Instructional process	Learner-centered, differentiated instruction, interaction, project-based
	Organizational procedures	School council, use of music, arrangement of breaks
	In-class relationships	Cooperation, freedom, counseling

Results Regarding Physical Arrangements

During the interviews, the subject that was stressed by the participants the strongest was the physical arrangements of the classroom and the school. 4 codes regarding this subject emerged as a result of the data analysis: views on spaces (in and out of the classroom), decoration, and materials. Regarding the "Classroom Spaces" code, the majority of the participants stated that "corners/centers" can be used effectively in classroom physical arrangements, regardless of class level. One of the participants stated that the teacher’s desk may not be used by the teacher in the classroom. The participants stated that they were inspired by school types such as Montessori, Summerhill and Tolstoy School for the views they presented under this code. Some excerpts illustrating the results are presented below.

> *Designed environments, just like in Montessori schools, increase the child's already existing learning interest. Each student should be able to freely choose which corner he/she wants to work in and should proceed according to his or her needs. If necessary, when the student*

completes the activity in the lesson, he/she should go to that corner to be able to do a completely different activity in the remaining time without interrupting anyone. The number of students in multigrade classes is less than in regular classes, and the space is sufficient. This is actually very easy to do. (ST)

I would set a corner of the classroom as the story corner. I would design a bookcase with story books and a separate area for one or two learners to sit and read. I would make story hours by creating a corner where students could read stories. (MY)

My student and I must be equal in the classroom environment. There is no need for a teacher's desk where I sit all the time and show my authority. Wherever my students put their stuff, I'll put mine there. If this can happen in the Tolstoy school, in the Free schools, why not in the multigrade classroom! (FT)

As for the "out-of-class spaces" code, the participants expressed their opinions on issues such as the school building and the effective use of the school environment. Some suggested transferring practices from Waldorf and Reggio Emilia Inspired schools to multigrade classes, and emphasized the advantages of having multigrade classrooms in small settlement units such as villages. The following quotations from the data exemplify the participant views on this subject:

When I learned about Waldorf schools, when I learned about the fact that the school is intertwined with nature and even the information about the use of those wooded areas around the school, I realized that village schools are actually the applied version of this. The fact that the multigrade classes are in the villages facilitates the inclusion of activities such as planting, animal care and agriculture into the education. In this way, learning by doing can be realized. I think the practices in Waldorf schools are easily transferable. (DB)

Just like Waldorf schools, the school building can be interesting because in order to encourage children to come here, I think that this building should first visually attract their attention. (BS)

As in Reggio Emilia schools, the environment should be accepted as the third teacher in this school. During the summer months, a library can be set up in the garden, and book recommendations or book summaries can be made to the villagers by the children. As in Waldorf schools, children can collect in this school. Collecting develops a sense of discipline and responsibility in individuals. Therefore, the areas where children will collect and exhibit their collections can be located in the halls of the school or in an empty classroom, if any. (OY)

It is seen that decoration examples in schools such as Reggio Emilia Inspired schools and Monstessori are presented as suggestions in the results obtained regarding the "Decoration" code. Some participant views on this issue are presented below.

I think that the color of the walls in the school or the places of the furniture in the school should be changed periodically. It would be very difficult if it was in a big public school, the approval of the school principal is required, it even affects the whole school, but in a village school, the only person responsible of the school is the teacher. This is actually a great power for the teacher. (DB)

The classroom environment in the Montessori model can be a very appropriate environment for multigrade classes. In Montessori, items are always scaled for children. The floor of the classroom may be completely covered with carpet, and there is nothing preventing this. Students can put their shoes in the shoe racks of the proper size and thus, it can be ensured that students take responsibility in the classroom. (DZ)

As in Reggio Emilia Inspired Schools, mirrors can be used in most places. This is because children's awareness of their emotions is also very important for their development. A mirror can be used especially for students who are younger than the others in the class to become aware of their own reactions and mimics. (AS)

The design of the interior of the building can be no different from a house, as in Waldorf schools, and unused items at home can be brought to school. It is hard to do these in a metropolitan city, but by doing these in village schools, collaborative work is done with the village people, which is a clear advantage. (BS)

Regarding the "Materials" code, some examples of the importance and use of the material in Montessori schools are presented as suggestions. Some participant views on this subject are presented below.

As in Montessori schools, additional materials on the solar system, the world, and countries can be used. For example, various maps and models of the world should be kept, even the map of the village can be drawn cooperatively as a project with a class trip, and tasks can be done according to the level of each student. It would be very difficult to do this in a city center for sure due to the permits required, security considerations, and road tolls. (MC)

For example, every activity that students do is important in Montessori. In my opinion, walls should never be allowed to be empty, many colorful materials made by students can be hung on the walls. It's not really something specific to the multigrade class either, every class should be like this. (AT)

The Results Regarding the Practice

The views expressed by the participants regarding the view of multigrade classrooms as an alternative learning environment are under three codes related to the instructional processes, the functioning of the school as an institution, and the types of in-class communication in the category of "Practice-based arrangements". The presence of mixed-age practice in the classroom has a significant effect on the opinions of the participants on the transferability of some practices in alternative school types that they had previously learned about to the multigrade classroom environment. Some verbatim quotations exemplifying the results on instructional dimensions such as content, feedback, evaluation, differentiated instruction, and peer learning within the scope of the instructional processes code are presented below.

> *The curriculum tells the teacher that you should use the strategy of teaching through discovery, so maybe it is not completely discovery, but it says to place the child in the center, then dialogue becomes important. For example, in Montessori, the teacher does not give feedback to the student but instead the student is expected to identify his or her own mistakes, and this was very interesting to me. Students learn from each other, so even feedback should be considered thoroughly. Why shouldn't we do this too, not only in the multigrade schools, but also in the schools in the centres. Of course, this is very well used if both first graders and fourth graders are together in the multigrade class. (DB)*

> *Anchor activities should be used very often because some of the students in the classroom are learning to read and write in the first grade and some are in the fourth grade. I think that anchor activities will be very important and effective in a classroom where there is so much learner diversity. So there are fast and slow learners in every classroom. (ST)*

> *We want students to be people who research and examine. That's why the methods in Reggio Emilia should be studied and used. Creating projects should be a part of the school, the age differences in the multigrade classes and the proximity of the villagers are something that supports the distribution of tasks in the project. (OY)*

> *If you observe how much the students have improved compared to their initial level during the evaluation process, you have created the right environment. Instead of separating students by their age with sharp lines, if they have learned something new or can do something that they did not know before, even if they are older, we need to call this as progress. All alternative schools do this, they care about each and every child, I think (BS)*

As regards the "Organizational procedures" code, which is another code in the "Practice-based arrangements" category, some opinions were reported about the school administrative processes and the institutional culture within the scope of the relationship between the stakeholders. The results

indicate that some of the practice examples and communication types in various alternative school models can be adapted. Some quotations from the data related to these findings are presented below.

Quotations about the administrative processes:

I think it is completely unnecessary to decide when and how long the students will take a break. Therefore, students should be aware that they can take a break whenever they want. I wish they were free to choose the courses like in Summerhill schools, but that is not possible due to the central authority of the Ministry of National Education. I mean there does not have to be sharp limits. If the teacher is living in a hostel in a village, the closing hours of the school can be flexible. Children should be able to get to the school at any time because the school is theirs. (NA)

There could be a "School Council" in the school. In this council, the votes of the teacher and the students are counted equally. Bi-weekly meetings can be arranged, for example, for anything related to the school, and decisions can be made together. This is used in Free Schools. By means of the council, students learn about democratic life by personal experience rather than just getting lectured about democracy. (DZ)

I know for a fact that pentatonic music is used in the transition between activities in Waldorf Schools. ...Actually, I recommend this to be used in school breaks. ...I researched about it after our Alternative Education class. It opens up perception by increasing the frequency of the alpha and beta waves in the brain. (AS)

Quotations about in-class communication:

In Waldorf, there is a greeting-like interaction that we call the moment of focused attention. I'm not saying that it should be copied entirely from Waldorf, but I do think that in the classroom there should be a special interaction between the teacher and each student. (FT)

Students should be able to express their opinions freely. When I say this, I do not mean the authority of the teacher. When I think that there are students of different ages in a class, I mean especially the younger ones to express themselves without being shy in front of the older grades. Discussion groups with children of all ages can be set up. (ST)

Discussion, Conclusion and Recommendations

Multigrade classroom teaching is a common practice, particularly in rural areas of developing countries, to ensure children's access to universal basic education. However, in developed countries, it is not always viewed as a necessity, but as a pedagogical choice (Aksoy, 2008). It is critical that teachers and pre-service teachers know and consider the pedagogical advantages of this practice,

which was born out of necessity in Turkey. The views of the primary school teacher candidates on the ability to use alternative education practices in multigrade classrooms are limited to the qualifications and perspectives of the participants. The findings obtained from the study emerged in two different categories as physical arrangements and practice-based arrangements.

The participants presented suggestions both for the inside and outside the classroom, and for the decoration and materials that can be used in terms of physical arrangements. Concerning the practice dimension, they made suggestions regarding the instructional process, the institutional functioning of the school, and the type of communication in the classroom, depending on whether there are only one or two teachers in the school. Examining all the findings, it is clear that the existing practices in different alternative school models are transferred or adapted. It is seen that these schools are Montessori, Waldorf, Summerhill, Free schools, Tolstoy school, Reggio Emilia Inspired schools and Magnet schools. Considering the diversity of school models inspired by the suggestions offered by the participants, it shows that the theoretical knowledge of pre-service teachers who will take an active role in schools in the future is sufficient.

It is seen that all of the participants' views on physical arrangements are related to Montessori's concept of "designed environment". Montessori schools have an organized environment equipped with materials, and this environment is planned to best address the needs of the child (Yıldız, 2021). In this pre-prepared environment, freedom of movement and activity is recognized so that the child can develop him(her)self (Montessori, 1995). Another type of school in which the environment has a key role, as in Montessori schools, is the Reggio Emilia Inspired School. In this approach, there are three educators in the classroom as the teacher, child, and environment (Kayır, 2015). The prepared environment gives important clues about the importance of "creating the order", which is also the first step of classroom management. Classroom management involves the strategies and behaviors used by the teacher to maintain the order in the classroom (Burden, 1995). The order to be preserved must be created by the teacher; which requires making the necessary physical arrangements in the classroom, creating classroom rules and norms, and thus essentially making the classroom ready for students. Regarding the creation of order in multigrade classrooms, suggestions were made about designing environments where students can choose freely and are at the center of the learning process, and where they can move freely in the classroom, unlike the traditional classroom design.

The participants, who made suggestions on the effective use of all the spaces in the classroom, presented some examples for the use of "corner and center" in the classroom, and stated that due to the nature of the multigrade classrooms, mixed-aged children in the classroom should be able to benefit from that by interacting with each other at the same time, unlike the traditional classroom environment. Pattillo and Vaughan (1992) define learning centers as an environment that

offers the opportunity to learn through concrete experiences with real objects and where student choices are valid. The centers have two types of practices: learning-oriented and interest-oriented. While learning centers (e.g. science, language, mathematics centers) are used for repetition of certain courses or for more in-depth learning, students are allowed to explore areas of interest (e.g. arts, sports, drama) in the centers of interest (Tomlinson, 2014). For the learning centers to be used effectively, the teacher should also consider the size of the class, the number of children in the classroom, and the interests and needs of the children when arranging the learning centers (Orcan Kaçan et al., 2021). Having these six learning centers in pre-school education classrooms in Turkey is recommended: a group study center, a book center, a music center, a dramatic play center, an art center, and a science center (MEB, 2013). Studies show that in line with these suggestions, teachers include these centers in their pre-school classes. Orcan Kaçan et al. (2021) found that the majority of preschool teachers included group works, books, music, dramatic plays and science centers in their classes, and determined that the center they put the weakest emphasis was a temporary learning center. This recommendation offered by the Ministry of National Education (MEB) is not implemented at the primary school level, which is the continuation of pre-school education and corresponds to the age period of 6-10, and primary school classes are organized with traditional approaches in the mainstream schools of Turkey. Avcı and Yüksel (2014), in their books in which they describe differentiated teaching practices, include a wide range of materials, such as library, arts, board games, exploration, drama, reading, writing, science, computer, mathematics, and language that will appeal to student interests and learning styles. They also stress the importance of designing the centers in the classroom. Various suggestions are made regarding the location or usage style of the teacher's desk, which is located in the traditional classroom layout and belongs only to the teacher and represents the authority in the seating arrangement. The most appropriate spot for the teacher’s desk is at the back of the classroom, as revealed by numerous studies (Krych, 2015) which was once located on a physically isolated, elevated platform in the center of the classroom, indicating the teacher's status relative to the student and the direction of the information flow (Proshansky & Wolfe, 1974). There is also an alternative theory that getting rid of the teacher's desk altogether is the best option. As in many alternative education environments (e.g. Montessori and Waldorf), furniture or items in learning environments should be student-oriented, and all the items in the classroom should be tailored to the student.

As for the physical arrangements outside the classroom, the participants, who offered their opinions on the effective use of the school building and the school environment in the education process, pointed out the advantages of being able to involve the family in school activities by referring to the advantages of the multigrade classrooms with insufficient facilities, being located in rural districts far from the city center. Research has shown that teachers in village schools have problems such as transportation problems, school budget problems, lack of kindergarten classes,

poverty and language problems (see Aksoy, 2008, 2010; Bingöl, 2002; Çınkır, 2010; Dursun, 2006; Engin, 2018; Erbaş and Karakaş, 2021; Erdem, Kamacı, & Aydemir, 2005; Sağ, 2010; Sidat & Bayar, 2018; Şahin, 2003). In addition to these problems, considering the importance of nature in alternative education practices that stand out as good examples in education, small settlements such as villages are unique learning environments. J. J. Rousseau, who has an important place in the field of alternative education, advocated educating the child with a naturalist approach without interfering with the natural environment in which he or she will be raised. Matsuoka (2010), on the other hand, states that schools with trees, bushes and grass areas have more successful students than schools built with artificial materials and with flat and empty floors in city centers. Waldorf schools aim their learners to be in harmony with the nature by instilling an awareness and love of nature in them (Koca & Ünal, 2018), while in Reggio Emilia Inspired schools, large window designs are used to illuminate learning environments in natural ways and to allow learners to observe their natural environments (Al, 2014). Considering these factors in alternative education environments, the participants further pointed out that it is easier to include the natural areas (woods, forests, streams, fields, hills, etc.) in the villages in the education processes and to plan them in out-of-class activities, compared to the classrooms in the city center due to problems in transportation, limited space, and security.

Concerning the decoration and materials that appear in physical arrangements, the roles of primary school teachers working in multigrade classrooms emerged as the key dimensions. The participants, who reported that these teacher roles make them free in a sense, especially stressed the importance of the color of the walls and the items that can be used in the school. The significance of the material elements in the Waldorf and Reggio Emilia inspired schools (e.g. carpet, sofa corner, shoe rack, mirror) were particularly highlighted. Burden (1995) states that the physical appearance of the school building and classrooms should be suitable for students' physiological needs and teaching activities. Considering that the multigrade classrooms are single or two-grade, the participants mentioned that all areas of the school (e.g. halls, empty room/classroom, school walls) can be used effectively to exhibit the activities performed by the students.

Another category in which the findings are concentrated is the practice-based arrangements, in which the mixed-age practice in the classroom emerges as the critical basis for many regulations. Although mixed-age classes are usually created out of administrative necessity, they may be created for pedagogical reasons in some schools (Berry, 2018). In the current study, the participants stated that it is necessary to evaluate the mixed-age practice in the multigrade classrooms arising from a pedagogical need in Turkey. The participants, who put the student in the center and emphasized the importance of the discovery learning strategy, also drew attention to the necessity of instructional differentiation. They stated that students who learn at a similar learning rate (slow, fast or average) despite being at different grade levels should not be separated from each other with strict lines on the basis of grade level. Şahin (2014) supports this finding of the study by saying that “it is very difficult

to explain and understand the philosophy and logic on which an education system is based, which ignores competence and progress at its own pace, and uses only chronological age as the only factor in placing students in classes" (p. 26). It should also be taken into account that this teaching method should not be used exclusively for multigrade classes, and that there is a need to differentiate teaching in independent classes created according to age level.

Regarding the institutional functioning of the school, the suggestions mostly focused on the time allocated for the school. The suggestions made regarding the duration of classes and breaks, starting and ending times are aimed at making the school a freer environment. A similar suggestion was made by proposing a "school council". Their emphasis on the need for students to express their opinions on all issues related to the instruction processes shows the importance of children's right to participate. A statistically significant relationship was identified between children's use of their right to participate and being encouraged to express their thoughts, and children's liking for school, academic performance, health, life satisfaction and happiness levels (de Róiste et al., 2012). It was seen that the participants expressed their opinions about the importance of in-class communication. In this context, the findings that emerged that teacher-student interaction should be private also mentioned the importance of the teacher's role as a classroom guide. In addition, the participants stated that there should be a libertarian (moving around freely in the classroom, expressing opinions etc.), and collaborative environment in the classroom and stated that the active participation of the students in the decisions taken about the school and their classes should be ensured. Further suggestions were made for classroom teachers to establish effective communication with families and involve them in school activities. Regarding the use of music at school, some suggestions were made that music should be listened to at school, during breaks or during lessons. Waldorf schools have practices aiming to use arts (especially eurythmy and pentatonic music) effectively in the class, and the participants stated that these can be transferred to multigrade classes.

Karasar and Platteau (1998) state that the multigrade class practices in the workshops held by the Ministry of National Education and in state programs are perceived as a "glitch" of the current system (cited in Aksoy, 2008), and this point of view has not changed over time. The research published on the disadvantages of the multigrade teaching, such as the poverty of the people of the region, linguistic problems, school budget, and the burden of the teachers' teaching responsibilities as well as their administrative workload should also inform the society and teachers about the pedagogical benefits of this practice. The problems experienced by the multigrade students during the transported education should also be taken into account when considering the current status of the schools closed by citing the disadvantages listed above. According to the MEB statistics for 2021, although the compulsory formal education was increased to 12 years after the 4+4+4 regulation, the schooling rates are far from being satisfactory. Most notably, the primary school enrollment rate has declined from 98.86 percent to 93.23 percent in the last nine years. As such, a significant part of the

Eastern Anatolia, Southeastern Anatolia, Central and Eastern Black Sea provinces are well below the national average, especially in terms of preschool and primary school enrollment (Eğitim Sen, 2021). The fact that the multigrade class teaching was ended in these regions was certainly one of the reasons for this. Köksal (2005) suggests that transferring teachers might be a better solution, rather than transferring tens of thousands of students and closing multigrade classrooms.

The Council of Higher Education (CoHE) has revised 25 undergraduate teacher education programs as of the 2018-2019 academic year, which has resulted in some important changes in the primary school teacher curriculum. As part of these changes, a required course named "Teaching in Multigrade Classes" has been removed from the program (CoHE, 2018). It is an important shortcoming that a course in which pedagogical content about the multigrade class practice, which still has a place in the education system and benefited by tens of thousands of students, has been removed from the curriculum. To overcome this deficiency, the subject of teaching in multigrade classes can be integrated into the elective course called "Alternative Education Models in Primary Schools" in the new undergraduate program. It should be noted that only a few weeks of multigrade classes can be taught as part of the entire semester within the relevant elective course and there may be differences in the determination of the content of the lecturers according to their fields of expertise. The fact that this is an elective course is another indication that it cannot be taken by all the undergraduate students. Therefore, it is recommended that a course that pre-service teachers can learn about teaching in multigrade classes should be included in the curriculum again, as in the previous curriculum. Thus, with this course, the students will be taught about the advantages and disadvantages of teaching in multigrade classrooms, instructional techniques, assessment and evaluation, differentiated instruction, grouping, and self-study strategies. Thus, it can be ensured that pre-service teachers understand the characteristics of the multigrade class and the difficulties of the practice in the complex environment where it takes place dialectically (Bonnan, & Bodkar, 1991; Ilyenkov, 1974; Nelson, & Kim, 2001, as cited in Sağ, 2010).

In addition to the alternative education practices mentioned in this study, pre-service teachers should also be informed about many other types of alternative education. Apart from these suggestions that can be applied in the pre-service education, training and support can be provided for the teachers who have started to serve and who work in the multigrade classrooms, during the in-service training phase to carry out administrative work. It is also known that the curriculum in multigrade classes is the same as the curricula used in independent classes organized by the Ministry of National Education, which shows that the curriculum used in multigrade classes has clearly separated content and outcomes for each grade level. Therefore, it is crucial to organize new curricula that are specifically prepared for multigrade classes where students from different grade levels have the opportunity to learn together and from each other in a single classroom to help them benefit from the advantages of the mixed-age education.

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Middle School Students' Views on Distance Education: Turkish Language Teaching under the Shadow of COVID-19 Pandemic

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Abstract

In this study, it was aimed to determine the strengths, deficiencies, and weaknesses of distance education process of learning-teaching activities in Turkish lesson by asking the opinions of students who are the subject of the learning process. In the study, the basic qualitative research design was preferred considering the nature of the research subject. The study group of the research consists of twenty-eight 7th grade students who continue their education activities in Eskişehir in the 2020-2021 academic year. The online interviews were conducted with the teachers through a semi-structured interview form prepared by the researchers. The data were analyzed by content analysis using the MAXQDA program. The students stated that distance education is more functional than face-to-face education in vocabulary activities of listening and comprehension skills. In speaking and writing skills, students mostly preferred distance education. The students explained the strengths and weaknesses of the two educational environments compared to each other in terms of all skills, with their justifications. In the study, students were also asked to write the five most useful features of both educational environments. Thus, the strengths of both learning environments in terms of Turkish lessons were revealed. Based on the data obtained, it has been determined that distance education cannot create an alternative to face-to-face education in terms of social interaction, teacher-student interaction, group studies at the desired level, but distance education is clearly preferred by students as it offers many opportunities that face-to-face education does not offer. For this reason, based on the prominent skills and activities of distance education, it can be said that it will be more beneficial to continue Turkish lessons by adopting a mixed (hybrid) model in the future.

Keywords: Covid-19 Pandemic, Turkish language education, distance education, face-to-face education, basic language skills.

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Introduction

Distance education is an interdisciplinary field and it extends over nearly three centuries. In Turkey, from 1923 to the 1960s, distance education was first discussed conceptually. After the 1970s, distance education studies were carried out at the middle education level with different initiatives, some experience was gained and limited progress was made (Bozkurt, 2017, p. 86). The distance education process, which progressed with the transmission of printed materials by mail at the beginning of the 1970s, continued by using television and radio broadcasts, cable television broadcasts (in the USA), multimedia tools such as video and audio recordings, teleconferences, web-based distance learning environments, computers and mobile devices. (Burns, 2011; Gunawardena and McIsaac, 2013). Online teaching and learning have emerged in the design and delivery of 21st century distance education. Online teaching and learning processes by providing Internet-based content and communication between instructors and students; carried out with advanced computer and communication technologies (Innes, 2021).

With the COVID-19 epidemic affecting the whole world, face-to-face education was paused in Turkey as of March 16, 2019, and education-teaching activities continued in distance education environments. This radical change in the educational environment and the emerging new condition has revealed new research areas based on learning and teaching processes. While the use of distance education at the higher education level in the past means that certain data on the quality and quantity of education at this level are already available, there is not enough data for this new learning environment experienced for the first time for students, teachers and parents in primary education. The data obtained for the distance education processes, which have recently started to be implemented due to the epidemic conditions at the primary education level, were mostly obtained by communicating with teacher candidates, teachers and parents (Demir and Demir, 2021; Erbaş, 2021; Ustabulut and Keskin, 2020; Güven, Kurum, and Sağlam, 2012; Süğümlü, 2021; Şenturk, Duran, and Yilmaz, 2020) and the studies carried out for elementary school students are limited. There is a need for studies that aim to reach data on the language skills and activities of distance education by referring to the lives of students in Turkish teaching. For this reason, the data to be presented by the students who are active members of the learning-teaching processes regarding the distance education processes is of great importance. In particular, the data to be obtained about how language skills gain a dimension in the distance education environment will guide the decisions to be taken for the future (hybrid, mixed education) by determining the stronger or weaker points of distance education compared to the face-to-face education environment in the acquisition of skills. For this purpose, four basic language skills with students and the activities (vocabulary, questions for understanding the text, finding the main idea, reading, listening, speaking and writing activities) involved in acquiring these skills were tried to be determined by comparing the strong, weak and improvable aspects of distance education with face-to-face education.

In accordance with this purpose, answers are searched for the following questions:

What are the strengths and weaknesses of distance education in vocabulary studies in distance education compared to face-to-face education?

Compared to face-to-face education, what are the strengths and weaknesses of distance education in listening or reading comprehension (questions about the text, identifying the subject and main idea) in distance education?

What are the reasons for students to think that distance education or face-to-face education is more efficient in their comprehension skills?

Compared to face-to-face education how is the distance education environment in terms of efficiency in speaking skill activities and what are the strengths or weaknesses of distance education?

Compared to face-to-face education how is the distance education environment in terms of efficiency in writing skill activities and what are the strengths or weaknesses of distance education?

Can distance education create an alternative to face-to-face education? How can these two educational environments be utilized most effectively in line with student views?

Method

In order to determine the participants' views on the dimension of comprehension and explicating the distance education Turkish course continued during the covid-19 pandemic, the basic qualitative research design was preferred among the qualitative research designs by taking into account the nature of the research subject. In basic qualitative research, researchers are concerned with the feelings and thoughts of the study group about a situation, a process, or an experience. Basic qualitative research; It is the study group's interpretation of the event, situation, phenomenon from its own perspective and the researchers' reinterpretation of these interpretations (Merriam, 2013).

In line with the method in question, the researchers first decided on the questions they would ask, considering the nature of the research topic. Then they decided to collect the data by interview. They planned the data analysis to be done by dividing the data into appropriate categories, forming themes from the data and making sense of the emotions and thoughts of the students in the study group.

Working Group

In this context, twenty-eight 7th grade students in a middle school in Eskişehir in the 2020-2021 academic year were chosen as the study group. The fact that Eskişehir has an average value among 81 provinces in the access list of provinces announced by the Ministry of National Education

has been effective in conducting the study in Eskişehir (Kamubiz, 2021). According to the data, every other student in Eskişehir can access EBA without any problem. A flexible approach was followed in determining the size of the study group. The flexible approach is often recommended when determining the size of the study group, especially in qualitative studies (Robson, 2017). In the flexible approach, the researcher does not determine a certain number before the study and ends the data collection when he thinks that the data reaches enough to reflect the subject studied. In this study, the researchers evaluated the data obtained from the interviews in the process and limited the number of participants to 28 when they thought that the data obtained was sufficient to answer the sub-problems of the study. In order to obtain reliable data in the comparison of face-to-face education and distance education, attention was paid to the regular participation of all students in the distance education activities carried out during the 2020-2021 academic year in the determination of the students in the study group.

Data Collection Tool

In qualitative research, interview, observation or document analysis are used during data collection. In the research, a semi-structured interview form prepared by the researchers was used to conduct in-depth interviews online. During the preparation of the interview form, the literature was examined and a draft interview form with nine questions was prepared based on the literature. Three Turkish education experts were consulted for the content validity of the draft interview form. Two of the experts who were consulted are doctors, and one is a Turkish teacher who currently carries out educational activities and has distance education experience. After the expert opinions, the interview form was rearranged considering the feedback and the number of questions was increased to twelve. It was applied to a group with similar characteristics in terms of grade level, educational environment and the interview form. Then it was decided that the interview form was appropriate. In the interview form, six questions were asked about the comprehension skill dimension of the Turkish lessons continued during the distance education process and three questions about the explicating skill dimension. In addition, the researchers added three more questions to the interview in order to clarify and summarize the thoughts of the students in the study group about distance education, considering the expert opinions. Thus, a twelve-question online interview form was completed to determine the views of the students in the study group in terms of comprehension and explicating the distance education Turkish lessons carried out during the covid-19 period. An example of the questions asked to the participants within the scope of the research on the dimension of understanding and explaining is as follows:

- While finding the main idea of the texts you listen/watch or read, do you think there are differences in distance education courses compared to the courses in the classroom? Explain the reasons.

- Which is easier face-to-face or distance learning to talk about a topic?

Data Collection Procedure and Data Analysis

The data in the study were collected through online interviews. Interviews were held between 11/02/2021-18/02/2021 at the beginning of the second semester of the 2020-2021 academic year. Before the interviews, the principal of the school where the participants continued their educational activities was contacted and detailed information about the research process was given to him. After the informing, an application was made to the district directorate of national education for research permission. After getting permission approval, an online information meeting was held with students and families on the content, purpose, scope and process of the research. After the meeting, the parents were asked whether they would give permission to participate in the research. Consent form for participation in the study was obtained from the parents who agreed to contribute to the study. Afterwards, online interviews were conducted with the students in the study group at suitable times for them, in a way that would not disrupt their normal education and training activities. The interviews were recorded with the permission of the participants and the recorded data were analyzed in the computer environment.

In the analysis of the data, the qualitative analysis program MaxQda program was used, and the data were analyzed using the content analysis method. Themes, sub-themes and codes were prepared in order to describe the findings as clearly and comprehensibly as possible. The application in Figure 1 was followed for the theme, sub-theme and codes.

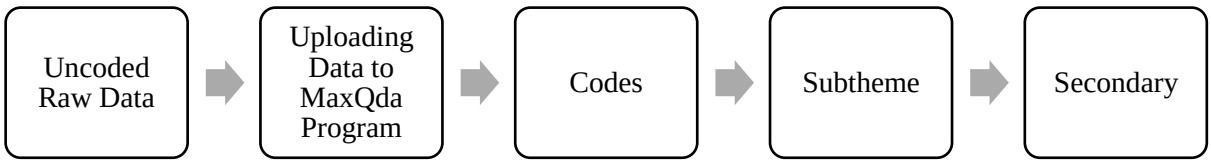

Figure 1. Data Analysis Coding System

First, the data of the online interview recorded in accordance with the application in Figure 1 was transferred to the computer environment. Afterwards, the raw data transferred to the computer environment were read with great care and the opinions of the students in the study group were coded. Secondly, the coded student opinions were gathered under common sub-themes. In the last stage, the sub-themes were combined under the themes based on the questions in the sub-problems of the research. In the direct quotations, the coding was stated as "S1, S2…" according to the priority of the interview with the students.

Validity and Reliability

In qualitative research, the concepts of validity and reliability are related to the concepts of credibility, confirmability, transferability and consistency. (Thorne, 1997). The researcher takes some precautions to ensure the validity and reliability of the research. In this study, some precautions were taken by the researchers to ensure validity and reliability.

In the research, depth-focused data collection method was preferred for the credibility. In order to collect depth-focused data, the researchers extended the time of interviews, archived the recordings of the interviews by obtaining the necessary permissions, and turned the interview records into written documents. It was tried to increase the credibility of the research by quoting directly from the interview. In addition, the consistency of the findings with the conceptual framework was checked.

The research process (details of working group characteristics, data collection and analysis) has been described in detail because the research can be transferable.

For the confirmability factor, the findings and results obtained from the research were read to three students who were randomly selected among the students in the study group. Afterwards, these students were asked whether the data obtained were consistent with the answers they gave to the questions in the interview form, and whether they reflected what they wanted to express, and their confirmations were obtained. In addition, the raw data of the research were also stored.

Content and face validity were provided for the consistency factor. In addition, throughout the process, the researchers carried out the stages of the research design, data collection and analysis, revealing the findings, reporting the results, and provided feedback to each other by constantly checking the stages. Apart from this process called peer assessment, for the consistency factor, the researchers conducted data analyzes simultaneously and tried to ensure the consistency of the analysis results by trying to agree on common codes and sub-themes. Content and face validity were provided for the consistency factor. Miles and Huberman's (1994) Reliability Level = Number of Agreements / Number of Agreements + Disagreements formula was used to determine the consistency coefficient. The reliability coefficient was determined as 330 / 330 + 6 = 0.98, since the number of agreed themes, sub-themes and codes was 330 and there were 6 codes that could not be agreed between the two researchers. The researchers met once again for the codes, on which they could not agree, returned to the raw data and repeated the analysis process together, and gave these codes their final form.

Findings

While finding the main idea of the subject of the texts you listen/watch or read, do you think there are differences in distance education courses compared to the courses in the classroom? Please explain the reasons.

Table 1. Students' Opinions on Distance Education in Activities for Finding the Topic and Main Idea

	f	Percentage
Face to face education	7	25,00
Distance Learning	6	21,43
Those who do not think there is a significant difference	15	53,57
TOTAL	28	100,00

When Table 1 is examined, the interviewed students state that learning environments do not have a significant effect on their performance in activities for determining the subject and main idea. It can be said that the distribution of students who think that distance education or face-to-face education affects learning performance is equal.

Students who think that distance education is more beneficial in determining the subject or main idea claim that the distance education environment makes them feel less peer pressure and thus they give their answers more easily. “I think I am more successful in distance education. In face-to-face training, my friends can laugh at my answer” (S 6).

Another reason for students who prefer distance education is that there are fewer distracting factors in the distance education environment compared to the classroom environment: “I think I am more successful in distance education. Because the sound coming from outside in the classroom environment, etc. factors affected more negatively” (S 13).

Students, who think that face-to-face education is more beneficial in determining the subject or main idea, mostly avoided giving reasons. Only one student gave a reason for his choice. The reason given is that distance education causes distraction in such activities: “I think I am more successful in face-to-face education. Because I get more distracted in distance education” (S 8).

Another remarkable data of Table 1 is that 54 percent of the students did not find a significant difference in performance in activities based on topic and main idea determination in distance education or face-to-face education courses. Accordingly, the fact that students do not choose an option is a positive indicator for the efficiency of the distance education courses.

Table 2. Code Distribution of Positive and Negative Aspects of Distance Education Compared to Face-to-Face Education in Questions Regarding Comprehension Skills in Activities

	f	Percentage
Positive Aspects of Distance Education Compared to Face-to-Face Education	18	75,00
Negative Aspects of Distance Education Compared to Face-to-Face Education	6	25,00
TOTAL	24	100,00

In answering the questions about listening/watching and reading texts, the students mentioned 7 different titles and 18 codes of distance education compared to face-to-face education. 5 negative situations are included in 6 codes. The positive/negative features of distance education compared to face-to-face education in questions about students' comprehension skills are shown in Table 3:

Table 3. Codes and Frequencies of Positive/Negative Aspects of Distance Education Compared to Face-to-Face Education in Activities Where Questions about Comprehension are Answered

Codes related to positive aspects	f	Percentage
More effective use of technology	5	27,78
Quieter Learning Environment	4	22,22
Time Saving Situations (Attendance Class Management etc.)	2	11,11
Making it Easier to Focus on the Lesson	2	11,11
Absence of Physical Problems (Preparation, Being Late, Carrying Bags)	2	11,11
Capable of appealing to more senses	1	5,56
Making Class Participation Easier and Systematic	1	5,56
Easy Access to Online Dictionaries such as TDK	1	5,56
TOTAL	18	100,00
Codes related to negative aspects	f	Percentage
lack of social contact	2	33,33
Ineffective use of body language	1	16,67
More easily distracted	1	16,67
More teacher support	1	16,67
Health problems (headache, backache, neck pain...)	1	16,67
TOTAL	6	100,00

Students answered questions about comprehension skills in distance education. They state that they can benefit more from technology in distance education, and learning environments are quieter than classroom environments. Also, they asserted that they are provided stimulus for learning during problem solving. In addition, although they are not directly related to question-answer activities, they stated that they do not have certain time-consuming processes such as classroom management and attendance, and not performing actions such as preparing for school, preparing and carrying materials, by associating them with this question. This is an indication that students are aware of the positive and negative outcomes of distance education and face-to-face education.

In the question-answer activities, the students expressed the negative features of distance education compared to face-to-face education with 5 different codes. Social interaction is at a higher level in face-to-face education. Due to the fact that distance education is a static process, the presence of head, neck, waist, eye disorders, and the fact that the effect of body language on learning is less in distance education are the findings that can be attributed not only to the question-answer activity but to the whole process.

The preference of the students in vocabulary-oriented activities was mainly in favor of distance education courses:

Table 4. Educational Environments Preferred by Students in Vocabulary Activities

	f	Percentage
Distance Education	25	78,13
I Don't Think There is a Significant Difference	6	18,75
Face to Face Education	1	3,13
TOTAL	32	100,00

Contrary to the fact that the preferences between distance and face-to-face education were equal in the previous questions, students preferred distance education predominantly in vocabulary-oriented activities. This situation shows that students make a judgment by taking into account every positive/negative situation presented by distance and face-to-face education environments in each of the in-class activities and they do not generalize. It is understood from the data in Table 4 that the target acquisitions for the vocabulary of distance education and the opportunities it offers for studies are more functional. The reasons why students prefer distance education are given in Table 5:

Table 5. Reasons for Students to Prefer Distance Education in Vocabulary Activities

	f	Percentage
More Functional Use of Electronic Dictionaries	14	56,00
The Unlimited Content of E-Resources According to Printed Materials	4	16,00
Difficulty Carrying Printed Dictionaries or Forgotten Dictionaries	4	16,00
Preventing Dictionary Diversity (Word, Idiom, Proverb, Dictation)	3	12,00
TOTAL	25	100,00

Vocabulary studies are a process that can be carried out with more diverse sources in terms of the wide range of vocabulary elements. In this respect, from the student's point of view, for a vocabulary study in face-to-face education, the student should have many materials such as words, idioms, proverbs, dictionaries and spelling book. It is a difficult situation for students to carry these materials around with them in every lesson and to spend effort to carry dictionaries along with other materials. In addition, the fact that there is the factor of “forgetting” due to age is another factor that will prevent every student from actively participating in these activities in the classroom. Students are

also less likely to access vocabulary elements in printed materials when compared to online dictionaries. In distance education, it is possible to reach the desired vocabulary element by means of many databases, especially the online dictionaries offered by TDK. This also guides how students can benefit from secure and official e-resources. The Turkish Curriculum (2019) has the following objectives regarding this issue:

T.4.3.35. Uses information resources effectively. (Information on how to use the contents of the printed and digital contents and the dictionary section to access the information is given.

T.5.3.29. Interrogate the reliability of information sources. (It is emphasized that sites with "edu" and "gov" extensions are mainly used in scientific studies.)

T.6.3.33. Uses information resources effectively.

T.6.3.34. Interrogate the reliability of information sources. a) The reliability of internet/written (magazine, book, brochure, newspaper, etc.) sources is questioned. b) It is emphasized that sites with "edu" and "gov" extensions are mainly used in scientific studies.

T.7.3.33. Interrogate the reliability of information sources. a) The reliability of internet/written (magazine, book, brochure, newspaper, etc.) sources is questioned.

T.8.3.31. Interrogate the reliability of information sources. a) Studies are carried out on the reliability of the information on the blog and personal web pages (MEB, 2019).

Therefore, the distance education environment also contributes to the acquisition of the above target objectives. Being aware of these opportunities offered by distance education, students preferred distance education in vocabulary activities.

The predominant preference of the students was face-to-face education in terms of which learning environment they learned more efficiently:

Table 6. Students' Learning Environment Preferences in Terms of Comprehension Efficiency

	f	Percentage
Distance education	13	54,17
I Don't Think There is a Significant Difference	7	29,17
Face to face education	4	16,67
TOTAL	24	100,00

While 54 percent of the students state that face-to-face education is more efficient in terms of comprehension skills, the rate of those who prefer distance education or think that there is no significant difference between the two is 46 percent.

Table 7. Reasons for Students to Prefer Face-to-face and Distance Education Environments in Terms of Efficiency in Comprehension Skills

Reasons for Preferring Face-to-Face Education	f	Percentage
Establishing a Healthier Communication with the Teacher	3	27,27
The Teacher's Active Use of Body Language	3	27,27
Having Social Interaction	3	27,27
Easier to Ask Questions	1	9,09
A More Disciplined Process	1	9,09
TOTAL	11	100,00
Reasons for Preferring Distance Education	f	Percentage
Having a Quieter Educational Environment	9	56,25
No Vision and Hearing (Teacher, Blackboard...) Problems	5	31,25
Easier to Take Instant Notes	1	6,25
Allocating Saved Time to Studying and Repetition	1	6,25
TOTAL	16	100,00

According to Table 7, the main factors in preferring face-to-face education in terms of comprehension skills are healthier communication and the effectiveness of body language. The main factor of these reasons is that both are stimulating to learning. Students interact more intensely with their peers and teachers due to being together in a physical environment. In a multi-stimulus educational environment, students become active subjects rather than being the object of theoretical teachings through visual, linguistic and auditory tools. This supports learning positively (Sever, 2011).

The reason why distance education is more efficient in comprehension skill is that most distance education offers a quieter learning environment. The students state that the noise that comes from inside and outside the classroom in face-to-face education negatively affects their comprehension processes. This situation also reveals that the social interaction of the students and the sounds that will emerge during this time can be interpreted differently by the students as positive or negative. While students who are more inclined towards social interaction do not perceive the sounds in the educational environment as a problem for learning, students who are more introverted and willing to learn individually; perceive voices coming from the inside and outside of classroom as an obstacle to understanding.

The second important reason put forward by students who prefer distance education is communication problems arising from the physical environment. For example, in a face-to-face education environment, there will be students who are closer to the blackboard and the teacher, as well as students sitting in the back rows who will have problems with vision and hearing. In distance education, each student's own screen and sound system prevents students from negatively affecting each other physically.

Other reasons of students who think that distance education is more beneficial in the understanding process are related to time savings and the conveniences offered by technology. For example, students state that, as an advantage of distance education, they can understand the target subject better by allocating time for repetition and practice immediately after a finished lesson. This situation is considered as an opportunity for students to reinforce the target topic after the lesson, since the time to be allocated for transportation and preparation in face-to-face education is not available in distance education.

Table 8. Educational Environment Preferences for Students' Speaking Skills

	f	Percentage
Distance Education	15	65,22
Face to Face Education	5	21,74
I Don't Think There is a Significant Difference	3	13,04
TOTAL	23	100,00

In terms of speaking skills, the students' predominant preference (.65) was to talk in a distance education environment. Students who think that speaking is more efficient and preferable in face-to-face education correspond to one-third of those who prefer distance education. Three students stated that there was no significant factor that would affect their individual performance between the two educational environments. The situations and frequencies that are effective in the preferences of the students are as in Table 9:

Table 9. Educational Environment Frequencies in which Students want to demonstrate their Speaking Skill

Face to face education	f	Percentage
Reflecting Body Language Effectively	2	50,00
Getting Feedback from the Body Language of the Audience	2	50,00
TOTAL	4	100,00
Distance education	f	Percentage
Less Stress and Excitement	14	100,00
TOTAL	14	100,00

Students who preferred distance education stated that they felt embarrassed, excited and stressed because they were afraid of the reactions of their peers during speaking activities. For this reason, they stated that they could speak more comfortably in distance education courses. On the other hand, students who prefer face-to-face education for speaking activities base their preferences on two reasons. The students stated that they have the opportunity to receive feedback from both their teachers and peers about their speaking in face-to-face education (S 3, 20, 25), and that they can also use their gestures and facial expressions more easily in speaking activities in face-to-face lessons (S 10, 13, 14). All three reasons put forward are important factors affecting the success of the speaking process. According to their cognitive and affective readiness levels, the students stated their preferences by considering which educational environment provided the opportunity they needed.

Students with high affective readiness especially intend to make eye contact with the audience, express themselves more effectively with their body language, and get feedback about their speech with the body language of the audience. Students with insufficient affective readiness try to cope with this pressure by not having a visual interaction with the audience, so they think that the distance education environment is more preferable for speaking.

Table 10. Educational Environment Frequencies in which Students want to demonstrate their Writing Skills

	f	Percentage
Distance Education	9	37,50
I Don't Think There is a Significant Difference	8	33,33
Face to face education	7	29,17
TOTAL	24	100,00

According to Table 10, there is an equivalence in the distribution of students who think that there is a significant difference between the educational environments for writing skills and those who do not. In this respect, there was no factor put forward by approximately 70% of the students regarding writing in distance education. The reasons and frequencies for students to choose face-to-face or distance education environment for their writing skills are given in Table 11:

Table 11. Frequencies of Educational Environment in which Students Want to Demonstrate their Writing Skill

Face to face education	f	Percentage
Social Interaction and Group Writing	4	66,67
Easier to Focus on Writing	2	33,33
TOTAL	6	100,00
Distance education	f	Percentage
Easier to Focus on Writing	5	50,00
No Peer Pressure	5	50,00
TOTAL	10	100,00

The main reason for students, who prefer face-to-face education environment in writing skills, as well as in speaking skills, is to interact with the group. They justified their choices by expressing that it is important to get support both through social interaction with their peers and with group writing activities by means of face-to-face training in the writing process. Another remarkable point in the table is that there are students who think that both face-to-face education and distance education provide a basis for focusing on writing. The reason for this is the individual differences of the students. Students who are more willing to work in groups and cooperation prefer face-to-face education to write story, composition etc. however, students who are more focused on individual studies think that distance education is more efficient in writing because the distance education environment is quieter and the interaction area with their peers is relatively low.

In general, students were asked to write down five advantageous aspects of both learning environments over the other. The advantages stated by the students are shown in Tables 12 and 13.

Table 12. Advantages of Distance Education Compared to Face-to-Face Education

	f	Percentage
Faster and Easier Access to Information	16	18,18
Absence of Preparing for School, Transportation and Climate-related Problems	12	13,64
Absence of some Problems (Carrying or Forgetting Educational Materials)	11	12,50
Saving Time	10	11,36
Easier to Focus	8	9,09
Having a Quieter Learning Environment	8	9,09
Higher Efficiency in Narrative Skills	6	6,82
Controlling Emotions (Anxiety, Fear, Excitement etc.)	4	4,55
Being More Efficient	4	4,55
Eating During Class	4	4,55
More Opportunity to Benefit from Technology in Learning	3	3,41
More Benefit From The Teacher' Knowledge and Experience	1	1,14
Allocating more time for the Family	1	1,14
TOTAL	88	100,00

According to Table 12, the most frequently mentioned aspect of distance education is access to information more quickly and easily. There are other positive aspects of the digital content offered. For example, there are no problems due to forgetting the materials. In addition, 13.84 percent of the students stated that they were aware of and expressed that they did not experience situations such as preparing to go to school, spending time and money on transportation, and being exposed to the negative effects of the climate. 12.5 percent of the students state that they can spare more time for learning in distance education and they see this as an advantage. Another prominent feature of distance education is that it has a quieter environment, therefore it is easier to focus on the lesson and it is thought that the lessons are more productive. Another factor of the mentioned efficiency is that students do not feel fear, excitement, etc. at a level that negatively affects their performance in distance education.

Table 13. Advantages of Face-to-face Education Compared to Distance Education

	f	Percentage
The Contribution of Social Interaction and Group Activities to Learning	16	28,57
Being More Efficient	11	19,64
Effective Use of Body Language	7	12,50
Easier to Focus	7	12,50
Being Physiologically Healthier	5	8,93
More Benefit From The Teacher' Knowledge and Experience	3	5,36
Lessons are not in the Late Hours	3	5,36
Higher Motivation	2	3,57
Easy Communication	2	3,57
TOTAL	56	100,00

When asked about the advantageous aspects of face-to-face education compared to distance education, students cited social interaction with a rate of 28.57 percent and stated that group activities also have an important share in learning. In this respect, when the views presented by the students are considered in general, it is possible to say that the biggest shortcomings of distance education are the inadequacy of social interaction, group work and body language.

Conclusion, Suggestion and Discussion

In this research, it is aimed to analyze students' thoughts about the efficiency of distance and face-to-face education environments in terms of four basic language skills. Thus, the functionality of both educational environments in terms of target objectives and activities in Turkish teaching was determined by those who experienced the process themselves. Based on the findings, it was concluded that distance education is more preferable for the students in terms of certain activities of the Turkish course, the technical opportunities it provides support the students more in achieving the target objectives, save time or relieve the burden.

Another issue is related to the fact that the sudden emergence of the epidemic process necessitates distance education despite the lack of sufficient equipment, and the technical problems experienced at the beginning make the efficiency of distance education debatable. Another question that the study searched for an answer is to reveal how much the functionality of distance education is compatible with the common perception of the public in terms of Turkish teaching processes and the thoughts of the students. However, in terms of physical conditions, face-to-face education (crowded, noisy, stuffy classrooms, etc.) has many negative effects on learning. For this reason, students were asked to reveal their thoughts about educational environments without considering the factors that negatively affect communication in both educational environments.

In this study, the strengths and weaknesses of distance education in the Turkish teaching process were tried to be determined based on the opinions of middle school students. In the interviews, questions were asked about the four basic language skills and the activities carried out to acquire them. In this respect, the study has two aspects in terms of past and future determinations and suggestions: Based on the activities so far in the distance education environment for the past, the strengths, weaknesses and improvable aspects of Turkish teaching in terms of skills have been revealed by comparing them with face-to-face education. Thus, determinations were made about the current situation of Turkish teaching in the distance education environment.

The fact that the Ministry of National Education plans to continue distance education, where there is a sudden and compulsory transition, after the epidemic reveals that a mixed (hybrid) education model will be adopted (CNN TÜRK, 2021). It is aimed to contribute to this mixed process by revealing the strengths and improvable aspects of distance education in terms of language skills

and learning activities during Turkish education, where distance education and face-to-face education are carried out together. This constitutes an important part of the study for the future of Turkish teaching in distance education. In this direction, in the light of the findings obtained in the research, the following conclusions were reached:

The preferability and efficiency of distance education in Turkish teaching is equivalent to face-to-face education for students.

In fact, many students stated that there was no significant difference between face-to-face and distance education environments, and therefore they did not make a choice. In the light of some positive and negative reasons for both learning environments, students' educational environment preferences show flexibility. While answering the questions about the texts in comprehension skill, the students expressed the positive features of distance education compared to face-to-face education with a frequency percentage of .75 under 8 different headings, while they mentioned the negative features at a rate of .25 and under 5 headings. These data, which are in favor of face-to-face education, have been in the direction of preferring distance education more clearly in the activities of comprehension skill on vocabulary. 78 percent of the students stated that distance education is more functional in vocabulary activities, 18.75 percent stated that there is no significant difference between the two education environments, and 3.13 percent stated that face-to-face education is more efficient than distance education. The main reason why distance education is so preferred in vocabulary studies is that digital resources are both easily accessible and more in number than printed resources. Pınar and Dönel Akgül (2020) reached similar research results regarding the discipline of science, and students stated that accessing information from multiple sources is an important benefit of distance education. According to another study that obtained data from teachers, distance education contributes such as not staying away from students' educational activities, supporting individual learning, independence from time and place, causing loss of motivation, creating inequality of opportunity, infrastructural problems, lack of feedback flow, inadequacy in technology literacy, It has negative features such as lack of socialization and being unsuitable for lessons involving practice (Kaplan & Gülden, 2021, p. 256).

Students have to bring word, idiom, proverb dictionaries and a spelling guide for vocabulary studies in face-to-face education. This creates a physical burden on students. Moreover, when even one of these tools is forgotten, students cannot actively participate in vocabulary studies. The probability of not being able to access the dictionary units they seek in these resources is higher in printed dictionaries than in digital content offered by distance education. In this respect, another reason why students prefer distance education is that these resources create a physical burden for them considering that these resources will be carried to school together with other materials, especially textbooks. On the other hand, it is much easier for students to find what they are looking

for in digital resources. The data of this study overlap with the data obtained in the studies of Nalyvaiko, Adzhva, and Sarhsian (2020), which aimed to reveal the strengths of distance education. Similarly, Bagapova, Kobilova and Yuldasheva's (2020) results in this study are consistent with the results that they have achieved regarding distance education, such as saving time and energy, and individual learning environment contributing to learning.

In terms of general efficiency in comprehension skills, the majority of students (.54) is in favor of face-to-face education. 29 percent of distance education; The rate of those who think that there is no certain difference between the two is around 17 percent. In the light of the data presented so far, the following judgment can be made: Although the students thought that distance education and face-to-face education affect learning equally in certain comprehension activities, and even they expressed the opinion that distance education is more functional in some activities, face-to-face education is predominantly preferred in terms of efficiency in comprehension skills. Students stated that face-to-face education is more productive than distance education for the main reasons such as better communication, easier observation of the teacher's body language, and more social interaction with the teacher and their peers. At the same time, students claimed that asking questions is easier in face-to-face education. These data obtained are consistent with the results of similar studies (Akyıldız, 2020, p. 330; Oliveira, Penedo, and Pereira, 2018, p. 148; Pınar and Akgül, 2020).

On the other hand, distance education has the following positive aspects compared to face-to-face education: The fact that it is a quieter learning environment is a factor that facilitates understanding, and situations such as not being able to see and hear the teacher and the blackboard in face-to-face education (unless there are technical problems) are not experienced in distance education. At the same time, it is less likely in distance education that the attention given to understanding the lesson is distracted by note-taking or that some points are missed during note-taking. Because students have the opportunity to record the course content in a short time by taking screenshots. On the other hand, according to what the students stated, the time that should be allocated for transportation and preparing for school contributes to understanding by using it for the repetition of the subject at the end of a course completed in distance education. Distance education offers more time to focus and study; It has also been found in similar studies that it offers opportunities to cope with negative emotions such as excitement, fear, and anxiety more easily (Karata and Tuncer, 2020, p. 26).

Based on these evaluations, it can be concluded that the distance education environment cannot be considered as an alternative to face-to-face education in terms of comprehension skills, but that distance education will further increase the efficiency in the comprehension processes with a complementary function to face-to-face education.

According to the data obtained in terms of speaking skills, it is possible to say in general that students who feel peer pressure more consider distance education as an opportunity. Students preferred distance education with a rate of 65 percent in speaking skills, while the rate of those who thought that speaking was more efficient in face-to-face education remained around 22 percent. There is only one reason why students prefer distance education: Individuals feel less stress and excitement compared to face-to-face education due to less physical interaction with their teachers and peers. Therefore, they perform their speeches more successfully. On the other hand, the reasons of students who think that face-to-face education is more efficient in speaking education are also extremely important. Students preferred face-to-face education in order to benefit from the effect of body language on communication during speaking.

When the educational environments are considered in terms of writing skills, the preference of the students was again in favor of distance education, although not as much as in speaking skills. Students think distance education as a more favorable environment for focusing on writing. Stages such as pre-writing thinking, activating information in long-term memory, and planning for writing are of great importance for writing. In this respect, students think of distance education as an environment where they can perform the mentioned writing steps more easily, as they interact less with their peers. The fact that their friends are not aware of how much time and what kind of writing they write also increases the writing performance of the students by ensuring that they do not feel peer pressure. The data obtained by Karata and Tuncer (2020) on language skills in distance education from English teacher candidates are similar to the results mentioned here regarding the ability to tell. In fact, among the four language skills, writing skill has been the skill that distance education can be applied in the most efficient way.

The most basic reason for students who prefer face-to-face education in the writing process is that they consider peer-teacher interaction as a supporting factor, unlike students who prefer distance education. At the same time, group writing activities are also preferable to face-to-face education for them.

Based on the points mentioned above, it can be said that distance education is preferred more than face-to-face education in terms of narration skills, but it can be said that these two educational environments are not equivalent to each other, but rather in coordination, they will increase the efficiency in Turkish teaching with their features that do not exist in each other. In the light of the data obtained from the researches of Bagapova, Kobilova and Yuldasheva (2020, p. 210), it can be confirmed that the two learning environments can similarly support each other, but not replace each other.

Based on the opinions expressed by the students, it can be said that distance education cannot be an alternative to face-to-face education mainly for the following reasons: Social interaction and

group activities are less; body language remains in a limited functionality. In similar studies (see Vail, 2001), results such as lack of social interaction in distance education or ineffective use of body language were obtained. On the other hand, students who remain stagnant for a long time in distance education experience headaches, backache and neck pain. Therefore, physiological problems constitute another negative aspect of distance education expressed by students. Similarly, there are some physiological problems caused by face-to-face education. Students may be exposed to extreme heat or cold depending on climatic conditions, and they also experience other physiological problems due to the load created by educational materials.

In general, it can be said that the continuation of Turkish lessons together in distance and face-to-face education environments will support the learning-teaching processes from different perspectives. "The preferences between the two teaching environments vary according to the needs of the students, the nature of the subject, and the chosen teaching methods" (Bates, 2005, p. 137). Therefore, it is necessary to benefit from both teaching environments in Turkish teaching according to the methods and techniques to be preferred depending on the needs of the students, the nature of the subject and the structure of the target objectives, based on the data revealed by these and similar studies.

Although many studies dealing with the COVID-19 process for similar purposes mention the difficulty of measurement-evaluation and getting feedback from the students, it can be claimed with a few suggestions that the level of the mentioned difficulties may be as much as in face-to-face education, based on the findings obtained in this study. In the findings of the study, it was stated that distance education is mostly more efficient especially in the speaking skills of the students. It is stated in the Turkish Language Curriculum that multi-focused assessment is essential and that assessment-evaluation practices will be carried out with the active participation of teachers and students (MEB, 2019, p. 6). In this respect, considering the opportunities provided by distance education, a writing assignment requested from the student can be easily delivered to the teacher via e-mail or via the EBA platform. It will be much easier for this assignment to be peer-reviewed by screen sharing in the distance education environment, compared to face-to-face education. In face-to-face education, both budget and time should be allocated for printing and distribution for each student to review an assignment or to provide students with an assessment-evaluation tool.

At the same time, if a portfolio is created, the preservation of printed products will be very difficult compared to digital content. In distance education, on the other hand, the digital writings and handwritten photographs taken by the teacher from the students are classified for each student without worrying about space. It is possible to apply measurement-evaluation tools on the digital platform, to apply on the EBA platform, to prevent the cost of paper and printing, as well as to give feedback to the student instantly and by the system. In addition, web 2.0 tools can be used in distance education.

In face-to-face education, feedback will be given separately through a printed measurement-evaluation tool. This will result in a serious waste of time.

At this point, the main problem is not related to distance education itself, but to teachers and students not being able to reach the guidance services they need in terms of how to use the system more functionally. In a study, it was concluded that the priorities of Turkish teachers were always the textbook and they adhered to it. According to the research, teachers need to turn to different sources when they think that the texts are not suitable for the level of the students or that the activities are insufficient (Kara Özkan, 2021). Therefore, the common habits of teachers are also a factor for the positive or negative perception of distance education. Both making the content richer and providing training to teachers and students so that they can use the distance education environment more effectively will eliminate many criticisms of distance education (Aktan-Acar, Erbaş and Eryaman, 2021; Fidalgo, Thormann, Kulyk, and Lencastre, 2020, 15; Hebebci, Bertiz, and Alan, 2020; Özköse, Arı, and Çakır, 2013; Chakanyuka, Chiome, and Chabaya, 2008). Considering that children's readiness and learning levels are at a high level in terms of digital competence (see Altunbay and Bıçak, 2018), it can be said that students can perform tasks such as applying and sharing their homework and exams over the digital environment without much difficulty.

It is thought that it will be beneficial to continue distance education in vocabulary studies and expression skills. In particular, one aspect of vocabulary studies will be carried out with distance education, and effective use of digital data resources and students' learning of digital research resources will be a step that supports the philosophy of the current curriculum. In addition to this, teaching the narration skills with distance education to a certain extent will create an opportunity for students who prefer to remain passive in these activities by experiencing emotions such as excitement, anxiety and fear. This situation can be recommended especially for 5-6 grade students who are more likely to be affected by the mentioned negative emotions.

The distance education process, which started as a necessity, also carries the potential that many opportunities can arise from a crisis. Distance education, which was mainly used at the university level before the epidemic and which was tried to become widespread, started to be used in all education levels as mentioned. For this reason, it is very important to make distance education as functional as possible, which is thought to be used to a certain extent in the future. The fact that it is not completely clear when the abnormal conditions due to the epidemic will disappear, necessitates making distance education compatible with the principle of being suitable for children as much as possible. For this reason, it is necessary to benefit more from the identified strengths of distance education for the four basic skills and activities of Turkish, and to make the developable aspects more appealing to the target objectives. A distance education environment can be organized with arrangements that will minimize the inadequacy of group work, social interaction and body language,

which is one of the most criticized points of distance education. Turkish course book activities can be arranged in accordance with distance education. For example, activities based on group work can be created directly in speaking activities. By making it compulsory for teachers to use cameras, they can be enabled to use their gestures and facial expressions. According to the results of the research, one of the points that should be noted is how well teachers teach in distance and face-to-face learning processes. For example, the teaching attitude and classroom management to be adopted in these two learning environments are based on very different sensitivities. Therefore, in many studies criticizing the efficiency of distance education, it should be taken into account that the problem may arise from the lack of knowledge and skills required by distance education, and this should be investigated as a separate study. Because distance education; It includes reading lists, assignments, student activities and feedback mechanism, many visual and written materials, online discussion forums, websites and web-based online resources for the relevant course, computer-based assessment-evaluation processes, audio and video clips, animations/simulations and it is a very broad concept that includes other similar media elements (Bates, 2005, p. 138). Therefore, it would not be a correct criticism to come to a conclusion that distance education is inefficient without meeting the requirements of all these and without allowing the teachers to access sufficient equipment about all these elements.

As summarized at the beginning of the study, "distance education" is a concept that has a long history and is in constant change with the development of technological opportunities. Depending on these changes in distance education, which has made its last and radical change in our age, individuals in the learning and teaching process should review their readiness levels according to these changes and have the necessary knowledge and skills. In this respect, while discussing the efficiency of distance education in Turkish lessons, it is necessary to reveal how teachers adapt to this educational environment, how much they can dominate it, how much they can prepare teaching methods-techniques and activities according to the nature of distance education.

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Self-Efficacy Perceptions of Instructors Who Teach Turkish as a Foreign Language on Web 2.0 Rapid Content Development for Educational Purposes

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Abstract

This study aims to examine the self-efficacy of instructors who teach Turkish as a foreign language for educational Web 2.0 rapid content development in terms of various variables. The study consists of 155 instructors who teach Turkish in various institutions. This study, which was designed according to the scanning model, is descriptive field research. The scale developed by Birişçi, Kul, Aksu, Akaslan, and Çelik (2018) was used to determine the self-efficacy of the trainers for Web 2.0 rapid content development for educational purposes. Analysis results indicated no significant differences between the variables of gender, technology use in language teaching before COVID-19, the continuation of distance Turkish teaching after COVID-19, and self-efficacy. A significant difference was detected between the education level of the study group, their experience in the field, distance education experience before Covid-19, and their self-efficacy for Web 2.0 rapid content development. The Covid-19 process raised important awareness in terms of teaching Turkish to foreigners remotely. In the information age, it is very important to increase the awareness and experience of teachers who teach Turkish to foreigners remotely about teaching a foreign language with digital tools.

Keywords: Self-efficacy, Teaching Turkish to foreigners, Distance education, Web 2.0 tools.

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Introduction

The use of technology in education and the integration of technology with educational environments have a long history. The distance education process, which started with the telegraph in the 19th century, continued with teaching by letter and underwent a transformation with the invention of the radio. In the broadcasts made on the radio, the students heard the teacher's voice for the first time and continued their education by listening. The invention of television and the presentation of sound and image in tandem made distance education easier. However, distance education experienced its real transformation with the invention of the internet. This feature of the internet, which provides audio and video communication between people who are far from each other in different parts of the world, has been used effectively and widely in the field of education as well.

Tools such as radio and television used in distance education have some deficiencies in terms of interaction and communication between the producer of the content, the narrator, and the student. These tools are one-way tools where the users consume the ready-made content due to reasons such as the listener or viewer's inability to interfere with the content or to create content. In this respect, these tools are considered within the scope of Web 1.0 technology (Yeşiltaş, 2020). The term Web 2.0 is used to describe more advanced online tools than Web 1.0 tools. The concept of Web 2.0 first emerged as a result of brainstorming during a media session at an international conference (O'Reilly, 2007). With Web 2.0 tools, individuals can produce content without requiring any software knowledge. Rather than passively receiving the information in the environment presented to them, they can share it with the interested parties. Eser (2020) stated that today, teachers use Web 2.0 tools to develop content, which does not require any computer use or software skills. According to Yalman and Başaran (2018), Web 2.0 applications are "technology that facilitates interaction with users in distance education". In addition, these technologies assist teachers and students in creating content, implementing teaching activities, and sharing them with others. Horzum (2010) mentioned that the main focus of Web 1.0 is the information placed on the site by people with technical knowledge, and stated that individuals become web literate thanks to Web 2.0 tools. These opportunities provided by the Web 2.0 tools to the users have brought the educational institutions with them, enabling instructors to produce their own content and use it independently in the classroom environment. Chartrand (2012: 98) stated that social networks (Facebook, YouTube, Twitter, etc.) minimized instructors' problems about lack of materials and students' problems about not being able to access the content instantly in order to improve their language skills outside of the classroom. However, since internet access is mandatory in order to use social networks, considering that individuals without internet access will have problems, Web 2.0 tools with offline use are more advantageous than social networking applications. In both cases, since the teacher and student interaction are possible, teaching activities outside the classroom and assigning tasks to students in different environments are important practices in terms of foreign language teaching.

Web 2.0 tools are not media where information is transferred as it is. These tools also require the application of the given knowledge by the student. In this respect, they also provide students with an environment where they practice the things they have learned by moving them beyond a position where they only receive and memorize information. However, the effective use of these tools depends on teachers' ability to use them (Alhassan, 2017). In order to fully integrate Web 2.0 tools into the classroom environment and curricula, existing traditional understanding and tools should be transformed, and the teacher should have a facilitating and guiding position in the use of these tools. When creating content for online tools and designing activities for this content, tutorials or content developers should consider the level and readiness of the target audience. Teachers should be able to choose technological tools suitable for their students' levels and follow new technologies to use them in the classroom (Wright and Akgündüz, 2018). In our age, information is easily accessible and can be shared quickly. These developments have also facilitated the coordination of work, time management, and personal development (Say and Yıldırım, 2020). Therefore, besides the general pedagogical principles and the criteria of foreign language teaching, students' technological literacy, their technological infrastructure and equipment, and cultural elements should also be taken into consideration in teaching Turkish as a foreign language. In addition, it is important for instructors to be aware of which online application and in which skill area should be utilized. Tanrıkulu (2021) states that language teachers' content development skills and perceptions should be changed by encouraging language teachers and prospective teachers to use digital materials, content development tools, and Web 2.0 environments. In this regard, Dynet, a web-based application developed for teaching English, was reported to be regarded as time-consuming and a great burden by English teachers. However, instructors should have good background knowledge as well as awareness of web-based foreign language teaching practices (Tılfarlıoğlu, 2011). Computer-assisted foreign language teaching or distance learning is very helpful in oral expression, particularly for shy and introverted students, for overcoming these obstacles (Chang, Pearman and Farha, 2012; Kuznetsova and Soomra, 2019).

The skills of teachers to recognize, use and create content for online tools are now a necessity in the 21st century in terms of bringing technology to educational environments. Teachers have started to follow and learn new practices in order to attract the attention of a new generation of students (Onbaşılı, 2020). There are significant differences between the expectations of an individual who was born in and after 2000, both while studying in their mother tongue and while learning a foreign language, and the expectations of an individual who did not receive an education so intertwined with technology. Prensky (2001) defines the generation that grew up with the internet, computers, and other technological tools as digital natives. According to Prensky (2001), digital immigrants are the generation that is familiar with technology (TV, radio, etc.), but not with advanced technology developed in later periods. From this point of view, digital immigrants' learning the

technological language of digital natives and catching their technology is an important requirement. This also applies to trainers, educational institutions, and other relevant stakeholders in educational environments. Although the learning process is unimaginable without a teacher, the role of the teacher has evolved over the last century to situations such as preparing content and guiding students. If the obligations that technological tools bring to the educational environment are not understood well, they may fall into the position of digital immigrants due to the impression that a language different from that of the target audience is spoken. This will lead to failure for teachers, students, and educational institutions. For this reason, teachers' having 21st-century skills in technology topics such as digital tools and innovations (Demirci and Yılmaz, 2021) is believed to help them to teach these skills. If teachers who teach Turkish as a foreign language have these skills, they can teach Turkish in a shorter time. The improvements in teaching on the Internet increase the importance of teachers' self-efficacy for teaching to be realized with these tools (Gömleksiz & Fidan, 2011: 597).

Aim

1. The purpose of this study is to determine the self-efficacy perceptions of instructors who teach Turkish as a foreign language regarding educational Web 2.0 rapid content development and to examine these perceptions in terms of various variables. The sub-problems of the study are as follows:

2. Is there a significant difference between the self-efficacy perceptions of instructors who teach Turkish as a foreign language for Web 2.0 rapid content development and the gender variable?

3. Is there a significant difference between the self-efficacy perceptions of instructors who teach Turkish as a foreign language for Web 2.0 rapid content development and the education level variable?

4. Is there a significant difference between the self-efficacy perceptions of instructors who teach Turkish as a foreign language for Web 2.0 rapid content development and the experience variable?

5. Is there a significant difference between the self-efficacy perceptions of instructors who teach Turkish as a foreign language for Web 2.0 rapid content development and the variable of distance education experience before the COVID-19 outbreak?

6. Is there a significant difference between the self-efficacy perceptions of instructors who teach Turkish as a foreign language for Web 2.0 rapid content development and the variable of receiving training in the use of technology in language teaching?

7. Is there a significant difference between the self-efficacy perceptions of instructors who teach Turkish as a foreign language for Web 2.0 rapid content development and the success of distance teaching of Turkish to foreigners?

8. Is there a significant difference between the self-efficacy perceptions of instructors who teach Turkish as a foreign language for Web 2.0 rapid content development and their willingness to continue teaching Turkish remotely after COVID-19?

Method

Research Design

This study utilized a quantitative design for data collection and analysis. The study is a field study that was designed according to the survey model. The survey model, which is one of the quantitative research models, aims to describe an existing phenomenon as it is (Karasar, 2003).

Study group

The study group of this study consists of 155 instructors who teach Turkish to foreigners at different levels remotely. Table 1 presents the characteristics of the study group.

Table 1. Descriptive characteristics of the study group.

Variables	Group	Frequency (f)	Percentage (%)
Gender	Man	40	25.8
	Woman	115	74.2
	Total	155	100.0
Level of Education	Undergraduate	44	28.4
	Degree	94	60.6
	Doctorate	17	11.0
	Total	155	100.0
Institution	Yunus Emre Institute	14	9.0
	TOMER	96	61.9
	MEB-PIKTES	17	11.0
	Private Course	22	14.2
	Maarif Foundation Schools	6	3.9
	Total	155	100.0
Experience (years)	0-1 years	30	19.4
	2-4 years	80	51.6
	5+ years	45	29.0
	Total	155	100.0
The pre-COVID-19 DTTF Experience	Yes	51	32.9
	No	104	67.1
	Total	155	100.0
Distance Language Teaching Education Experience	Yes	52	33.5
	No	103	66.5
	Total	155	100.0
Perspective on Distance Teaching Turkish to Foreigners	Negative	34	21.9
	Indecisive	28	18.1
	Positive	93	60.0
	Total	155	100.0

Are DTT Materials Sufficient for Foreigners?	Yes	20	12.9
	Partially	51	32.9
	No	84	54.2
	Total	155	100.0
Is DTT to Foreigners successful?	Yes	23	14.8
	I'm undecided	92	59.4
	No	40	25.8
	Total	155	100.0
Should DTT to Foreigners Continue after Covid-19 as well?	Yes	83	53.5
	I'm undecided	19	12.3
	No	53	34.2
	Total	155	100.0

The study group of the present study consisted of 40 men (28.8%) and 115 (74.2%) women. Of all the participants, 44 (28.4%) had an undergraduate degree, 94 (60.6%) had a master's degree, and 17 (11.0%) had a doctoral degree. In addition, 14 (9.0%) of the participants worked in Yunus Emre Institutes, 96 (61.9%) worked in TÖMER, 17 (11.0%) worked in PIKTES project, and 6 (3.9%) worked in Maarif Foundation Schools in Turkey. As for years of experience in the profession, 30 (19.4%) participants had 0-1 years, 80 (51.6%) participants had 2-4 years, and 45 (29.0%) participants had more than 5 years of experience. In addition, 104 (67.1%) participating instructors did not have any experience in distance education experience in teaching Turkish to foreigners before the COVID-19 pandemic, and 103 instructors (66.5%) did not have any training on distance foreign language teaching. While 93 instructors (60%) approached the distance education of Turkish to foreigners positively, 84 instructors (54.2%) stated that the materials developed for distance education of Turkish to foreigners were insufficient. While a significant portion of the instructors (59.4%) was undecided about the success of distance teaching of Turkish to foreigners, 83 (53.5%) of the instructors defended the view that the Turkish language should continue with distance education for foreigners after the COVID-19 outbreak as well.

Data Collection Tools

The Web 2.0 Rapid Content Development Scale for Determining Self-Efficacy Belief (W2 SEBS), developed by Birişçi, Kul, Aksu, Akaslan, and Çelik (2018), was used as the data collection tool in the study. The validity and reliability of the scale were tested on the data collected from pre-service teachers. There are a total of 21 items in the scale consisting of the sub-scales of preparation of the course content, presentation of the course content, and evaluation of the learning outcomes. According to exploratory factor analysis (EFA) results, 13 items with factor load values ranging from 0.5 to 0.76 constitute the preparing the course content sub-scale, 4 items with factor load values between 0.64 and 0.79 constitute the presentation sub-scale, and 4 items with factor load values between 0.58 and 0.67 constitute the evaluation sub-scale. Internal consistency coefficients were detected as .93 for the preparation sub-scale, .85 for the presentation sub-scale, .84 for the evaluation sub-scale, and .95 for the overall scale. As a result of the confirmatory factor analysis (CFA)

performed after the reliability and validity coefficients of the scale were determined, goodness-of-fit indices of $\chi 2$=516.18, $\chi 2$/df=2.86, RMSEA=0.074, SRMR=0.053, NFI=0.9, CFI=0.94, RFI=0.85 and IFI=0.94 were found. These data show that the goodness-of-fit indices of the scale are at an acceptable level and that the scale is valid and reliable.

The ethics committee application was submitted before the implementation phase of the study. At the meeting numbered 2020/11 in Istanbul Aydın University Social Sciences Ethics Committee, it was unanimously decided that the implementation of the study is ethically appropriate. After the positive result of the ethics committee, the implementation phase was started.

Data Analysis

The data obtained in the study were analyzed using the SPSS 21.0 program to obtain the findings. Frequencies and percentages were used to determine the demographic characteristics of the study group. Before proceeding to the analyses for the sub-problems, the normality analysis of the data was performed, and which of the parametric or non-parametric analysis techniques to be used was determined. Table 2 demonstrates findings of the normality distribution of the data.

Table 2. Findings of the normality analysis of the data.

	Distortion	Skew error	z_skewness	Kurtosis	Kurtosis error	z_ kurtosis
W2SEBS Total score	-.836	.195	-4.287	.382	.387	.987

There are many ways to test the normality of the data in a study. One of these ways is to have the skewness and kurtosis values close to 0. Field (2009) states that when one of the skewness and kurtosis Z scores is greater than 1.96, the data do not show a normal distribution at the 0.05 level. Table 2 shows that the z-score of the kurtosis value is less than 1.96. This finding shows that the data has a normal distribution. For this reason, parametric analysis techniques were used in the analysis of the data. The independent measures t-test was used to test the significance between the scores of two unrelated variables, and the ANOVA test was used to test the significance between the scores of three or more variables. Tukey's multiple comparison technique was used to determine the source of variance between groups.

Findings and Interpretation

The findings obtained from the analyses regarding the problems of the study are presented below.

Findings related to the first problem: The t-test results of the scores were used for the first problem of the study. Findings are demonstrated in Table 3.

Table 3. The scores of instructors who teach Turkish as a foreign language (W2SEBS) and the t-test results for the gender variable.

Gender	N	$\overline{X}$	S	sd	t	p
Female	115	82.06	19.68	153	1.135	.258
Male	40	78.07	17.60			

As is shown in Table 3, Web 2.0 rapid content development self-efficacy beliefs of female instructors are 82.06, while those of male teachers are 78.07. Independent measures t-test was used to determine whether there was a significant difference between these scores in terms of the gender variable. Analysis results indicated no significant difference in terms of the gender variable (p>.05). Although the number of female teachers (N=115) participating in the study was higher than the number of male teachers (N=40), the self-efficacy mean scores were found to be quite close to each other. Based on this finding, it can be said that female instructors who teach Turkish as a foreign language have higher rapid content development self-efficacy in Web 2.0 tools.

Findings related to the second problem: The results of the ANOVA test of the scores were used for the second problem of the study. The source of the significant difference between the groups was tested with the Tukey test. Findings are given in Table 4.

Table 4. The scores of instructors who teach Turkish as a foreign language (W2SEBS) and the ANOVA test results for the education level variable.

Level of education	N	$\overline{X}$	S	sd	F	p	Significant difference between groups (Tukey)
Graduate	44	74.29	20.20	2-152	4.323	.015*	1-2
Postgraduate	94	84.36	17.16				
Doctorate	17	80.11	23.33				
Total	155	81.03	19.19				

*p<.05 significant

As is shown in Table 4, the ANOVA test was used to determine whether there was a significant difference between the total scores (W2SEBS) and the instructors' education level. According to ANOVA test results, the W2SEBS mean scores were 74.29 for the instructors who had an undergraduate degree; 84.36 for the instructors who had a master's degree, and 80.11 for instructors who had a doctoral degree. The self-efficacy beliefs of instructors who had postgraduate a degree were found to be higher than those of instructors who graduated from other education levels. Although the number of doctoral graduates was low, their mean score close to that of the master's graduate teachers can be explained by the high awareness of distance education as a result of further research at the doctoral level. Web 2.0 rapid content development self-efficacy beliefs of the instructors show a significant difference (F(2-152)=4.323, p<.011) between graduate and postgraduate teachers. When the arithmetic mean scores were examined, this difference was found to be in favor of

postgraduates (84.36). The graph regarding the difference between the education levels of the instructors and their Web 2.0 rapid content development self-efficacy scores is given in Figure 1.

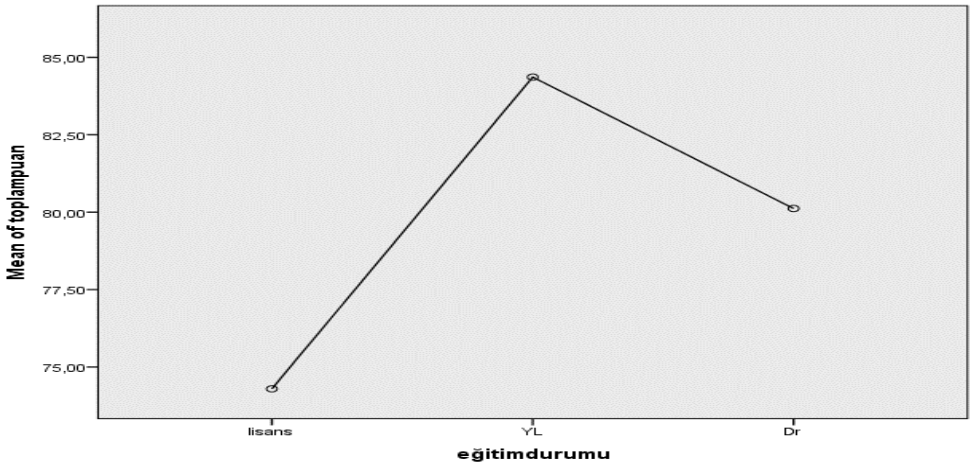

Figure 1. The relationship between the W2SEBS scores of the teachers and their education levels.

Findings related to the third problem: The ANOVA test results were used for the third problem of the study. The source of the significant difference between the groups was tested with the Tukey test. Findings are given in Table 5.

Table 5. The scores of instructors who teach Turkish as a foreign language (W2SEBS) and the ANOVA test results for the experience variable.

Experience	N	$\overline{X}$	S	sd	F	p	Significant difference between groups (Tukey)
0-1 years	30	73.20	21.82				
2-4 years	80	82.45	17.78	2-	3.262	.041*	1-3
5+ years	45	83.75	18.82	152			
Total	155	81.03	19.19				

*p<.05 significant

Table 5 shows ANOVA test results regarding the presence of a significant difference between the total scores of the instructors (W2SEBS) and their experiences. According to ANOVA test results, the W2SEBS mean score of the beginner instructors was 73.20; the mean score of the instructors with 2-4 years of experience was 82.45, and the mean score of the instructors with 5 years or more experience was 83.75. A significant difference was detected between the Web 2.0 rapid content development self-efficacy beliefs of the instructors and their experience; the difference was in favor of the instructors with 5 years or more experience (F(2-152)=3.262, p<.050). These findings show that as the experience of instructors teaching Turkish as a foreign language increases, their self-efficacy beliefs in preparing content for Web2.0 tools also increase. It can be said that especially the instructors who have been working for 5 years or more have a high awareness of distance education and are more confident than other instructors in preparing materials and content for online teaching

environments. The relationship between the instructors' experiences and their Web 2.0 rapid content development self-efficacy scores is shown in Figure 2.

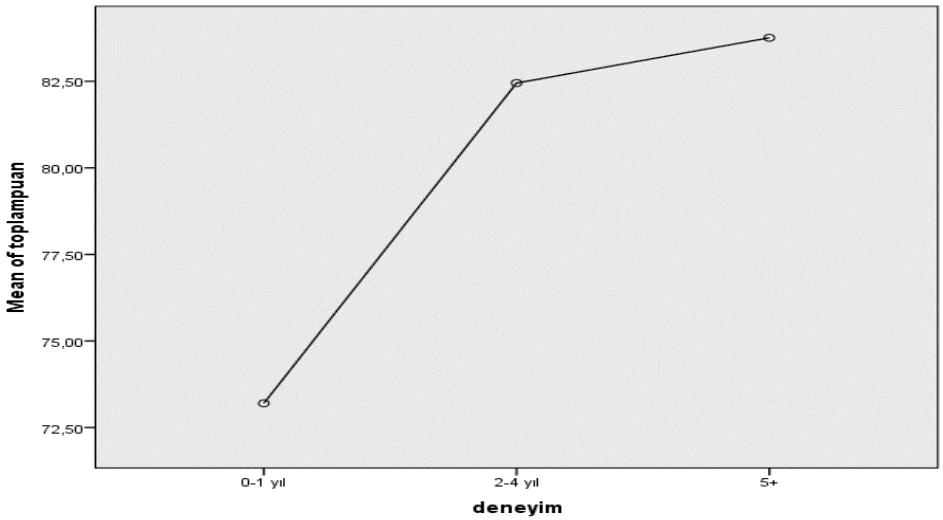

Figure 2. The relationship between the W2OYİÖ scores of the instructors and their experiences.

Findings related to the fourth problem: The t-test results of the scores were used for the fourth problem of the study. Findings are given in Table 6.

Table 6. The scores of instructors who teach Turkish as a foreign language (W2SEBS) and the t-test results regarding the pre-COVID distance education experience variable.

Do you have any pre-COVID distance education experience?	N	$\overline{X}$	S	sd	t	p
Yes	51	86.35	17.44	153	-2.453	.015*
No	104	78.43	19.55			

*p<.05 significant

The distance teaching of Turkish as a foreign language, which was not common before the COVID-19 pandemic, has led to the transition of Turkish to distance education by TÖMERs and other relevant institutions with the global epidemic. After the pandemic, the level of awareness of distance education environments, materials, and other elements has increased considerably in both students and instructors compared to before. Therefore, one of the problems of the study was whether the instructors had distance education experience before the COVID-19 pandemic. The t-test was used to test the difference between the distance education experiences of the instructors before COVID-19 and their (W2SEBS) scores. As Table 6 shows, the number of instructors who had the experience of teaching Turkish as a foreign language remotely (N=51) before the COVID-19 epidemic was 51 while the number of those who had no experience was 104. The mean scores of both groups (W2SEBS) were examined; although the number of those with experience is about half of those without experience, Web 2.0 rapid content development self-efficacy beliefs were higher in those who had experience (86.35) than those without experience (78.43). Analysis results indicated a significant

difference between their beliefs [t(153)=-2.453, p<.015] in favor of those who had pre-COVID-19 experience (W2SEBS). Hence, it can be concluded that the distance education experience enabled the instructors to feel more confident while preparing content in digital environments.

Findings related to the fifth problem: In the fifth problem of the research, t-test was utilized to find out whether there was a significant difference between the Web 2.0 rapid content development self-efficacy of those who taught Turkish as a foreign language and the variable of receiving training in the use of technology in language teaching. Findings related to this are given in Table 7.

Table 7. Self-efficacy scores of instructors who teach Turkish as a foreign language (W2SEBS) and t-test results for the receiving training in the use of technology in language teaching variable

Receiving training in the use of technology in language teaching	N	$\overline{X}$	S	sd	t	p
Yes	52	84.48	19.41	153	-1.594	.113
No	103	79.30	18.93			

T-test was utilized to test the difference between the Web 2.0 rapid content development self-efficacy beliefs of the instructors and whether they had received training in the use of technology in language teaching. According to Table 7, the number of those who received training in the use of technology in language teaching is 52 and the number of those who did not is 103. When the arithmetic mean scores of the groups were examined, it was found that although the number of those who received training was less than those who did not, the Web 2.0 rapid content development self-efficacy beliefs of the instructors who received training (84.48) were higher than those of instructors who did not (79.30). This finding, which is in favor of those who received training in terms of mean scores, was not high enough to create a significant difference. Table 7 shows no significant difference between the mean scores of those who received training in technology use in language teaching and those who did not [t(153)=-1.594, p>.113]. According to the mean scores, receiving training in the use of technology in language teaching increased the teachers' self-efficacy for Web 2.0 tools, or in general terms, content development for digital environments.

Findings related to the sixth problem: ANOVA test results of the scores were used in the sixth problem of the study. The source of the significant difference between the groups was tested with the Tukey test. Findings are given in Table 8.

Table 8. ANOVA results of the self-efficacy scores of instructors who teach Turkish as a foreign language (W2SEBS) and the success of distance teaching of Turkish to foreigners.

Is distance teaching of Turkish to foreigners successful?	N	$\overline{X}$	S	sd	F	p
Yes	23	86.08	23.41	2-152	1.944	.147
I'm undecided	92	81.70	81.70			
No	40	76.60	86.08			
Total	155	81.03	81.03			

Table 8 presents ANOVA test results regarding the presence of a significant difference between the total scores (W2SEBS) and the success of distance teaching Turkish to foreigners. While 23 of the instructors were found to think that the distance teaching of Turkish as a foreign language was successful, 40 of them thought that it was unsuccessful. The majority of the participating teachers (N=92), on the other hand, stated that they were undecided on this issue. When the mean scores of the groups were examined, the self-efficacy mean scores were found 86.08 in those who found distance teaching of Turkish to foreigners successful, 81.70 in those who were undecided, and 76.60 in those who found it unsuccessful. Although the number of those who found the distance teaching of Turkish to foreigners successful was low in number, this group had the highest Web 2.0 rapid content development self-efficacy beliefs. Based on this finding, it can be concluded that the idea of being successful is a factor that increases self-efficacy. No significant difference was found between the teachers' Web 2.0 rapid content development self-efficacy beliefs and their views on the success of distance teaching of Turkish to foreigners (F(2-152)=1.944, p>. 147). Although the difference was not high enough to make it significant, the perception of being successful increased the self-efficacy belief. The figure of the analysis results is given below.

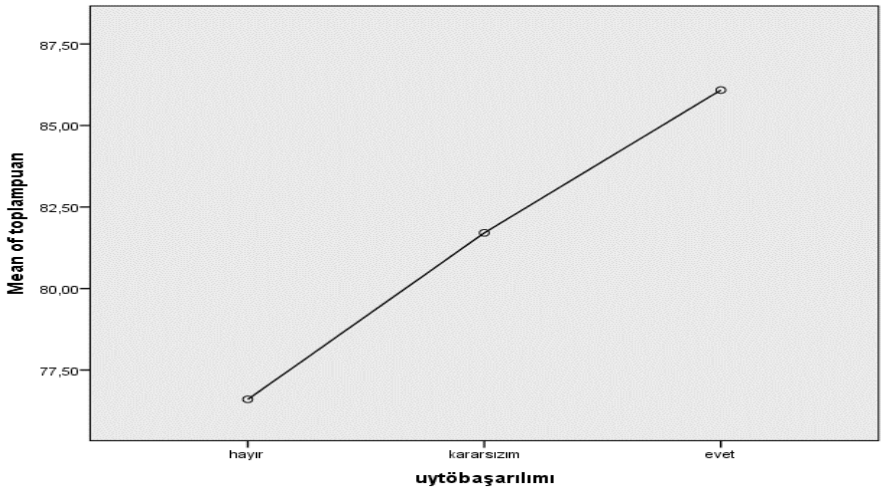

Figure 3. The relationship between the W2SEBS scores of the instructors and the success of distance education of Turkish as a foreign language.

Findings related to the seventh problem: ANOVA test results of the scores were used for the seventh problem of the study. The source of the significant difference between the groups was tested with the Tukey test. Findings are given in Table 9.

Table 9. ANOVA results of self-efficacy scores of instructors who teach Turkish as a foreign language (W2SEBS) and their willingness to continue distance education after COVID-19.

Desire to continue distance education after COVID-19	N	$\overline{X}$	S	sd	F	p	Significant difference between groups (Tukey)
No	53	73.84	22.10	2-152	8.746	.000*	1-3
I'm undecided	19	76.26	19.50				
Yes	83	86.72	15.06				
Total	155	81.03	19.19				

*p<.05 significant

Table 9 demonstrates ANOVA test results on the presence of a significant difference between the total scores (W2SEBS) and instructors' willingness to continue distance teaching of Turkish to foreigners after COVID-19. Of all the participating instructors, 53 did not want to continue distance teaching after the COVID pandemic, 19 were undecided, and most of the study group, 83 instructors, reportedly wanted to continue. When the mean scores for self-efficacy were examined, those who said "yes" were found to have the highest mean score (86.72) and those who said "no" were found to have the lowest mean score (73.84). Whether there was a significant difference between the mean scores was tested with the ANOVA test. According to the analysis results, a significant difference was found between those who did not want to continue distance education after COVID and those who wanted to, in favor of those who said "yes" ($F(2\text{-}152)=8.746$, $p<.000$). It was concluded that the desire to continue distance education positively affected the perception of Web 2.0 rapid content development self-efficacy and increased this belief. The figure for this is given below.

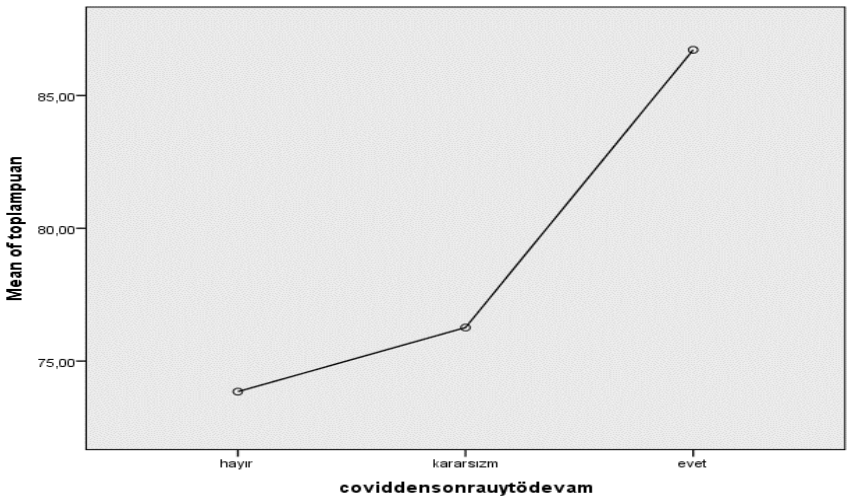

Figure 4. The relationship between the W2SEBS scores of the instructors and their willingness to continue teaching Turkish as a foreign language after COVID-19.

Conclusion and Discussion

The results of this study, which examined the self-efficacy of instructors who teach Turkish as a foreign language for educational Web 2.0 rapid content development, indicated no significant difference between the self-efficacy of the instructors in terms of the gender variable, but according to the mean scores, female teachers had higher self-efficacy (82.06) than male teachers (78.07). In the study conducted with pre-service teachers, Onbaşılı (2020: 104) also reported that gender did not have a significant effect on Web 2.0 tools rapid content development self-efficacy. Meriç (2014) and Sakin and Yıldırım (2019), who examined the technological pedagogical content knowledge self-efficacy of teacher candidates, reported that gender did not make a significant difference in terms of technological pedagogical self-efficacy. The results obtained in this study are similar to the results reported in the literature. Eren, Avcı, and Kapucu (2015) found that the perceptions of teacher candidates' proficiency in developing content for practical tools did not differ significantly according to the gender variable; however, they concluded that women's perception of necessity was higher than that of male candidates. Although the gender variable did not make a significant difference in content preparation, the efficacy perceptions of female instructors were higher than those of males.

Analyses performed according to the education level of the participants, which is another variable of the study, indicated a significant difference between instructors who had an undergraduate degree (74.29) and those who had master's degree, in favor of the participants with master's (84.36) degree; scores of the instructors who had a doctoral degree (80.11) indicated no significant difference. Web 2.0 tools of postgraduate and doctoral level teachers are considered to be higher because the research process starts in postgraduate education and further increases during master's and doctorate education, leading to higher self-efficacy for rapid content development. Eser (2020: 132) reported that as the grade levels of teacher candidates increase, their Web 2.0 rapid content development self-efficacy increases. As the level of education increases, awareness of Web 2.0 tools also increases. This view is supported by the study conducted by Karakuş and Er (2021: 195), indicating that the 21st century skill levels get higher as the education levels and experiences of teachers increase.

The experience of the participants in teaching Turkish to foreigners was also taken as an independent variable in this study. Analysis results indicated a significant difference between those who had been teaching Turkish to foreigners for 5 years or more and those who had just been teaching Turkish for less than 5 years in favor of those who had been teaching for 5 years or more. In other words, as experience increases, rapid content development self-efficacy for Web 2.0 tools also increases positively. In the study examining the relationship between teachers' self-efficacy for Web 2.0 tools and their use of these tools in teaching, Alhassan (2017) determined a negative, significant relationship between teachers' ages and their use of Web 2.0 tools in the teaching process. This result indicates that older teachers use Web 2.0 tools less in the classroom. Kavanoz, Yüksel, and Özcan

(2015) remarked that the self-efficacy perceptions of English preparatory class teachers towards web pedagogical content information did not make a significant difference according to the experience in the profession variable. They stated that it was affected by the fact that the participants had a similar level of knowledge of preparing content for web tools. Keeping up-to-date and improving the knowledge and skills of those who teach Turkish as a foreign language in preparing content for technological tools in faculties and in-service training is important in many respects.

A significant difference was detected between the Web 2.0 rapid content development self-efficacy of the instructors who had distance education experience before the COVID-19 pandemic and the self-efficacy of those who did not have distance education experience, in favor of those who had experience. The instructors with distance education experience seem to adapt to this process quickly and have the potential to be better than other instructors in developing content for Web 2.0 tools.

The number of those who did not receive training on the use of technology in language teaching was 103 and the number of those who received training was 52. Although the number of those who did not receive training was high, no significant difference in Web 2.0 rapid content development self-efficacy between the two groups was a remarkable finding.

There was a significant difference between the Web 2.0 rapid content development self-efficacy scores of those who wanted to continue the compulsory distance education activities after the epidemic and those who did not want to continue. The Web 2.0 rapid content development self-efficacy of those who said “distance education should be continued” after the pandemic was 86.72. Hence, a significant part of the instructors thinks continuing the distance Turkish education is problematic even when the compulsory conditions are eliminated.

Technology, which is encountered in all areas of life, has recently affected human life more directly and strongly. In this regard, educational institutions, classes, students, and instructors; namely, all stakeholders of education have been affected. While this effect has sometimes been positive, sometimes it has brought some problems. The necessity of teaching Turkish as a foreign language in digital environments effectively and efficiently has been understood much better. The web 2.0 tools used in the classroom in the foreign language teaching process were reported to improve the comprehension and expression of language skills of individuals (Mohammed, Assam & Saidi, 2020). Hence, the development of the content becomes prominent by separating it from other processes. Content development for teaching tools is only one step in this process. It is extremely important that this stage is operated well and that the content produced is suitable for the target audience, the pedagogical principles and characteristics of the Turkish language, and the digital environment in which it is given. The relevant departments of universities should enrich teacher education programs with technology-oriented courses, and teacher candidates should be trained with

this awareness. In addition, providing in-service training to the instructors who are currently on duty could also fill an important gap. Thus, it will be ensured that the distance teaching of Turkish as a foreign language is carried out effectively. It is thought that the high self-efficacy and awareness of the instructors will directly affect the content produced and thus the success of the students. However, there is a need for experimental studies to test the accuracy of this view. Moreover, designing the printed materials produced to be adaptable and usable in digital environments will provide an opportunity to prepare Turkish language teaching for future developments today.

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Examining the Programs of Political Parties in terms of the Structure of the Turkish National Education System

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Abstract

Education systems are largely shaped by the policies of political parties. Political parties try to express their policies regarding the structure and functioning of the education system through party programs. As in all countries, policies regarding the education system have an important place in party programs in Turkey. The aim of this study is to examine the programs of political parties in Turkey in terms of the structure of the Turkish National Education System; the aim is to present their views on "Pre-School Education", "Primary Education", "General Secondary Education", "Vocational Technical Secondary Education", "Higher Education" and "Non-Formal Education-Adult Education-Continuous Education". In this context, it is important to express the similarities in the objectives of the political parties regarding the structure of the Turkish Education System. In this study, the qualitative research method was used. The data of the research were collected through document analysis. The study population consisted of all the political parties in The Grand National Assembly of Turkey (GNAT). The sample of the study consists of five political parties selected according to the criterion sampling method, which is one of the purposive sampling methods. These political parties can be listed as follows according to the number of members: 1.Justice and Development Party (JDP), 2.Republican People's Party (RPP) 3.Peoples' Democratic Party (PDP) 4.National Movement Party (NMP) 5.Good Party (GP). The data sources of the study are the party programs of political parties. The documents regarding the party programs were taken from the official websites of the parties. In the context of suitability for the purpose of the study, the documents were analyzed by the content analysis method. The findings of the research are given without adding the researcher's comment, according to the themes and codes created. According to the findings, there are quite a lot of statements about the structure of the Turkish National Education System in the programs of political parties. As a result of the analysis, it has been determined that there are many similarities in the programs of the five parties, although there are many differences in the objectives of the parties regarding the structure of the Turkish Education System.

Keywords: Political Parties, Party Programs, Education, The Turkish National Education System

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Introduction

Political parties are indispensable elements of democracies. The construction and maintenance of democracies depends on political parties. “Strong political parties are essential to open, competitive democratic politics, particularly in emerging democracies” (Johnston, 2005). The primary role of political parties is to set the political agenda and policies. It is in this process of representing the opinions of citizens and acting as the agencies of people‟s political participation that political parties perform the role of intermediaries, facilitating the relationship between citizens and institutions of the states (Chandra, 2021). According to Kurniadi (2019), the political parties as the drivers of the upholding of democracy are means for citizens to participate in the process of managing the state.

Political parties are critical institutions through which citizens organize themselves to participate in public life, among which they choose at elections, and through which elected officials cooperate to build and maintain the coalitions that are the hallmark of democratic politics. They are vital to the realization of representative democracy (European Commission For Democracy Through Law [ECfDTL], 2020). Political parties are organizations that mediate between citizens, civil society and the state (Veljanovska, 2021). According to Özbudun (Esen, 2012), political parties are political communities with a permanent and stable organization that aim to seize and control the government mechanism by gaining the support of the public. The majority of people living in democratic countries around the world believe that political parties are necessary (Holmberg, 2003).

According to the law on political parties (Prime Ministry, 1983), in accordance with the Constitution and laws; they are institutions with legal personality, which aim to reach the level of contemporary civilization in a democratic state and social order by ensuring the formation of national will through their works and open propaganda in line with the views determined in their statutes and programs, through the elections of the president, deputies and local administrations, and which are organized to operate throughout the country.

The first regulation regarding political parties in the Republic of Turkey took place in the 1961 Constitution. As in every country, political parties in the Republic of Turkey derive their power from the people. Therefore, political parties are very sensitive to the needs and demands of the people. One of the most important issues for the public is undoubtedly education. Political parties have to produce policies to meet the needs and demands of the people regarding education. These policies are of great importance in terms of the functioning of the state, the socio-economic development of the country, science, technology, and manpower education.

Benjamin Franklin famously noted that “an investment in knowledge always pays the best interest” (Rauh, Kirchner & Kappe, 2011). In contemporary societies, information plays a primary

role in human activities. (Tataj & Kola, 2021). In fact, a country's endowment with human capital is an important source of economic prosperity. (Rauh, Kirchner & Kappe, 2011). For these reasons, investing in human resources is a must, and education policies play a key role in this process. In this context educational policies must be adapted to the new needs that arise in society as a result of economic, technological, and social developments. (Tataj &Kola, 2021). Education policies have long been understood as the putative domain of the nation state. Sociologists and political scientists, beginning with Max Weber, Emile Durkheim, and John Stuart Mill, recognized that national educational systems arose as part of the apparatus of modern government in the Western world. The discursive and organizational structures of educational policy have importantly and rather steadily shifted to a global level in recent decades (Mundy, Green, Lingard & Verger, 2016).

Political parties are regarded as agents of political socialization. Political socialisation is a process in which people are familiarised with the political culture, political norms and values of their country and these virtues are transferred from one generation to another generation. Public opinion-making is primarily a democratic function of political parties (Chandra, 2021). Party programs have an important effect on these functions. Educational policies are generally perceived as a part of political socialization in the field of education and political science. Political parties integrate different ideas or concerns of general public into a political project, and campaign them in order to check the feedback from the majority (Sirivunnabood, 2016). Party programs are effective in these campaigns.

Turkey has an education system structure that is both relatively large and highly centralized, encompassing more than 1 million teachers and 18 million students in 2018/19 (OECD, 2020). Therefore, as in every country, the education system is of great importance for both the state and society in Turkey. Being aware of this situation, political parties attach great importance to the Turkish Education System and create their education policies accordingly.

Making education policies is considered as one of the main steps for the development of the country (Tataj & Kola, 2021). For over a century, Turkish political parties have reflected both the profound changes and the underlying continuity in the country's political history (Heper & Landau, 2016). This situation has affected the policies of political parties regarding the Turkish Education System.

According to Durkheim (1968), the determination and application of education policies are considered as an important step in society's development (Eren, 2020). It is accepted that party programs directly reflect the processes of determining and implementing policies regarding education.

The programs of political parties are official political documents and are valuable resources in examining the policy priorities and preferences of the parties. There is a historical and universal relationship between politics and education (Varış, 1998). Political parties, which assume the

authority and responsibility of the government, deal with the problems related to the structure of the education system through the policies they determine in their programs; when they come to power, they try to solve it. “Every nation has its own education system. This system is established and developed in accordance with the social, cultural, political and economic characteristics of that society” (Duman, 1991). The education system of a country is the most important indicator of how that country defines itself and what kind of future it prepares for itself (MoNE, 2006). Education systems vary from country to country, depending on the historical background of that country, the educational philosophy prevailing in the country, and cultural and political factors (Türk, 2015)

As in every country, education and politics have always been in a relationship in Turkey. The "Turkish National Education System" was enacted with the National Education Basic Law dated 14 June 1973 and numbered 1739. Since then, the educational policies of political parties have been the subject of constant debate. However, in the literature review, no study was found among the available sources, both abroad and domestically, on the subject of examining the political party programs regarding the general structure of the "Turkish National Education System". However, a limited number of studies examining the programs of political parties related to some educational issues and educational levels have been found in Turkey.

Aydın (1997) has a study called "Education, Teaching and Teachers in Political Party and Government Programs". In the study, the views of the political parties operating from 1908 to 1997 on education, training and teachers in their programs were discussed. In Berber's study "Political Parties and Education Policies in Turkey" (2001), it was researched how and in what form the political parties would try to make educational arrangements in their programs. Güneş and Güneş (2003) in their book "Educational Policies and Civil Society in Turkey" tried to reveal the views on education in the programs of major political parties between 1980 and 2003 and their results in general. In his book titled “Education in the Programs of Political Parties in Turkey”, Yılmaz (2007) brought together only the sections related to “education” of the programs of the political parties that were able to take part in the Grand National Assembly of Turkey between 1923-2007. On the other hand, he gave place to how the parties defined themselves, again based on their own programs. In the study "Primary Education in Political Party Programs" by Bulut and Güven (2010), the regulations aimed by the political parties regarding Primary Education are included. In Tok's study titled "Education Discourses and Policies of Political Parties in Turkey" (2012), when the political parties come to power, what kind of educational activities will carry out for the public, what policies they adopt in the field of education, and what kind of solutions they will produce for current problems are examined. Toprakçı and Güngör (2014), in their study "Educational Policies of Political Parties in Turkey", tried to show comparatively how often the political parties participating in the 2011 general elections in Turkey included concepts embodying education policies or phrases and expressions that characterize them. In his study "Educational Policies According to Political Party Programs", Usta

(2015) examined political party programs in terms of education, and after determining the characteristics of education policies, he included comparisons in terms of basic elements of education. Büyükboyacı (2015), in his study "The Echoes of Educational Policies and Practices in the Turkish Press of the Period of Süleyman Demirel (1965-1971)", revealed what the policies regarding Primary Education and the teaching profession were in the party programs during the Demirel Period (1965-1971). In his study "Educational Policies in the Programs of Political Parties in the Grand National Assembly of Turkey between 1923-1960", Yılmaz (2016a) examined how the political parties that were in the Grand National Assembly of Turkey during the period from the proclamation of the Republic to the 1980 military intervention handled the education-training issue in their programs. In another study titled "Educational Policies in the Programs of Political Parties in in the Grand National Assembly of Turkey between 1983 and 2015", Yılmaz (2016b) examined what the educational policies were in the programs of the parties that took place in in the Grand National Assembly of Turkey after 1980. Erol and Çetin (2020), in their study "Current Education Policies of Political Parties in Turkey", after determining the education policies of political parties in their programs, they tried to reveal the level of implementation of the education policies of the current ruling political party.

Party programs are a road map that includes the policies that the political parties that form the link between the state and the nation want to carry out when they come to power. It is natural that one of the most important topics in party programs in Turkey is "educational policies" (Erol & Çetin, 2020). Countries have their own educational policies. Education policies are aimed at creating a decisive framework for the structure and functioning of the education system. Education policies are important in terms of determining how the education system of a country will be shaped in the future and what should be done about education in that country (Aypay, 2015; Uluğ, 2018).

Government programs are effective in the regulations regarding the Turkish Education System. The foundations of government programs are the programs of the parties that came to power. The programs of political parties in Turkey have been the subject of many academic studies. However, in terms of the general structure of the Turkish Education System (Figure 1), no research has been found in which party programs are examined comprehensively.

In this research, the programs of the political parties that were in the top five in terms of the number of members in the Grand National Assembly of Turkey and had a group in the Grand National Assembly of Turkey in 2021 were examined in terms of the Turkish Education System, and the similarities in the objectives of the parties regarding the structure of the Turkish Education System were tried to be revealed.

In the current situation, this study is important in that it covers the programs of the parties that are in the first place in the government and the Turkish Grand National Assembly, and that these

programs are examined in terms of the general structure of the Turkish Education System, and it is hoped that it will contribute to the researches on education policies.

Purpose of the Research

The aim of this study is to examine the programs of political parties in Turkey in terms of the structure of the Turkish National Education System. Within the framework of this purpose, this study sought to answer the following questions:

1.What are the views of political parties on

a.Pre-Primary Education (Kindergarten and Nursery),

b.Primary Education,

c.General Secondary Education,

d.Vocational and Technical Secondary Education,

e.Higher Education,

f.Non-Formal Education, Adult Education, Continuous Education?

2.What are the similarities in the objectives of the political parties regarding the structure of the Turkish Education System?

Method

In this study, qualitative research method was used. “Qualitative research is an approach to discovering and understanding the meaning individuals or groups attach to a social or human problem” (Creswell & Creswell, 2018). In qualitative research, naturally occurring events are studied in all their complexity (Fraenkel, Wallen & Hyun, 2012).

The data of the research were collected through document analysis. Document analysis includes the analysis of written materials containing information about the phenomenon or cases that are aimed to be investigated (Yıldırım & Şimşek, 2018). In this framework, the programs of political parties were examined as documents. In this study, four main stages were followed in document review: 1)Access to documents, 2)Checking originality, 3)Understanding the documents, 4) Analyzing the data, 5) Interpretation of data.

Population and Sampling

The study population consisted of all the political parties in The Grand National Assembly of Turkey (GNAT). The sample of the research consists of five political parties.

The sample of this study was determined by using criterion sampling described by Patton in purposive sampling. The logic of criterion sampling is to review and study all cases that meet some

predetermined criterion of importance. This approach is common in quality assurance efforts (Patton, 1990; Patton, 2014).

The main criteria for the selection of the political parties that constitute the sample of this study:

1.To be in the top five in terms of the number of members in the GNAT,

2.To have a group in the GNAT in 2021.

These political parties can be listed as follows according to the number of members:

1.Justice and Development Party (JDP)

2.Republican People's Party (RPP)

3.Peoples' Democratic Party (PDP)

4.National Movement Party (NMP)

5.Good Party (GP)

Data Sources

The data sources of the study are the party programs of political parties (JDP, 2021; RPP: 2021; PDP, 2021; NMP, 2021; GP, 2021). The documents regarding the party programs were taken from the official websites of the parties.

Data Analysis

In the context of suitability for the purpose of the study, the documents were analyzed by content analysis method. According to Kuckartz (2014), qualitative content analysis focused on discovering the meaning within texts and analysing their communicative content. In general, content analyses within the social sciences should be considered as a method of analysis, and not as a method of data collection. During the content analysis, long-term and repeated reviews were made.

When the programs of the parties that make up the sample of the research are examined, it is seen that all of them, except PDP's Program, have parts related to "education". For this reason, while the content analysis of only the sections related to "education" in the programs of other parties was carried out, the content analysis of the entire program of PDP was made.

While determining the themes and codes, the following documents were used:

1.The scheme prepared by the Ministry of National Education [MoNE] (2021) for the Turkish National Education System (Figure 1),

2.Concepts related to the "General Structure of the Turkish National Education System" in the Basic Law of National Education [MoNE] (2020),

3.Statements about the education system in party programs.

The basic process in content analysis is to gather similar data within the framework of certain concepts and themes and to interpret them by arranging them in an understandable way (Yıldırım & Şimşek, 2018). Coding is the fundamental analytic process used by the researcher (Corbin, & Strauss, 1990). The resulting codes (concepts) and the relationships (themes) between these codes guided the explanation of the facts underlying the data (Yıldırım & Şimşek, 2018). In order to ensure validity and reliability in qualitative research, all stages of the research should be expressed clear and precise by being consistent in the processes of data collection, data analysis and data interpretation (Özdaş & Çakmak, 2018). In order to ensure reliability in the content analysis process, the principles of stability, reproducibility, and accuracy were followed (Weber, 1989). The findings of the research are given without adding the researcher's comment, according to the themes and codes created. Digitization of research data was used to increase reliability, reduce bias, and make comparisons between coding and themes.

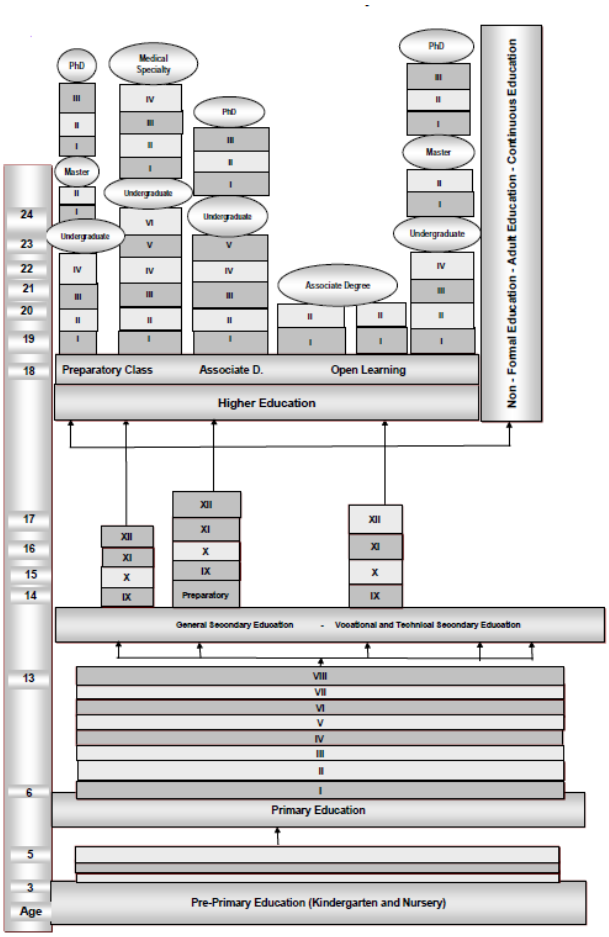

Figure 1. Turkish National Education System (MoNE, 2021)

Information on the themes and codes to be used for content analysis is presented in Table 1.

Table 1.Themes and Codes

Themes	Codes
Pre-Primary Education	Pre-school Kindergarten Nursery Class
Primary Education	Primary School Basic Education
General Secondary Education	Secondary Education, High School Academic High School Teacher High Schools Science and Technology High Schools Anatolian High Schools Imam-Preacher High Schools Imam-Preacher Training
Vocational (and) Technical Secondary Education	Vocational Education High Schools (Providing) Vocational Technical Education Formal Vocational-Technical Education Non-Formal Vocational-Technical Education Vocational (and) Technical Education Vocational and Technical Vocational Schools Vocational High School Private Vocational High Schools Vocational-Specialty High Schools Vocational High School Education Private Technology Vocational High Schools
Higher Education Associate Degree Open Learning	Vocational Colleges
Undergraduate	College Faculty Teacher Academies Teacher Training Schools
Master	
PhD	
Medical Specialty	
Non-Formal Education	
Adult Education	
Continuous Training	Continuing Education for Adults

As seen in Table 1, there are 14 themes and 30 codes related to the structure of the Turkish Education System.

In the findings of this research, as Saldana (2013) stated in his study, the themes were tagged with bold type and underlining, while codes were tagged with italics and underlining.

Findings

In this part of the study, the findings related to the research questions are presented under separate headings. In political party programs, statements regarding the structure of the Turkish

Education System are included under the titles of education stages. Then, the similarities between the arrangements that the political parties aim to realize regarding the Turkish Education System are presented under separate headings.

Statements Regarding Pre-Primary Education

The status of the statements regarding Pre-Primary Education (Kindergarten and Nursery) in the programs of the parties is presented in Table 2.

Table 2. The status of the statements regarding Pre-Primary Education (Kindergarten and Nursery)

Theme	Code	JDP f	RPP f	PDP f	NMP f	GP f	Total F
Pre-Primary Education		1	4		1	5	11
	Pre-school			1		2	3
	Kindergarten		1				1
Total		1	5	1	1	7	15

As seen in Table 2, the number of statements related to Pre-Primary Education (Kindergarten and Nursery) is 15. These statements are included in the parties' programs as follows:

Justice and Development Party

Pre-Primary Education, which is at a very insufficient level in Turkey, will be expanded throughout the country by the public and private sector.

Republican People's Party

RPP sees **Pre-Primary Education** as a condition for a healthier development of children in terms of mental, physical and emotional aspects and as a compulsory step of the modern education approach

In order to prepare our children for the education process before Primary Education, 2-year **Pre-Primary Education** will be made compulsory throughout Turkey.

In **Pre-Primary Education**, priority will be given especially to the regions of the cities that are insufficient in terms of social development, to the children of working women, civil servants and laborers; in addition to the direct responsibility of the public, it will be ensured that enough children's homes and Kindergartens are opened with the leadership of local governments and the contributions of voluntary organizations.

In the transition period, participation support payment will be made to those who send their children to **Pre-Primary Education** for 2 years from families within the scope of the Citizenship Right payment.

People's Democratic Party

Our party, which has adopted the basic principle that the education system should be scientific, democratic, and egalitarian and libertarian, and that *Pre-school* should be compulsory along with Primary and Secondary Education, advocates that transitions at all levels of the education system should be without examination.

Nationalist Movement Party

Our main goal is to increase the duration of compulsory Basic Education by expanding **Pre-Primary Education**, to include Secondary Education within the scope of compulsory education by creating the necessary physical infrastructure and manpower capacity, and to direct students to areas suitable for their abilities by making effective guidance at all levels of education.

Good Party

Pre-Primary Education staff and physical facilities will be provided by the state, private schools and parent initiative will be encouraged by cooperatives.

The methods applied in some countries that are very successful in **Pre-Primary Education** will be researched and quality education models will be added to the system by making use of the experiences of private schools that implement them.

Pre-Primary Education will be organized by taking into account the possibilities of the child's family and the environment in which the child lives, and the working status of the mother, and non-working mothers will be contributed in this regard.

The schooling rate will be increased above the average of OECD countries, the physical conditions of the institutions will be improved, and the **Pre-Primary Education** programs will be rearranged according to age levels in the context of preparation for life.

In order to ensure the healthy mental, emotional and physical development of children and to prepare them for life and the education process, **Pre-Primary Education** will be carried out with modern methods under the support and supervision of the state.

Education, including *Pre-school* and Higher Education, will be provided with a dynamic and flexible structure that will provide a balance between the welfare of the society and the changing demands of the economy.

Guidance orientation services will be provided to all children, especially parents, starting from *Pre-school.*

Statements Regarding Primary Education

The status of the statements regarding Primary Education in the programs of the parties is presented in Table 3.

Table 3. The status of the statements regarding Primary Education

Theme	Code	JDP f	RPP f	PDP f	NMP f	GP f	Total F
Primary Education		1	5	1			7
	Primary School					1	1
	Basic Education	4	5		1	7	17
Total		5	10	1	1	8	25

As seen in Table 3, the number of statements related to Primary Education is 25. These statements are included in the parties' programs as follows:

Justice and Development Party

In **Primary** and Secondary Education, apart from religious culture and ethics lessons, elective religion lessons will be provided depending on the consent of the parents.

The Basic Education curriculum will be reconstructed according to the requirements of the age, our needs and the equipment that the students will gain.

The provision of *Basic Education* services will be transferred to the provincial units of the central administration and local administrations through pilot applications.

Basic Education will be provided free of charge by the public.

Starting from the fifth grade of *Basic Education*, "elective courses" will be introduced and students will be directed to General and Vocational Education according to their interests and abilities.

Republican People's Party

In order for the **Primary Education** and High School System to reach the targeted level of success, the economic, technological and educational support needed will be primarily provided by the state, and the public and private resources transferred to education will be used in the most efficient way in line with the National Education Policies.

It will be aimed to increase the number of Regional **Primary Education** Boarding Schools (RPBS) (until the inter-regional development gap is eliminated) especially in the Eastern and Southeastern Anatolia, especially in rural areas, in regions where the poor are dense.

In order for our students to have an ideal *Basic Education* process; Uninterrupted and Compulsory *Basic Education* (**Primary Education**) will be increased from 8 to 10 years, and the necessary studies for this will be completed rapidly throughout the country.

It will be ensured that the religious culture and moral knowledge course given in **Primary** and **Secondary** Education institutions is given with a curriculum suitable for the purpose stipulated by the Constitution.

In order to prepare our children for the education process before **Primary Education**, 2-year Pre-school Education will be made compulsory throughout Turkey.

To implement the Basic Principles of Turkish National Education as contained in the *Basic Education* Law, completely, uninterruptedly and in integrity.

In the 9th and 10th grades of *Basic Education*, a 2-year "Vocational Orientation Program" will be implemented, which takes into account regional characteristics, focuses on vocational promotion, ability measurement and orientation to the profession.

At the end of the 10-Year *Basic Education*, students who will go to Multi-Program Academic High Schools in line with the results of the General Evaluation Exam, giving special attention to Turkish teaching, choosing fields such as Social Studies, Science, Mathematics, Information and Information Technologies, Foreign Language, Art and Sports, will continue within the framework of the programs.

People's Democratic Party

Our party, which adopts as a basic principle that the education system should be scientific, democratic, egalitarian and libertarian, and that **Primary Education** and Secondary Education should also be made compulsory, advocates that transitions at all levels of the education system be exam-free.

Nationalist Movement Party

Our main goal is to increase the duration of compulsory *Basic Education* by expanding Pre-school education, to include Secondary Education within the scope of compulsory education by creating the necessary physical infrastructure and manpower capacity, and to direct students to areas suitable for their abilities by making effective guidance at all levels of education.

Good Party

A new curriculum will be adopted, including life-related topics such as basic computer programming, financial literacy, political/legal literacy, rhetoric, manual skills, and coding and programming courses at all levels starting from *Primary School*.

Academies will be structured for *Basic Education* levels and the needs of vocational and technical teachers.

The point where our students with *Basic Education* are in the international PISA exams is worrying for our education system. Necessary measures will be taken to put an end to this bad course.

Twelve years of compulsory and uninterrupted *Basic Education* will be brought to a level that can compete with developed countries.

The *Basic Education* curriculum will be re-evaluated, and it will be transformed from a knowledge and acquisition-oriented structure to a skill-oriented, creative, inquiring and questioning structure.

Basic Education is based on examination, observation and experiment, especially the High School and Vocational Education curriculum; it will be reshaped with a transformation in which sports, arts and cultural activities aiming to increase the spiritual and physical development of students are more involved, prompting free thinking, taking into account individual differences and transitions between programs.

High School and equivalent school programs of *Basic Education* and Higher Education programs will be made to complement each other.

A guidance teacher will be assigned to every 200 children in all *Basic Education* institutions.

Statements Regarding General Secondary Education

The status of the statements regarding General Secondary Education in the programs of the parties is presented in Table 4.

Table 4. The status of the statements regarding General Secondary Education

Theme	Code	JDP F	RPP f	PDP f	NMP f	GP f	Total F
General Secondary Education							
	Secondary Education,	1	1	1	3		6
	High School	1	5	1		2	9
	Academic High School		6				6
	Teacher High Schools					2	2
	Science and Technology High Schools					1	1
	Anatolian High Schools					1	1
	Imam-Preacher High Schools					1	1
	Imam-Preacher Training		1				1
Total		2	13	2	3	7	27

As seen in Table 4, the number of statements related to General Secondary Education is 27. These statements are included in the parties' programs as follows:

Justice and Development Party

Apart from the religious culture and ethics courses in Primary and *Secondary Education*, elective religion courses will be provided depending on the consent of the parents.

The current practice produces results that are unfair and reduce students' motivation. The distortions of this practice will be addressed first, and equal opportunity will be provided to all *High School* and equivalent school graduates in the university entrance exams.

Republican People's Party

It will be ensured that the religious culture and moral knowledge course given in Primary and *Secondary Education* institutions is given with a curriculum suitable for the purpose stipulated by the Constitution.

In order for the Primary and *High School* System to reach the targeted level of success, the economic, technological and educational support needed will be primarily provided by the state, and the public and private resources transferred to education will be used in the most efficient way in line with the National Education Policies.

Every *High School* student will learn at least one foreign language. Qualified education will be provided to those who have graduated from *Academic* or Vocational *High Schools*, at a level that will enable them to know at least one foreign language well.

Student Selection Exam (SSE) will be abolished: Students who want to attend Higher Education institutions after *Academic High School* will have the right to go directly to Higher Education according to the results of the exams to be held within the scope of *High School* success and Talent Assessment and Evaluation System. The "Abilities Assessment and Evaluation System" exams, which will be held during the 2-year *High School* education period and students will be given the right to participate 4 times, will have two options as "Thinking, Problem Solving, Language Skills Exam" (PSLSE) and "Field Preference Exam" (FPE).

Students will be directed to Colleges and Universities at the *High School* stage within the framework of the total and department quotas to be determined by the universities under the coordination of the Council of Higher Education.

Students will be directed to the 2-year *Academic High School* or Vocational High School based on the results of A General Assessment Exam to be held at the end of the 10th grade and on the basis of success scoring.

It will be ensured that *Academic* or Vocational *High School* Education is provided in a qualified and effective manner.

2-year Multi-Program *Academic High Schools* will be the bridge for the transition to Higher Education: At the end of the 10-year Basic Education, students who will turn to Multi-Program *Academic High Schools* in line with the results of the General Evaluation Exam, with special attention to Turkish teaching, Social Studies, Science, Mathematics, Information and Information Technologies, Foreign Language, Art and Sports. They will continue their education within the framework of the programs they prefer by choosing amaong fields.

Imam-Preacher Training will be organized within the framework of the need for the number of religious officials.

People's Democratic Party

Our party, which adopts as a basic principle that the education system should be scientific, democratic, egalitarian and libertarian, and that Primary and *Secondary Education* should also be made compulsory, advocates that transitions at all levels of the education system be exam-free.

It struggles to overcome all the obstacles that restrict the freedom of expression and association of young students in *High Schools* and universities by democratizing universities.

Nationalist Movement Party

Our main goal is to increase the duration of compulsory Basic Education by expanding Pre-school Education, to include *Secondary Education* within the scope of compulsory education by creating the necessary physical infrastructure and manpower capacity, and to direct students to areas suitable for their abilities by making effective guidance at all levels of education.

The share of Vocational Education, which increases employability, in *Secondary Education* will be increased.

Secondary Education; it will have a structure that is based on the type of program, allows horizontal and vertical transitions, and provides an effective transition to the university system with modern guidance and guidance services.

Good Party

Basic Education, mainly *High School* and Vocational Education curriculum, is based on examination, observation and experimentation; it will be reshaped with a transformation in which sports, arts and cultural activities aiming to increase the spiritual and physical development of students are more involved, prompting free thinking, taking into account individual differences and transitions between programs.

High School and equivalent school programs of Basic Education and Higher Education programs will be made to complement each other.

Teacher High Schools will be modernized and restored to their former identity.

Teacher High Schools will be restored to their former identity. For the graduates of these schools, Teacher Academies or Education Faculties will be the next level of education.

Emphasis will be placed on opening *Science and Technology High Schools* and *Anatolian High Schools* that teach certain courses in a foreign language.

The education level of *Imam-Preacher High Schools*, which will be evaluated within the scope of Vocational High Schools, will be increased and it will be ensured that they train people who are professionally equipped.

Statements Regarding Vocational and Technical Secondary Education

The status of the statements regarding Vocational and Technical Secondary Education in the programs of the parties is presented in Table 5.

Table 5. The status of the statements regarding Vocational and Technical Secondary Education

Theme	Code	JDP f	RPP f	PDP f	NMP f	GP f	Total F
Vocational (and) Technical Secondary Education					1		1
	Vocational Education	3			1	5	9
	High Schools (Providing) Vocational Technical Education		2				2
	Formal Vocational-Technical Education				1		1
	Non-Formal Vocational-Technical Education				1		1
	Vocational (and) Technical Education		1		1	1	3
	Vocational and Technical					1	1
	Vocational Schools	1				1	2
	Vocational High School		2			4	6
	Private Vocational High Schools		1				1
	Vocational-Specialty High Schools					1	1
	Vocational High School Education		2				2
	Private Technology Vocational High Schools					1	1
Total		3	8	0	5	14	31

As seen in Table 5, the number of statements related to Vocational and Technical Secondary Education is 31. These statements are included in the parties' programs as follows:

Justice and Development Party

Starting from the fifth grade of Basic Education, "elective courses" will be introduced and students will be directed to general and *Vocational Education* according to their interests and abilities.

Special importance will be given to *Vocational Schools*, and pre-university education will be made more qualified to provide a profession beyond giving diplomas. Together with the chambers of industry and commerce and the non-governmental organizations established by businessmen, the need areas of the business world will be determined and dynamic and *Vocational Education* programs will be developed that meet the needs of the day. Organizations that provide short-term *Vocational Education* will be established for those who are unable to attend long-term school programs.

Republican People's Party

A National Occupational Standards Institution will be established for the approval of the diplomas of *High Schools providing Vocational Technical Education*.

Students who will be placed in *Vocational Technical High Schools* will have the right to pass to two-year Vocational High Schools without examination.

In order to ensure the relationship between *Vocational and Technical Education* and employment, Advisory Boards will be formed with the participation of the representatives of the Ministry of National Education, Council of Higher Education [CoHE] and Chambers of Industry, Commerce and Tradesmen, to guide the subjects of course programs, trainers and internships.

Qualified education will be provided to those who have graduated from academic or *Vocational High Schools*, at a level that will enable them to know at least one foreign language well.

Students will be directed to the 2-year Academic High School or *Vocational High School* based on the results of a General Assessment Exam to be held at the end of the 10th grade and on the basis of success scoring.

Students who receive *Vocational High School Education* will be covered by full-time insurance for 2 years for incentive and support purposes, and their premiums will be paid by the state. Half of the premiums will be covered by the relevant educational institution and the other half by the state in this incentive insurance practice, which will also include *Private Vocational High Schools*.

It will be ensured that academic or *Vocational High School Education* is provided in a qualified and effective manner. As a result of the evaluations and referrals to be made during 2 years, it will be aimed that approximately one third of our students will be directed to universities and the others to Vocational Schools.

People's Democratic Party

The party's program does not include any statement on Vocational and Technical Secondary Education.

Nationalist Movement Party

Program integrity will be ensured between **Vocational and Technical Secondary Education** institutions and Vocational Schools. Relationship, communication and interaction between business life and *Vocational and Technical Education* will be developed.

The share of *Vocational Education*, which increases employability, in Secondary Education will be increased.

Formal and Non-formal *Vocational-Technical Education* and skill-building education will be emphasized, and education programs will be rearranged based on occupational standards.

Good Party

Basic Education, mainly High School and *Vocational Education* curriculum, is based on examination, observation and experimentation; It will be reshaped with a transformation in which sports, arts and cultural activities aiming to increase the spiritual and physical development of students are more involved, prompting free thinking, taking into account individual differences and transitions between programs.

The private sector will be encouraged to open schools in the field of *Vocational Education*. International partnerships and technology transfers of such schools will be supported.

Vocational Education will be encouraged, *Private Technology Vocational High Schools* will be expanded, and establishment of *Vocational Schools* in factories and industrial zones will be supported. English preparatory classes will be placed in these schools.

The quality of *Vocational Education* will be increased and strong need-based *Vocational Education* will be provided. In this context; *Vocational High Schools*, Vocational Schools and Undergraduate level education planning will be reviewed.

Academies will be structured for Basic Education levels and the needs of *vocational and technical* teachers.

Software Department will be opened in *Vocational High Schools* and the transition of students studying in these schools to Higher Education will be facilitated.

Within the scope of *Vocational High Schools*, schools related to Agriculture and Livestock will be activated, and Turkey will be self-sufficient in agriculture again.

The education level of Imam-Preacher High Schools, which will be evaluated within the scope of *Vocational High Schools*, will be increased and it will be ensured that they train people who are professionally equipped.

Employment of the young population will be increased by ensuring that the skills gained in *Vocational and Technical Education* match the demands of employers.

Vocational High Schools; machinery parks will be renewed with their programs and practices and will be made suitable for training human resources for technical fields needed by the labor market.

If students who graduated from *Vocational-Specialty High Schools* choose the relevant departments according to their specialization in their school, they will be given additional points.

Statements Regarding Higher Education

The status of the statements regarding Higher Education in the programs of the parties is presented in Table 6.

Table 6. The status of the statements regarding Higher Education

Theme	Code	JDP F	RPP f	PDP f	NMP f	GP f	Total F
Higher Education		3	5		2	14	24
Associate Degree							
	Vocational Colleges	1	2		1	1	5
Open Learning							
Undergraduate						1	1
	College		2			1	3
	Faculty		2			2	4
	Teacher Academies					2	2
	Teacher Training Schools	1					1
Master						1	1
PhD			1			1	2
Medical Specialty							
Total		5	12	0	3	23	43

As seen in Table 6, the number of statements related to Higher Education is 43. These statements are included in the parties' programs as follows:

Justice and Development Party

Most of our educational institutions, including **Higher Education** institutions, raise unemployed with diplomas, far from a realistic understanding. For these reasons, our party will embark on a radical reform movement in the field of education.

Higher Education in Turkey has made great progress in terms of quantity, but the same success has not been achieved in terms of quality. There is a need for a radical reform in **Higher Education**.

Vocational Colleges established to meet the need for intermediate staff will be subject to a new regulation within a program, and these institutions will be provided to train qualified intermediate staff.

An education approach that develops participatory, free thinking and analysis habits, encourages the ability to make independent decisions and produces, presents pluralistic values, raises the awareness of being a citizen, and teaches contemporary developments and technologies will be adopted. In this transformation, the experiences of democratic and developed countries will also be benefited from, *Teacher Training Schools* will be restructured according to this understanding, and existing teachers will be subjected to in-service training according to the new system.

Republican People's Party

2-year multi-program Academic High Schools will be the bridge for the transition to **Higher Education**: At the end of the 10-year Basic Education, students who will turn to Multi-Program Academic High Schools in line with the results of the General Evaluation Exam, with special attention to Turkish teaching, Social Studies, Science, Mathematics, Information and Information Technologies, Foreign Language, Art and Sports. They will continue their education within the framework of the programs they prefer by choosing amaong fields.

Student Selection Exam (SSE) will be abolished: Students who want to attend **Higher Education** institutions after Academic High School will have the right to go directly to **Higher Education** according to the results of the exams to be held within the scope of *High School* success and Talent Assessment and Evaluation System. The "Abilities Assessment and Evaluation System" exams, which will be held during the 2-year High School education period and students will be given the right to participate 4 times, will have two options as "Thinking, Problem Solving, Language Skills Exam" (PSLSE) and "Field Preference Exam" (FPE).

In the structuring of **Higher Education**, the EU's Bologna process and the OECD's autonomy criteria will be taken into account.

The task of coordinating between universities and developing **Higher Education** strategies will be transferred to the Interuniversity Board.

It will be ensured that Academic or Vocational High School education is provided in a qualified and effective manner. As a result of the evaluations and referrals to be made during two years, it will be aimed that approximately one third of our students will be directed to universities and the others to *Vocational Colleges*.

Students who will be placed in Vocational Technical High Schools will have the right to pass to 2-year *Vocational Colleges* without examination.

In order to train high-level clergy to meet the religious needs of minorities, *Colleges* may be opened within the framework of the general principles of education, affiliated to the theology *faculties* of the relevant state universities.

Students will be directed to *Colleges* and Universities at the High School stage within the framework of the total and department quotas to be determined by the universities under the coordination of the Council of Higher Education [CoHE].

University rectors will be elected by university Faculty members: In these elections candidates' abilities will be taken as a basis, and in no way will their internal policy choices be allowed to be effective. The same principles will be valid in the selection of Deans, Institute Presidents and other *Faculty* administrators.

Additional support will be provided to students who will complete their postgraduate education in Turkey and abroad; every year, our young people will be fully supported with public resources so that they can receive **PhD** education in the new disciplines, branches and sectors of our age; the education and development of these students will be closely monitored.

People's Democratic Party

The party's program does not include any statement on Higher Education.

Nationalist Movement Party

The **Higher Education** system will have a more democratic and productive structure, and the necessary cooperation and harmony will be ensured between students, institutions and academic staff. It will be ensured that the education expenses of the children of martyrs and veterans at all levels will be covered by the state and a quota will be allocated for them when they enter **Higher Education**.

Program integrity will be ensured between Vocational and Technical Secondary Education Institutions and *Vocational Colleges*.

Good Party

Education, including Pre-school and **Higher Education**, will be provided with a dynamic and flexible structure that will provide a balance between the welfare of the society and the changing demands of the economy.

High School and equivalent school programs of Basic Education and **Higher Education** programs will be made to complement each other.

Software Department will be opened in Vocational High Schools and the transition of students studying in these schools to **Higher Education** will be facilitated.

The centralized structure of the **Higher Education** system, the physical inadequacies brought about by rapid universityization, the scarcity of teaching staff, and the politicized understanding of appointment and administration have caused universities in Turkey to lose their feature of being academic institutions where universal knowledge is freely produced. Career planning in **Higher Education** did not give the expected result in many universities, and unemployment rates of educated young individuals increased rapidly.

Higher Education will be planned based on the principles of academic and scientific freedom, institutional autonomy, diversity, transparency, accountability, participation, competition and quality.

The Turkish **Higher Education** Council will be established to regulate the establishment, duties, education-training, research, working procedures and principles of **Higher Education** institutions, as well as the academic and administrative staff working in **Higher Education** institutions and the students of **Higher Education** institutions. This board will be responsible for standard setting, planning and coordination, universities will be academically and administratively autonomous and free.

Turkish **Higher Education** Council, by ending the uniform universityization; It will diversify in *faculties, Colleges,* institutes and research centers, departments and programs, taking into account the needs of the country and the region, in a way that can compete with its stakeholders in developed countries.

All kinds of political influence, pressure and restrictions on academic studies will be removed and a free and autonomous **Higher Education** eco-system will be created for academic studies, research and development activities and innovative initiatives.

A Science and Technology Strategy Center and a National Information Bank will be established in the Turkish **Higher Education** Council.

Brain drain will be prevented by establishing a scientific and technological environment, and the **Higher Education** system will become a center of attraction for international students and Faculty members.

The quality of Vocational Education will be increased and strong need-based Vocational Training will be provided. In this context; Vocational High Schools, *Vocational Colleges* and **Undergraduate** level education planning will be reviewed.

Teacher High Schools will be restored to their former identity. For the graduates of these schools, *Teacher Academies* or education *faculties* will be the next level of education.

A new beginning will be made in teacher training by opening *"Teacher Academies"*, which will train teachers who are well-educated in their fields, know a foreign language to the extent that they can watch the world, have internalized democratic values, art and sports as a philosophy of life, and are passionate about their profession in order to transfer their knowledge to their students.

Master's and **PhD** students will be selected on the basis of objective criteria and merit, and their performance will be monitored through a central network to be established and supported with scholarships.

Statements Regarding Non-Formal Education-Adult Education-Continuous Education

The status of the statements regarding Non-Formal Education-adult education-continuous education in the programs of the parties is presented in Table 7.

Table 7. The status of the statements regarding Non-Formal Education-adult education-continuous

Theme	Code	JDP f	RPP f	PDP f	NMP f	GP f	Total F
Non-Formal Education					1	4	5
Adult Education			1				1
Continuous Training			1				1
	Continuing Education for Adults		2				2
Total		0	4	0	1	4	9

As seen in Table 7, the number of statements related to Non-Formal Education-adult education-continuous education is 9. These statements are included in the parties' programs as follows:

Justice and Development Party

The party's program does not include any statement on Non-Formal Education-adult education-continuous education.

Republican People's Party

Continuing education opportunities for adults will be expanded: A *continuing education* program will be implemented *for adults*, which will be carried out in cooperation with relevant universities and municipalities, in order to provide **adult education** who have not had the opportunity to receive adequate education in the normal education age or who are not in a literate position.

A "framework law" will be enacted, covering all principles regarding the **Continuous Training** of teachers, employment, appointment and personal rights.

People's Democratic Party

The party's program does not include any statement on Non-Formal Education-adult education-continuous education.

Nationalist Movement Party

All kinds of **Non-Formal Education** opportunities, including e-learning, will be developed within the framework of life-long learning, and activities for young people to gain skills and acquire professions will be expanded.

Good Party

An effective **Non-Formal Education** program will be implemented by giving importance to the education of women.

Other **non-formal** and formal **education** opportunities such as student exchange programs will be increased for Turkish children living abroad to preserve and develop their cultural identities.

Information and communication technology infrastructure will be developed in formal and **Non-Formal Education** institutions, and students' and teachers' ability to use these technologies will be increased.

All kinds of **Non-Formal Education** opportunities, including e-learning, will be developed with the understanding of lifelong learning, and maximum effort will be made for all individuals to acquire skills and acquire a profession.

Similarities in the targets of political parties regarding the Turkish Education System

The similarities in the targets of the political parties regarding the Turkish Education System are presented in Table 8.

Table 8. Similarities in the targets of the parties regarding the Turkish Education System

Parties	Themes	Parties JDP	RPP	PDP	NMP	GP	Total
JDP	PPE		1		1	1	3
	PE						
	GSE						
	VTSE		1		1	1	3
	HE						
	NFE, AE, CT						
	Total		2		2	2	6
RPP	PPE	1		1	2		4
	PE						
	GSE						
	VTSE	1				1	2
	HE						
	NFE, AE, CT						
	Total	2		1	2	1	6
PDP	PPE		1				1
	PE						
	GSE						
	VTSE						
	HE						
	NFE, AE, CT						
	Total		1				1
NMP	PPE	1	1	1			3
	PE						
	GSE						
	VTSE	1				1	2
	HE						
	NFE, AE, CT						
	Total	2	1	1		1	5
GP	PPE	1					1
	PE						
	GSE						
	VTSE	1	1				2
	HE						
	NFE, AE, CT				1		1
	Total	2	1		1		4
Grand Total		6	5	2	6	4	23

PPE: Pre-Primary Education
PE: Primary Education
GSE: General Secondary Education
VTSE: Vocational (and) Technical Secondary Education
HE: Higher Education
NFE: Non-Formal Education
AE: Adult Education
CT: Continuous Training

As seen in Table 8, the number of similarities in the targets of the political parties regarding the Turkish Education System is 23. These statements show a distribution according to the parties as follows:

Regarding the concept of Pre-Primary Education, the parties that show similarities are JDP, RRP, NMP and GP. Examples of similar statements by these parties:

Pre-Primary Education will be expanded throughout the country by the public and private sector (JDP)

Enough *Kindergartens* will be opened and Pre-Primary Education will be made compulsory (RPP)

Pre-school education will be expanded and included in the scope of compulsory education (NMP)

Pre-school will be made compulsory (PDP)

Pre-Primary Education will be encouraged by private schools and parent initiative cooperatives (GP)

Regarding the concept of Vocational and Technical Secondary Education, similar parties are JDP, RRP, NMP and GP. Examples of similar statements by these parties:

Vocational Training programs will be developed (JDP)

Vocational High School education will be provided in a qualified and effective manner (RPP)

Formal and non-formal Vocational-Technical Education and skill-building education will be emphasized, and education programs will be rearranged based on occupational standards (NMP)

The quality of Vocational Education will be increased and strong need-based Vocational Training will be provided. In this context; Vocational High Schools, Vocational Schools and Undergraduate level education planning will be reviewed (GP)

Regarding the concepts of Non-Formal Education-adult education-continuing education, the parties that show similarities are NMP and GP. Examples of similar statements by these parties:

All kinds of Non-Formal Education opportunities, including e-learning, will be developed within the framework of lifelong learning (NMP)

All kinds of Non-Formal Education opportunities, including e-learning, will be developed with a lifelong learning approach (GP)

Discussion, Conclusion and Recommendations

In this section, the results of the statements related to the structure of the Turkish Education System in the political party programs are presented according to the education stages. Then, the

results regarding the similarities between the arrangements that the political parties aim to realize regarding the Turkish Education System are given. These results of the research are discussed with the results of different studies in the relevant literature. At the end of the section, suggestions are given in order to contribute to the literature.

Statements about education stages

Statements regarding Pre-school education are included in the programs of all political parties. However, in terms of the number of statements, GP (f=7) takes the first place, while RPP (f=5) takes the second place. Other parties (JDP, f=1; PDP, f=1; NMP, f=1) are in the third place.

Statements related to Primary Education are included in the programs of all political parties. However, in terms of the number of statements, RPP (f=10) takes the first place, while GP (f=8) takes the second place; JDP (f=5) takes the third place. PDP (f=1) and NMP (f=1) take the fourth place

Statements related to General Secondary Education are included in the programs of all political parties. However, in terms of the number of statements, RPP (f=13) took the first place, while GP (f=7) took the second place; NMP (f=3) takes the third place. In the fourth place are JDP (f=2) and PDP (f=2).

Statements regarding Vocational and Technical Secondary Education are included in the programs of all political parties except the PDP. In terms of the number of statements, GP (f=14) takes the first place, while RPP (f=8) takes the second place; NMP (f=5) takes the third place. In the fourth place is JDP (f=3).

Statements regarding Higher Education are included in the programs of all political parties except the PDP. In terms of the number of statements, GP (f=23) takes the first place, while RPP (f=12) takes the second place; JDP (f=5) takes the third place. NMP (f=3) is in the fourth place.

Statements on Non-Formal Education-Adult Education-Continuing Education are included in the programs of all political parties except JDP and PDP. In terms of the number of statements, GP (f=4) and RPP (f=4) take the first place, while NMP (f=1) takes the second place.

In general, the general structure of the Turkish Education System; when the political party programs are evaluated in terms of education stages, the following results can be expressed:

The statements related to "Pre-school", "Primary Education" and "General Secondary Education" are more or less included in the programs of all political parties.

The statements related to "Vocational and Technical Secondary Education" and "Higher Education" are more or less included in the programs of all political parties except the PDP.

Statements regarding “Non-Formal Education, Adult Education, Continuing Education” are more or less included in the programs of other political parties, apart from JDP and PDP. This general result shows that political parties have different education policies regarding the general structure of the Turkish Education System and education stages.

According to all these results, it has been determined that the statements about the structure and educational stages of the Turkish Education System are included in the programs of all political parties. Büyükboyacı also expresses this result in his study (2015). However, when the party programs are ranked in terms of including statements, the GP is in the first place; RPP in second place; third place is JDP; NMP ranks fourth and PDP fifth. In this case, the fact that the ruling party is in third place is an issue that draws attention. Toprakçı and Güngör (2014) found it interesting that the ruling party ranked third in their studies in terms of including the concepts embodying the education policies.

When the programs of the parties were evaluated in the context of the similarities in the objectives of the Turkish Education System, the following results were obtained:

All political parties focus on Pre-school Education, "encouragement, dissemination, making it compulsory and increasing the number of institutions". This result coincides with the result of Tok's (2012) study, which stated that "all parties should include Pre-school Education within the scope of compulsory education", although there are more or less differences. Berber (2001) also states in his study that all parties attach importance to Pre-school Education and try to systematize it. According to Bulut and Güven (2010), all political parties whose programs were examined aim to increase compulsory education. However, Usta (2015) stated in his study that "the education policies of political parties contain some contradictions" and gave the following example: "While it was stated that Pre-school Education would be compulsory in RPP program, on the other hand, it was stated that working mothers would be given priority".

Except for PDP, the subject that all political parties focus on regarding Vocational and Technical Secondary Education is “giving emphasis to Vocational Education, increasing its quality and developing its programs”. In the program of PDP, there is no statement about Vocational and Technical Secondary Education. In the study conducted by TEDMEM (2018), it was stated that PDP does not have any policy regarding Vocational and Technical Secondary Education.

In terms of the objectives of Non-Formal Education, Adult Education and Continuing Education, similarities were found only in the programs of NMP and GP.

The fact that the political parties have no similarities in terms of the objectives of Primary Education, General Secondary Education and Higher Education shows that the education policies

regarding the Turkish Education System are different from each other. Korkmaz (2018), Berber and Aslan (2017) also found in their studies that there are differences in the policies of the parties regarding the realization of education. In fact, they stated that these differences between the parties were also reflected in the grading of education. Tok (2012) also found similar differences in his study. Toprakçı and Güngör (2014), in their study, concluded that, in addition to the differences in the comparisons they made about the party programs in terms of the concepts embodying the education policies, they committed to make similar arrangements on some issues. However, as Toprakçı and Güngör (2014), Bulut and Güven (2010) stated in their studies, political parties are committed to making some changes, regulations and practices in many areas. In his study, Yılmaz (2007) stated that the fact that almost all of the political parties included education and training in their programs, starting from the single-party period in Turkey to the present, is one of the indicators of how important the education issue is for the political institution. However, at the conclusion of their study, Bulut and Güven (2010) stated that there are many regulations that the political parties whose party programs are examined are required to make and how these are carried out is far from consistent. Gürsoy and Balcı-Karaboğa (2015), Erol and Çetin (2020) have stated in their studies that the factors that determine their political ideologies and identities are effective in the similarities or differences in the views of political parties on education.

Depending on the results of the research, the following recommendations can be made:

Political parties should include education policies in their party programs to cover the general structure of the Turkish Education System and all education stages.

Political parties should refrain from including education policies in their programs regarding the structure of the Turkish Education System and the existing practices related to the educational stages in this structure.

Political parties should adopt an expression style that is far from populist and ideological approaches while determining their policies regarding the education system.

Political parties should review their own party programs, taking into account policy documents such as development plans, government programs and national education councils.

Since political parties will implement practices that will affect the whole society when they come to power, they should include education policies that will ensure broad consensus in their party programs.

It is important for political parties to determine their education policies by taking into account the technological, social and cultural changes in the world and the developments in Turkey's European Union harmonization process.

Political parties should include not only short-term but also long-term and sustainable education policies in their party programs.

It is important for political parties to review each other's programs in terms of education policies and to pay attention to similarities and differences while organizing their programs.

Political parties need to update the statements about education policies in their party programs in many respects. In this process, support can be obtained from experts in the fields they need, especially education policy and language experts.

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An Analysis of the Relationship between Pre-Service Secondary Mathematics Teachers' Epistemological Beliefs towards Learning, their Educational Beliefs, and Critical Thinking Dispositions

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Abstract

This study attempts to identify the pre-service secondary mathematics teachers' epistemological beliefs towards learning, their educational beliefs, and critical thinking dispositions as well as the relationship between them. A relational survey model was employed and the study group consisted of 152 pre-service teachers. The study used Epistemological Beliefs Scale towards Learning (EBStL), The Educational Philosophy Tendencies Scale (EPTS), and Marmara Critical Thinking Dispositions Scale (MCTDS) as data collection tools. The results suggested that pre-service secondary mathematics teachers' epistemological beliefs and critical thinking dispositions were above the average value. Moreover, they were found to have progressive and reconstructivist tendencies. The results also revealed that the pre-service secondary mathematics teachers' epistemological beliefs towards learning did not differ across their gender, academic achievement, parents' educational level while significantly differed in terms of their grade level. The pre-service secondary mathematics' teachers' educational beliefs significantly varied across their gender, grade level while that was not the case for their academic achievement and parents' educational level. Besides, the results confirmed positive and significant relationships between the pre-service teachers' epistemological beliefs towards learning and their critical thinking disposition levels and progressivism, further positive and significant relationships were noted between the critical thinking dispositions and progressivism, reconstructionism and perennialism. Progressivism was found to be explained by epistemological beliefs towards learning and critical thinking dispositions; reconstructionism was found to be explained by critical thinking disposition; epistemological beliefs towards learning was determined to be explained by progressivism and critical thinking disposition, and critical thinking dispositions were identified to be explained by reconstructionism and perennialism

Keywords: Epistemological Belief, Educational Beliefs, Critical Thinking Dispositions, Pre-Service Secondary Mathematics Teachers

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Introduction

Since the day of their existence, human beings have wondered about their own existence and that of the universe by constantly questioning, searching, and producing new knowledge. This knowledge was insufficient to satisfy their curiosity and hence, they started to query the source, limits, meaning, and value of the obtained knowledge. These inquiries related to knowledge led to the emergence of the field of "epistemology", one of the fields of philosophy (Dorsah et al., 2020; Hofer & Pintrich, 1997). Epistemology seeks for giving replies to the questions regarding the possibility, the source, the field, scope/limits, and the rationality of knowledge within the framework of nature of knowledge. What is meant by the nature of knowledge here is how the person knows, where the source of knowledge is, whether knowledge is definite/objective or subjective, what the structure of knowledge is, and how knowledge is learned and controlled (Schommer, 1990). This has led to the emergence of individuals' beliefs about the nature of knowledge, namely the concept of "epistemological belief". Epistemological belief refers to the individual's acceptances, namely the beliefs by the nature, accuracy, source, and structure of knowledge, how knowledge is obtained, and what knowledge is or not (Bromme et al., 2010; Gu, 2016; Hofer, 2001). The scope of epistemological belief is not constrained to subject areas such as the nature, source and accuracy of knowledge; therefore, they also try to answer how learning occurs (Deryakulu, 2017). Thus, epistemological beliefs play a significant role in the teaching-learning process (Green & Hood, 2013; Hofer & Pintrich, 1997).

Research on Epistemological Beliefs (EBs) began with the works of Perry (1868, 1970) (Kutluca et al., 2018; Mardiha & Alibakhshi, 2020) who carried out two longitudinal studies on undergraduate Harvard students in the 1950s and 1960s to document what he called “an intellectual Pilgrim’s Progress” (Mardiha & Alibakhshi, 2020). The first researcher to consider epistemological belief as a multidimensional structure, Schommer (1990) (Kutluca et al., 2018; Mardiha & Alibakhshi, 2020) evaluated learners in terms of their epistemological beliefs and categorized them into two groups as sophisticated (more relativistic) and naïve (more dualistic) learners. Naïve learners believe that knowledge consists of simple and separate parts, while sophisticated learners postulate that knowledge has a complex and holistic structure. Naive learners favor that the ability to learn is genetic and fixed, that knowledge is transmitted through authorities, and that the source of knowledge is considered as experts. Sophisticated learners, on the other hand, have the belief that knowledge is gained not only by experts but also thanks to life-long experiences and thoughts through observation (Schommer-Aikins, 2004). Contrary to naïve beliefs, individuals with sophisticated epistemological beliefs believe that learning ability can be improved and an intense effort is required for learning to take place (Tanık Önal & Saylan Kırmızıgül, 2021). In this vein, naïve learners may interpret their mistakes as a result of their permanent inadequacy, become frustrated, and eventually give up trying. Sophists, however, think that their academic goals will increase their capacity (Üztemur et al., 2021).

When acknowledged as a filtering system through which all components in the learning-teaching process pass, epistemological beliefs are likely to affect and structure educational processes and their outcomes (Wong et al., 2009). In this regard, they can provide us with significant knowledge in predicting various behaviors and attitudes. Numerous studies were carried out to reveal the relation of epistemological beliefs with reading comprehension skills (Bråten & Strømsø, 2009), learning/studying strategies (Liang et al., 2010; Paulsen & Feldman, 1999; Schommer, 1998; Üztemur et al., 2020; Üztemur et al., 2021), academic achievement (Arseven et al., 2021; Cano, 2005; Müller et al., 2008; Üztemur et al., 2020; Vecaldo, 2017; Winberg et al., 2019), self-efficacy levels (Kapucu & Bahçivan, 2015; Tsai et al., 2011), critical thinking levels (Kandemir & Eğmir, 2020; Rott, 2021), knowledge literacy levels (Rosman et al., 2018), motivation levels (Ricco et al., 2010), and self-regulation skills (Muis, 2007). The studies reveal the importance of epistemological beliefs in terms of learning outcomes of the educational process. Safrudiannur (2020) drew attention to the fact that epistemological beliefs are still a subject area that opens gates for theoretical and methodological developments despite all the work done. In this case, the importance of the epistemological beliefs of teachers, one of the most remarkable inputs of the learning and teaching process, burst into prominence as epistemological beliefs deeply influence teachers' understanding of learning/teaching and teaching practices in the classroom, including the measurement-evaluation process (Bråten & Ferguson, 2015; Sheehy et al., 2021; Tanık Önal & Saylan Kırmızıgül, 2021; Üztemur et al., 2020). It is of utmost importance to conduct studies related to the epistemological beliefs in the teacher education process in ensuring that teachers have advanced epistemological beliefs.

Upon analyzing the relevant literature, the philosophical paradigms forming the educational beliefs are also built on the epistemological beliefs. Because individuals' educational philosophy tendencies that constitute the educational beliefs outline the learning-teaching strategies/methods, the materials, and the measurement-evaluation process (Can & Çelik, 2020). The philosophy of education, one of the most essential sub-branches of philosophy, has been defined by Gunzenhauser (2003:52) as "a set of ideas and commitments about the purpose and value of education that guides our practice and helps us make choices". Being as old as education, the philosophy of education includes thinking systematically in order to achieve the identified goals (Yargı & Sıvacı, 2021).

Considering the literature on what educational philosophies are, they generally fall into the following four categories. These are; perennialism, essentialism, progressivism and reconstructionism (Demir & Aktı Aslan, 2021; Gutek, 2014; Segall & Wilson, 2004). Perennialism is the oldest and most conservative educational philosophy (Cevizci, 2015; Wiles & Bondi, 2014), one of the proponents of which is Platon and which is rooted in realism and idealism philosophies (Şişman, 2015). Perennialism advocates that the facts are the same everywhere, they do not change, and individuals should be educated according to these facts (Cohen, 1999). Perennials have a subject-centered curriculum understanding (Ornstein & Hunkins, 2014) and are concerned with the

development of individuals' mental abilities, reasoning skills, and information processing (Cohen, 1999; Ellis, 2015). This philosophy requires that education deal with intellectual education, based upon raising gifted individuals with the right character. Education is teacher-centered in perennialism since the teacher is the most knowledgeable and empowered person in the classroom (Gutek, 2014). Çelik (2020) indicated that the development of creativity and self-discovery is arduous in the perennialism-based curriculum and it is improper for democratic societies since individual differences are not taken into consideration. Having emerged after perennialism and being one of the traditional educational philosophies put forward by educators such as W. C. Bagley, İ. L. Kandel, A. E. Bestor (Acar-Erdol, 2018), essentialism is rooted in idealism and realism philosophies (Demirel, 2020). Essentialism, just as perennialism, advocates that knowledge is universal and absolute that must be transmitted from generation to generation (Gutek, 2014). The curriculum of the essentialism is subject-centered (Yılmaz, 2019). This philosophy has a strict understanding of discipline (Ellis, 2015), and the student has to welcome the authority of the teacher (Yaralı, 2020). According to essentialism, an individual does not have an innate knowledge and skills, knowledge is obtained through experimenting, memorization and repetition are essential after knowledge is gained (Asmaz, 2019; Tisdell & Taylor, 2000).

In recent centuries, industrial and scientific advancements have also affected the understanding of education and contemporary educational philosophies have emerged to meet individuals' needs in line with the requirements of the age. One of the contemporary educational philosophies, progressivism is a development over pragmatism philosophical movement, and its main proponent is John Dewey (Winch & Gingell, 2008; Yargı & Sıvacı, 2021). Unlike perennialism and essentialism, progressivism asserts that knowledge does not have an absolute identity as it has a relative structure (Gutek, 2014). Progressivism advocates education that centers on the student's interests, needs, and first-hand experiences (Jarrah et al., 2020; Ornstein & Levine, 2008). According to progressivism, in which democratic environments are essential, the teacher is a guide and the schools must demonstrate the real-life situations to the students (Williams, 2017). In this regard, Ellis (2015) refers to the significance of curricula that will provide learning environments for individuals to build knowledge. Being one of the contemporary educational philosophies and aiming for real democracy through social reforms, reconstructionism is rooted in pragmatism (Segall & Wilson, 2004). Reconstructionism, which emphasizes that education is not only life but also the future, prioritizes society against too much emphasis on individualism (Tuncel, 2017), and the most important representatives of this philosophy are Theodore Brameld and Isaac Bergson (Asmaz, 2019; Dinamitçi, 2021). Schools should be institutions of social innovation movements, social reforms pioneers (Dewey, 2019), and social roles that come to the fore with a real understanding of democracy in order to engender social change (Winch & Gingell, 2008). It has a student-centered understanding that takes into account the experiences of individuals (Hamrah, 2012). In teaching processes based on

reconstructionism, it is essential to create environments where individuals can use scientific research methods, question and think critically.

The characteristics of both the ideal individual of contemporary educational philosophies and the individuals with advanced epistemological beliefs are the common qualities is the ability to think critically. Today's information society requires individuals who analyze, criticize and know what/why/how to learn, who actively participate in the learning process, synthesize and produce new information, rather than those who accept ready-made information directly and without questioning. In particular, many of the information access and applications have been transferred to the Internet, databases, media, and social networks where the reliability and validity are uncertain. This made it more difficult to prove the accuracy of the information and to make judgments (Fandiño Parra et al., 2021). The importance of teaching critical thinking, which is one of the skills that students need to have in order to cope with the complexities of their future lives, comes to the fore. Because critical thinking is the process of detecting false information through the mind by challenging the information obtained from the individual's environment (Judge et al., 2009).

The definition of critical thinking put forward by Facione (1990) with the consensus of many experts is as following “critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based”. Individuals having critical thinking skills are those who can objectively evaluate information, who make/develop independent decisions, who find ways to cope with difficult and complex situations and who attach importance to democratic values. Namely, critical thinking can also be viewed as the art of seeing the glass half empty or half full together (Yeşilyurt, 2021). Many studies evaluated critical thinking in two different dimensions named as critical thinking skills and dispositions (Lantian et al., 2021). While critical thinking skill is to be able to think critically with mental effort, critical thinking disposition is to have the desire, sense of responsibility, attitude and a consistent internal motivation for critical thinking (Lantian et al., 2021; Stupnisky et al., 2008). Yung-Kuan et al. (2017) emphasized the importance of having a critical thinking disposition by arguing that critical thinking will either never occur or will not be at the desired level in an individual who does not have a positive critical thinking disposition.

For a good future, the development of students’ critical thinking is the basis of their development in society, and the educational process is of great importance in this regard. Curricula implemented in Turkey also aim at raising individuals with critical thinking dispositions and skills. Raising future generations with critical thinking skills is possible with teachers having this disposition and skill. Hence, it is vital to train pre-service teachers who can keep up with the times, who produce innovative ideas, who have the will and attitude to distinguish between right and wrong through using

scientific and analytical thinking skills, in short, who have critical thinking dispositions. Because pre-service teachers' critical thinking disposition and skill levels play a key role in determining to what extent they will have their students gain these skills in the future.

This study attempts to identify the pre-service secondary mathematics teachers' epistemological beliefs towards learning, their educational beliefs and critical thinking dispositions and the relationship between them.

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

1. What are the pre-service secondary mathematics teachers' epistemological beliefs towards learning, their educational beliefs and critical thinking dispositions?

2. Do the pre-service secondary mathematics teachers' epistemological beliefs towards learning, their educational beliefs and critical thinking dispositions significantly differ across their gender, grade level, academic achievement and parents' educational level?

3. Is there a significant relationship between the pre-service secondary mathematics teachers' epistemological beliefs towards learning, their educational beliefs and critical thinking dispositions?

4. Do the pre-service secondary mathematics teachers' epistemological beliefs towards learning, their educational beliefs and critical thinking dispositions predict each other at a significant level?

Method

Research Design

This study employed a relational survey model, which tries to determine whether there is a relationship between more than one variable and if there is, the degree of the relationship (Karasar, 2022). The relational studies also aim at identifying whether the determined independent variable or variables predict the dependent variable in addition to examining the relationship between two or more variables (Gravetter & Forzano, 2018).

Study Group

The study group consists of 152 out of 166 pre-service teachers studying at Çanakkale Onsekiz Mart University, Faculty of Education, Department of Mathematics Education. The working group was chosen by convenience sampling method and by taking into account the voluntariness criterion. Convenience sampling provides a practical and rapid data collection based upon existing people or situations (Patton, 2015). Among the study group, 111 are female and 41 are male, 28.3% were the first-year undergraduate students, 25% were the second-year, 24.3% were the third-year and 22.4% were the fourth-year undergraduate students. Considering the pre-service teachers' academic

achievement, more than half of them (55.3%) had an academic achievement of over 3.51 based upon a 4-point system, and 95.4% of them had an academic achievement above 3.00. Upon examining parents' educational level, 54% of their mothers were found to be primary school graduates, while 25% were high school graduates; 32.2% of their fathers graduated from primary school and 23.7% of them from high school.

Data Collection Tools

Epistemological Beliefs Scale towards Learning (EBStL)

This tool, the Turkish adaptation of which was done by Kutluca et al. (2018), was developed by Sing-Chai et al. in 2009. Kutluca et al. (2018) added 4 items to the original scale and carried out exploratory, confirmatory factor and reliability analyses in order to obtain a 23-item five-point Likert-type scale ranging across "strongly agree (5)" and "strongly disagree (1)". Considering the developed epistemological beliefs while coding the data, negative items were reverse coded. Accordingly, the highest score that can be obtained from the scale is 115 and the lowest is 23. The scale consists of four dimensions: "attaining to knowledge" (9 items), "nurture vs. nature" (6 items), "absolute and single reality" (4 items) and "epistemic confliction" (4 items). The Cronbach Alpha internal consistency coefficient of the whole scale was noted to be .79, and that of each dimension was found to differ across .72-.84 (Kutluca et al., 2018).

The Educational Philosophy Tendencies Scale (EPTS)

It is a five-point Likert-type scale consisting of 36 items, ranging from "totally agree (5)" to "strongly disagree (1)". Aytaç and Uyangör (2020) performed exploratory and confirmatory factor analyses along with reliability analyzes. The scale encompasses four dimensions: "progressivism" (13 items), "reconstructionism" (9 items), "essentialism" (7 items) and "perennialism" (7 items). The Cronbach Alpha internal consistency coefficient of the entire scale was found to be .83, and that of each dimension varied across .66-.89 (Aytaç & Uyangör, 2020).

Marmara Critical Thinking Dispositions Scale (MCTDS)

Being a five-point Likert-type, the scale is composed of 28 items, ranging from "always (5)" and "never (1)". Exploratory factor analyzes and reliability analyzes were carried out by Özgenel and Çetin (2018). The scale possesses 6 dimensions such as "reasoning" (6 items), "reaching the judiciary" (6 items), "seeking evidence" (4 items), "seeking the truth" (4 items), "open-mindedness" (4 items) and "systematicity" (4 items). The Cronbach Alpha internal consistency coefficient of the entire scale was found to be.91 and that of each dimension varied across .64-.85 (Özgenel & Çetin, 2018).

Data Analysis

For determining the statistical techniques to be used during data analysis, the kurtosis and skewness values were examined to decide on whether data were normally distributed.

Table 1. The Kurtosis and Skewness Values of the EBStL, EPTS, and MCTDS

Scale	Kurtosis	Skewness
EBStL	-.514	.005
EPTS	-.155	.088
MCTDS	1.326	-.074

Upon analyzing Table 1, the data demonstrated a normal distribution, since kurtosis and skewness values obtained from the overall scales were between (+2.0) and (-2.0) (George & Mallery, 2010). Based upon the analyzes performed to determine whether the distribution was parametric, it was found appropriate to use the independent samples t-test in cases whe re the independent group is two, and one-way ANOVA (F test) when the independent group is more than two (Tabachnick & Fidell, 2013). In addition, Pearson product- moments correlation coefficients were used to determine the relationships between variables, and regression analysis to make predictions.

Findings and Interpretation

This part presents findings and interpretations of the study. The order of the findings is the same as the order of the research questions.

Findings and Interpretation regarding the First Research Question

Within the scope of the first research question; arithmetic mean and standard deviations of the pre-service secondary mathematics teachers' epistemological beliefs towards learning, their educational beliefs and critical thinking dispositions are presented in Table 2.

Table 2. Analysis Results regarding the Epistemological Beliefs towards Learning, Educational Beliefs and Critical Thinking Dispositions

	Dimension	$\bar{X}$	Sd
Epistemological Beliefs towards Learning	Attaining to Knowledge	35.22 (Min:9, Max:45)	2.96
	Nurture vs. Nature	21.53 (Min:6, Max:30)	3.99
	Absolute and Single Reality	14.97 (Min:4, Max:20)	1.62
	Epistemic Confliction	12.68 (Min:4, Max:20)	2.54
	Total	84.39 (Min:23, Max:115)	6.02

Educational Beliefs	Progressivism	4.56	.405
	Reconstructionism	4.30	.461
	Essentialism	2.37	.497
	Perennialism	3.02	.617
Critical Thinking Dispositions	Reasoning	4.04	.446
	Reaching the Judiciary	3.93	.413
	Seeking Evidence	4.01	.524
	Seeking the Truth	3.92	.462
	Open-mindedness	4.20	.480
	Systematicity	4.07	.511
	Total	4.02	.368

As is seen in Table 2, pre-service secondary mathematics teachers' epistemological beliefs towards learning were determined to be $\bar{X}$=84.39 out of 115. Besides, pre-service secondary mathematics teachers had an average of $\bar{X}$=35.22 out of 45 in terms of "attaining to knowledge" dimension, $\bar{X}$=21.53 out of 30 for the dimension of "nurture vs. nature", $\bar{X}$=14.97 out of 20 for the "absolute and single reality" dimension and $\bar{X}$=12.68 out of 20 for "epistemic confliction" dimension.

Table 2 reveals that pre-service secondary mathematics teachers' educational beliefs were mostly grounded on progressivism with an average of $\bar{X}$=4.56 out of 5. In addition, pre-service teachers' lowest level of educational beliefs was identified to be essentialism with $\bar{X}$=2.37 out of 5.

Upon analyzing Table 2 in terms of critical thinking dispositions, pre-service secondary mathematics teachers' critical thinking disposition levels were determined as $\bar{X}$=4.02 out of 5. Moreover, pre-service secondary mathematics teachers had the highest average with $\bar{X}$=4.20 in terms of the "open-mindedness" dimension of the critical thinking disposition level, while the dimension of "seeking the truth" had the lowest average with $\bar{X}$=3.92.

Findings and Interpretation regarding the Second Research Question

Within the scope of the second research question; the analysis results on whether pre-service secondary mathematics teachers' epistemological beliefs towards learning, their educational beliefs and critical thinking dispositions significantly differed across their gender, grade level, academic achievement and parents' educational level are presented in Table 3, Table 4, Table 5, Table 6 and Table 7.

Table 3. Analysis of the Epistemological Beliefs towards Learning, Educational Beliefs and Critical Thinking Dispositions in terms of "Gender"

	Dimension	Gender	N	$\overline{X}$	Sd	df	t	p
Epistemological Beliefs towards Learning	Attaining to Knowledge	Female	111	34.98	3.12	150	-1.667	.098
		Male	41	35.88	2.37			
	Nurture vs. Nature	Female	111	22.03	3.66	150	2.594	.010*
		Male	41	20.17	4.55			
	Absolute and Single Reality	Female	111	15.04	1.50	150	.864	.389
		Male	41	14.78	1.90			
	Epistemic Confliction	Female	111	12.44	2.58	150	-1.906	.059
		Male	41	13.32	2.34			
	Total	Female	111	84.49	6.13	150	.308	.758
		Male	41	84.15	5.79			
Educational Beliefs	Progressivism	Female	111	4.60	.383	150	2.178	.033*
		Male	41	4.43	.441			
	Reconstructionism	Female	111	4.33	.458	150	1.030	.305
		Male	41	4.24	.470			
	Essentialism	Female	111	2.35	.522	150	-.956	.341
		Male	41	2.44	.418			
	Perennialism	Female	111	2.94	.607	150	-2.604	.010*
		Male	41	3.23	.602			
Critical Thinking Dispositions	Reasoning	Female	111	4.04	.445	150	.012	.991
		Male	41	4.04	.456			
	Reaching the Judiciary	Female	111	3.94	.384	150	.207	.836
		Male	41	3.92	.489			
	Seeking Evidence	Female	111	4.01	.499	150	-.033	.974
		Male	41	4.01	.591			
	Seeking the Truth	Female	111	3.89	.449	150	-1.411	.160
		Male	41	4.01	.489			
	Open-mindedness	Female	111	4.20	.473	150	.035	.972
		Male	41	4.20	.505			
	Systematicity	Female	111	4.11	.499	150	1.450	.149
		Male	41	3.98	.533			
	Total	Female	111	4.02	.355	150	.087	.931
		Male	41	4.02	.405			

*p < .05

According to Table 3, no significant difference was noted across the pre-service secondary mathematics teachers' epistemological beliefs towards learning in terms of gender (t(150)=.308, p>.05). A significant difference was only identified across the dimension "nurture vs. nature" between men and women at the p=.010 level (t(150)=2.594, p<.05).

On examining the pre-service secondary mathematics teachers' educational beliefs in terms of gender in Table 3, significant differences were found in the dimension of progressivism in favor of females at p=.033 level (t(150)=2.178, p<.05), and in the dimension of perennialism in favor of males at the p=.010 level (t(150)=-2.604, p<.05). Table 3 also displays that the pre-service secondary mathematics teachers' critical thinking dispositions did not significantly differ at the p<.05 level in terms of their gender.

Table 4. Analysis of the Epistemological Beliefs towards Learning, Educational Beliefs and Critical Thinking Dispositions in terms of "Grade Level"

	Grade Level	N	$\overline{X}$	Sd		Sum of Squares	df	Mean Square	F	p
Epistemological Beliefs towards Learning	1st grade	43	85.23	4.99	Between Groups	353.814	3	117.938	3.407	.019*
	2nd grade	38	85.34	6.64						
	3rd grade	37	85.05	5.86	Within Groups	5122.501	148	34.611		
	4th grade	34	81.56	6.04						
	Total	152	84.39	6.02	Total	5476.316	151			
Progressivism	1st grade	43	4.54	.457	Between Groups	.604	3	.201	1.235	.299
	2nd grade	38	4.63	.349						
	3rd grade	37	4.47	.436	Within Groups	24.141	148	.163		
	4th grade	34	4.60	.348						
	Total	152	4.56	.405	Total	24.746	151			
Reconstructionism	1st grade	43	4.26	.461	Between Groups	.818	3	.273	1.289	.280
	2nd grade	38	4.42	.428						
	3rd grade	37	4.23	.490	Within Groups	31.315	148	.212		
	4th grade	34	4.29	.460						
	Total	152	4.30	.461	Total	32.134	151			
Essentialism	1st grade	43	2.37	.513	Between Groups	2.434	3	.811	3.451	.018*
	2nd grade	38	2.53	.537						
	3rd grade	37	2.40	.340	Within Groups	34.797	148	.235		
	4th grade	34	2.17	.519						
	Total	152	2.37	.497	Total	37.231	151			
Perennialism	1st grade	43	2.93	.659	Between Groups	1.808	3	.603	1.601	.192
	2nd grade	38	2.19	.598						
	3rd grade	37	3.02	.487	Within Groups	55.725	148	.377		
	4th grade	34	2.92	.691	Total					
	Total	152	3.02	.617		57.533	151			
Critical Thinking Dispositions	1st grade	43	4.01	.426	Between Groups	.147	3	.049	.357	.784
	2nd grade	38	4.07	.367						
	3rd grade	37	4.01	.415	Within Groups	20.294	148	.137		
	4th grade	34	3.99	.213						
	Total	152	4.02	.368	Total	20.441	151			

*p < .05

As can be seen in Table 4, the pre-service secondary mathematics teachers' epistemological beliefs towards learning significantly varied across their grade level at the p=.019 level against the fourth graders [F(3-148)= 3.407; p<.05]. Tukey test results used to determine the differences among the grade levels demonstrated a significant difference between the fourth grade pre-service teachers and the first graders at the level of p=.036, between the second graders at p=.036 level, and between the third graders at p=.064 level. No significant difference was identified across the factors regarding the pre-service secondary mathematics teachers' epistemological beliefs towards learning at the p<.05 level in terms of their grade levels (attaining to knowledge p=.692; nurture vs. nature p=.129; absolute and single reality p=.243; epistemic confliction p=.230).

As for the educational beliefs, the pre-service teachers' educational beliefs varied significantly only in the dimension of essentialism (F(3-148)= 3.451, p=.018) at p<.05 level. Tukey

test results showed a significant difference at the level of p=.009 between the fourth graders and those in the second grade in favor of the second graders at the level of p=.009.

A closer look at pre-service secondary mathematics teachers' critical thinking dispositions in terms of changes based on grade level indicated no statistically significant difference at the p<.05 level. A similar finding was reported concerning all dimensions of the scale in terms of the grades at the p<.05 level (reasoning p=.776; reaching the judiciary p=.584; seeking evidence p=.682; seeking the truth p=.477, open-mindedness p=.923; systematicity p= .676).

Table 5. Analysis of the Epistemological Beliefs towards Learning, Educational Beliefs and Critical Thinking Dispositions in terms of "Academic Achievement"

	Academic Achievement	N	$\overline{X}$	Sd		Sum of Squares	df	Mean Square	F	p
Epistemological Beliefs towards Learning	2.51-3.00	7	83.14	5.27	Between Groups	180.303	2	90.152		
	3.01-3.50	61	85.72	5.25	Within Groups	5296.012	149	35.544	2.536	.083
	3.51-4.00	84	83.54	6.47						
	Total	152	84.39	6.02	Total	5476.316	151			
Progressivism	2.51-3.00	7	4.32	.521	Between Groups	.506	2	.253		
	3.01-3.50	61	4.54	.397	Within Groups	24.240	149	.163	1.555	.215
	3.51-4.00	84	4.59	.398						
	Total	152	4.56	.405	Total	24.746	151			
Reconstructionism	2.51-3.00	7	4.03	.520	Between Groups	.674	2	.337		
	3.01-3.50	61	4.28	.439	Within Groups	31.460	149	.211	1.596	.206
	3.51-4.00	84	4.34	.469						
	Total	152	4.30	.461	Total	32.134	151			
Essentialism	2.51-3.00	7	2.29	.233	Between Groups	.071	2	.036		
	3.01-3.50	61	2.39	.582	Within Groups	37.160	149	.249	.142	.867
	3.51-4.00	84	2.37	.446						
	Total	152	2.37	.497	Total	37.231	151			
Perennialism	2.51-3.00	7	3.14	.670	Between Groups	1.789	2	.895		
	3.01-3.50	61	3.14	.621	Within Groups	55.743	149	.374	2.391	.095
	3.51-4.00	84	2.92	.601						
	Total	152	3.02	.617	Total	57.533	151			
Critical Thinking Dispositions	2.51-3.00	7	3.94	.553	Between Groups	.111	2	.055		
	3.01-3.50	61	4.00	.364	Within Groups	20.330	149	.136	.405	.668
	3.51-4.00	84	4.04	.356						
	Total	152	4.02	.368	Total	20.441	151			

Table 5 depicts that the pre-service secondary mathematics teachers' epistemological beliefs towards learning were free from a significant difference in terms of their academic achievement [F(2-

149)= 2.536; p>.05]. Only the dimension of "nurture vs. nature" significantly differed across pre-service teachers with 3.01-3.50 and those with that of 3.51-4.00 at the p= .032 level (F(2-149)=3.533, p<.05) in favor of those with high academic achievement (attaining to knowledge p=.884; genetic absolute and single reality p=.946; epistemic confliction p=.463).

Table 5 suggests that the educational beliefs scale did not significantly vary in terms of academic achievement at the p<.05 level. Pre-service teachers with high academic achievement were pointed to have more progressive and reconstructive educational beliefs, whereas those with lower academic achievement had perennialism educational beliefs.

Table 5 also shows that the critical thinking dispositions of pre-service secondary mathematics teachers did not differ significantly in terms of their academic achievement [F(2-149)= .405; p>.05]. As for the dimensions of the scale, a similar layout was noted in terms of their academic achievement at the p<.05 level (reasoning p=.216; reaching the judiciary p=.842; seeking evidence p=.383; seeking the truth p=.268, open-mindedness p=.284; systematicity p=.369). As the pre-service teachers' academic achievement increased, their critical thinking dispositions also increased, albeit a little.

Table 6. Analysis of the Epistemological Beliefs towards Learning, Educational Beliefs and Critical Thinking Dispositions in terms of "Mother Educational Level"

	Mother Educational Level	N	$\overline{X}$	Sd		Sum of Squares	df	Mean Square	F	p
Epistemological Beliefs towards Learning	Primary school	82	84.32	5.85	Between Groups	167.215	3	55.738		
	Middle School	12	85.50	5.87						
	High School	38	85.45	6.14	Within Groups	5309.101	148	35.872	1.554	.203
	Bachelor	20	82.05	6.33						
	Total	152	84.39	6.02	Total	5476.316	151			
Progressivism	Primary school	82	4.52	.430	Between Groups	.279	3	.093		
	Middle School	12	4.65	.392						
	High School	38	4.57	.381	Within Groups	24.466	148	.165	.563	.640
	Bachelor	20	4.61	.359						
	Total	152	4.56	.405	Total	24.746	151			
Reconstructionism	Primary school	82	4.27	.439	Between Groups	.612	3	.204		
	Middle School	12	4.49	.463						
	High School	38	4.29	.528	Within Groups	31.522	148	.213		
	Bachelor	20	4.36	.411					.958	.414
	Total	152	4.30	.461	Total	32.134	151			
Essentialism	Primary school	82	2.44	.518	Between Groups	.846	3	.282		
	Middle School	12	2.25	.460						
	High School	38	2.28	.411	Within Groups	36.385	148	.246	1.147	.332
	Bachelor	20	2.35	.565						
	Total	152	2.37	.497	Total	37.231	151			

Perennialism	Primary school	82	3.03	.616	Between Groups	1.233	3	.411		
	Middle School	12	2.75	.625						
	High School	38	3.10	.631	Within Groups	56.299	148	.380	1.081	.359
	Bachelor	20	2.95	.585						
	Total	152	3.02	.617	Total	57.533	151			
Critical Thinking Dispositions	Primary school	82	4.03	.414	Between Groups	.028	3	.009		
	Middle School	12	4.01	.214						
	High School	38	4.03	.342	Within Groups	20.412	148	.138	.068	.977
	Bachelor	20	3.99	.302						
	Total	152	4.02	.368	Total	20.441	151			

Table 6 presents that the pre-service secondary mathematics teachers' epistemological beliefs towards learning did not significantly differ in terms of mother educational level [F(3-148)= 1.554; p>.05]. Concerning the dimensions of epistemological beliefs towards learning, only the dimension of "attaining to knowledge" showed a significant difference between those whose mothers were primary school graduates and those whose mothers were high school graduates at the p=.044 level (F(3-148)=2.767, p<.05) in favor of those whose mothers were high school graduates (nurture vs. nature p =.268; absolute and single reality p=.960; epistemic confliction p=.666). Pre-service teachers whose mothers had a bachelor's degree have fewer developed epistemological beliefs compared to others.

Upon analyzing the pre-service secondary mathematics teachers' educational beliefs in terms of mother educational level, no significant difference was noted at the p<.05 level. The pre-service teachers whose mothers were primary school graduates were determined to mostly adopt perennialism and essentialism.

As in Table 6, no significant difference was pointed across the pre-service secondary mathematics teachers' critical thinking dispositions in terms of mother educational level [F(3-148)= .068; p>.05]. Likewise, the dimensions of pre-service teachers' critical thinking dispositions did not significantly vary in terms of mother educational level at the p<.05 level (reasoning p=.652; reaching the judiciary p=.929; seeking evidence p=.941; seeking the truth p=.426, open-mindedness p=.625; systematicity p=.850).

Table 7. Analysis of the Epistemological Beliefs towards Learning, Educational Beliefs and Critical Thinking Dispositions in terms of "Father Educational Level"

	Father Educational Level	N	$\overline{X}$	Sd		Sum of Squares	df	Mean Square	F	p
Epistemological Beliefs towards Learning	Primary school	49	84.82	5.19						
	Middle School	29	82.76	6.06	Between Groups	106.020	5	21.204		
	High School	36	84.75	6.04						
	PreBachelor	9	85.44	7.80	Within Groups	5370.296	146	36.783	.576	.718
	Bachelor	27	84.44	6.97						
	Master	2	86.00	4.24						
	Total	152	84.39	6.02	Total	5476.316	151			

Progressivism	Primary school	49	4.44	.424	Between Groups	1.328	5	.266		
	Middle School	29	4.57	.446						
	High School	36	4.61	.379						
	PreBachelor	9	4.50	.423	Within Groups	23.418	146	.160	1.656	.149
	Bachelor	27	4.68	.321						
	Master	2	4.81	.272						
	Total	152	4.56	.405	Total	24.746	151			
Reconstructionism	Primary school	49	4.18	.371						
	Middle School	29	4.30	.536	Between Groups	1.541	5	.308		
	High School	36	4.33	.532						
	PreBachelor	9	4.36	.355	Within Groups	30.593	146	.210	1.470	.203
	Bachelor	27	4.46	.422						
	Master	2	4.56	.629						
	Total	152	4.30	.461	Total	32.134	151			
Essentialism	Primary school	49	2.47	.530						
	Middle School	29	2.24	.563	Between Groups	1.307	5	.261		
	High School	36	2.32	.438						
	PreBachelor	9	2.37	.458	Within Groups	35.924	146	.246	1.063	.384
	Bachelor	27	2.39	.444						
	Master	2	2.71	.202						
	Total	152	2.37	.497	Total	37.231	151			
Perennialism	Primary school	49	3.01	.640						
	Middle School	29	2.89	.638	Between Groups	3.099	5	.620		
	High School	36	3.20	.574						
	PreBachelor	9	2.78	.295	Within Groups	54.433	146	.373	1.663	.147
	Bachelor	27	3.04	.639						
	Master	2	2.36	.707						
	Total	152	3.02	.617	Total	57.533	151			
Critical Thinking Dispositions	Primary school	49	3.98	.396						
	Middle School	29	3.94	.339	Between Groups	.961	5	.192		
	High School	36	4.15	.456						
	PreBachelor	9	3.94	.144	Within Groups	19.479	146	.133	1.441	.213
	Bachelor	27	4.05	.224						
	Master	2	3.91	.025						
	Total	152	4.02	.368	Total	20.441	151			

Table 7 displays that the pre-service secondary mathematics teachers' epistemological beliefs towards learning did not significantly differ in terms of father educational level [F(5-146)= .576; p>.05]. Moreover, pre-service teachers' epistemological beliefs towards learning varied significantly across only in the dimension of "attaining to knowledge" at the p=.032 level (F(5-146)=2.515, p<.05) (nurture vs. nature p=.161; absolute and single reality p=.551; epistemic confliction p=.855).

Upon analyzing the pre-service secondary mathematics teachers' educational beliefs in terms of father educational level, no significant difference was determined at the p<.05 level. The pre-service teachers whose fathers had a higher educational level were determined to mostly adopt progressivism and reconstructionism.

As in Table 7, no significant difference was identified across the pre-service secondary mathematics teachers' critical thinking dispositions in terms of father educational level [F(5-146)= 1.441; p>.05]. When the dimensions of the pre-service teachers' critical thinking dispositions were examined in terms of father educational level, only the dimension of "open-mindedness" (F(5-146)=

2.351, p=.044) significantly differed at p<.05 level (reasoning p=.206; reaching the judgment p=.169; seeking evidence p=.801; seeking the truth p=.448, open-mindedness p=.044; systematicity p=.557). Tukey test results revealed a significant difference between the pre-service teachers whose fathers were primary school graduates and high school graduates (p=.013) in favor of those whose fathers were high school graduates.

Findings and Interpretation regarding the Third Research Question

The analysis results on whether there was a significant relationship between the pre-service secondary mathematics teachers' epistemological beliefs towards learning, educational beliefs and critical thinking dispositions are illustrated in Table 8, Table 9 and Table 10.

Table 8. Pearson Correlation Coefficients between the Epistemological Beliefs towards Learning and Critical Thinking Dispositions

Variables		Critical Thinking Disposition (Total)	Reasoning	Reaching the Judiciary	Seeking Evidence	Seeking the Truth	Open-mindedness	Systematicity
Epistemological Beliefs towards Learning (Total)	r	.250**	.313**	.092	.290**	.245**	.054	.169*
	p	.002	.000	.259	.000	.002	.512	.038
Attaining to Knowledge	r	.320**	.300**	.154	.234**	.282**	.217**	.336**
	p	.000	.000	.058	.004	.000	.007	.000
Nurture vs. Nature	r	-.038	.017	-.068	.054	.020	-.158	-.059
	p	.638	.837	.406	.505	.802	.052	.470
Absolute and Single Reality	r	.193*	.210**	.107	.145	.134	.185*	.125
	p	.017	.010	.152	.075	.100	.022	.124
Epistemic Confliction	r	.157	.234**	.078	.238**	.136	.005	.021
	p	.053	.004	.342	.003	.095	.951	.796

**Correlation is significant at the 0.01 level *Correlation is significant at the 0.05 level

Table 8 shows that the correlation coefficient between the pre-service secondary mathematics teachers' epistemological beliefs towards learning and their critical thinking disposition levels was .250 (p=.002, p<.01), having a positive and significant relationship. Positive and significant relationships were determined between the epistemological beliefs towards learning and the dimensions of critical thinking dispositions such as reasoning (r=.313; p=.000, p<.01), seeking evidence (r=.290; p=.000, p<.01), seeking the truth (r=.245; p=.002, p<.01) and systematicity (r=.169; p=.038, p<.05). Moreover, positive and significant relationships were found between the attaining to knowledge, one of the dimensions of epistemological beliefs, and those of critical thinking dispositions such as reasoning (r=.300; p=.000, p<.01), seeking evidence (r=.234; p=.004, p<. .01), seeking the truth (r=.282; p=.000, p<.01), open-mindedness (r=.217; p=.007, p<.01) and systematicity

(r=.336; p =.000, p<.01). There were also positive and significant relationships between the dimension of epistemic confliction and those of reasoning (r=.234; p=.004, p<.01) and seeking evidence (r=.238; p=.003, p<. .01).

Table 9. Pearson Correlation Coefficients between the Epistemological Beliefs towards Learning and Educational Beliefs

Variables		Progressivism	Reconstructionism	Essentialism	Perennialism
Epistemological Beliefs towards Learning (Total)	r	.186*	.121	-.102	-.018
	p	.022	.139	.211	.828
Attaining to Knowledge	r	.257**	.292**	.070	.277**
	p	.001	.000	.388	.001
Nurture vs. Nature	r	.062	-.037	-.044	-.179*
	p	.446	.652	.593	.027
Absolute and Single Reality	r	.130	.134	-.131	.045
	p	.110	.100	.108	.581
Epistemic Confliction	r	-.039	-.082	-.172	-.112
	p	.631	.313	.034	.169

**Correlation is significant at the 0.01 level *Correlation is significant at the 0.05 level

Table 9 figures positive and significant relationships between epistemological beliefs towards learning and progressivism (r=.186; p=.022, p<.05). Besides, a negative but insignificant relationship was identified between epistemological beliefs towards learning and essentialism and perennialism educational beliefs. Positive and significant relationships were determined between the dimension of "attaining to knowledge" and progressivism (r=.257; p=.001, p<.01), reconstructionism (r=.292; p=.000, p<.01) and perennialism (r=.277; p=.001, p<.01) educational beliefs.

Table 10. Pearson Correlation Coefficients between the Critical Thinking Dispositions and Educational Beliefs

Variables		Critical Thinking Dispositions (Total)	Reasoning	Reaching the Judiciary	Seeking Evidence	Seeking the Truth	Open-mindedness	Systematicity
Progressivism	r	.388**	.289**	.258**	.255**	.309**	.347**	.399**
	p	.000	.000	.001	.002	.000	.000	.000
Reconstructionism	r	.347**	.283**	.219**	.235**	.417**	.285**	.226**
	p	.000	.000	.007	.004	.000	.000	.005
Essentialism	r	-.105	-.134	-.049	-.065	-.069	-.084	-.086
	p	.198	.099	.549	.426	.395	.304	.292
Perennialism	r	.187*	.066	.198*	.060	.205*	.225**	.159
	p	.021	.420	.014	.461	.011	.005	.050

**Correlation is significant at the 0.01 level *Correlation is significant at the 0.05 level

As can be seen in Table 10, positive and significant relationships were found between critical thinking dispositions and progressivism (r=.388; p=.000, p<.01), reconstructionism (r=.347; p=.000, p<.01) and perennialism (r=.187; p=.021, p<.05) educational beliefs. And negative relationship was

determined between critical thinking dispositions and essentialism (r=.105; p=.198) despite not at a significant level. Positive and significant relationships were found between each dimension of the critical thinking dispositions and progressivism and reconstructionism educational beliefs.

Findings and Interpretation regarding the Fourth Research Question

Linear regression analysis was used to determine whether the relationship between the pre-service secondary mathematics teachers' epistemological beliefs towards learning, educational beliefs and critical thinking dispositions was predictive. Analysis results are shown in Table 11, Table 12, Table 13, Table 14, Table 15 and Table 16.

Table 11. Regression Analysis of the Epistemological Beliefs towards Learning on their Critical Thinking Dispositions

Independent Variable	Dependent Variable	B	Std. Error	β	t	R	R2	F	p
Epistemological Beliefs towards Learning	Critical Thinking Dispositions (Total)	2.733	.409	.250	6.688	.250	.063	10.010	.002*
		.015	.005		3.164				
	Reasoning	2.079	.486	.313	4.276	.313	.098	16.317	.000*
		.023	.006		4.039				
	Reaching the Judiciary	3.401	.472	.092	7.205	.092	.008	1.284	.259
		.006	.006		1.133				
	Seeking Evidence	1.877	.575	.290	3.262	.290	.084	13.813	.000*
		.025	.007		3.717				
	Seeking the Truth	2.331	.514	.245	4.539	.245	.060	9.619	.002*
		.019	.006		3.101				
	Open-mindedness	3.837	.550	.054	6.974	.054	.003	.432	.512
		.004	.007		.657				
	Systematicity	2.867	.577	.169	4.967	.169	.028	4.393	.038*
		.014	.007		2.096				

*p < .05

Table 11 suggests that the pre-service secondary mathematics teachers' epistemological beliefs towards learning had a positive but weak effect on their critical thinking dispositions. The R2 value (R=.250; R2 = .063; p<0.05), which is expressed as the explanatory power of the model, illustrates that 6.3% of the critical thinking disposition variance is explained by the epistemological beliefs towards learning. Upon analyzing the values with regard to the dimensions of critical thinking disposition, 9.8% of the reasoning (R=.313; R2 = .098; p<0.05) dimension, 8.4% of seeking evidence (R=.290; R2 = .084; p<0.05) were explained by the epistemological beliefs towards learning.

Table 12. Regression Analysis of the Epistemological Beliefs towards Learning on their Educational Beliefs

Independent Variable	Dependent Variable	B	Std. Error	β	t	R	R2	F	p
Epistemological Beliefs towards Learning	Progressivism	3.505	.456	.186	7.677	.186	.035	5.366	.022*
		.012	.012		2.317				
	Reconstructionism	3.523	.525	.121	6.706	.121	.015	2.210	.139
		.009	.006		1.487				
	Essentialism	3.082	.567	-.102	5.439	.102	.010	1.576	.211
		-.008	.007		-1.255				
	Perennialism	3.169	.708	-.018	4.477	.018	.000	.047	.828
		-.002	.008		-.217				

*p < .05

According to Table 12, the pre-service secondary mathematics teachers' epistemological beliefs towards learning had a positive but weak effect only on their progressivism educational belief. The R2 value (R=.186; R2 =.035; p<0.05), the explanatory power of the model, shows that 3.5% of the progressivism education belief variance is explained by the epistemological belief towards learning.

Table 13. Regression Analysis of the Critical Thinking Dispositions on their Epistemological Beliefs towards Learning

Independent Variable	Dependent Variable	B	Std. Error	β	t	R	R2	F	p
Critical Thinking Dispositions	Epistemological Beliefs towards Learning (Total)	67.9227	5.227	.250	12.996	.250	.063	10.010	.002*
		4.094	1.294		3.164				
	Attaining to Knowledge	24.860	2.513	.320	9.893	.320	.103	17.149	.000*
		2.576	.622		4.141				
	Nurture vs. Nature	23.203	3.574	-.038	6.492	.038	.001	.222	.638
		-.417	.885		-.471				
	Absolute and Single Reality	11.550	1.422	.193	8.122	.193	.037	5.820	.017*
		.849	.352		2.413				
	Epistemic Confliction	8.313	2.245	.157	3.703	.157	.025	3.810	.053
		1.085	.556		1.952				

*p < .05

Table 13 suggests that the pre-service secondary mathematics teachers' critical thinking dispositions had a positive but weak effect on their epistemological beliefs towards learning. Expressed as the explanatory power of the model, R2 value (R=.250; R2 = .063; p<0.05) points out that 6.3% of the epistemological belief towards learning variance is explained by the critical thinking dispositions. Considering the values related to the dimensions of epistemological beliefs on learning, the dependent variable, 10.3% of the dimension of attaining to knowledge (R=.320; R2 = .103; p<0.05) and 3.7% of the absolute and single reality dimension (R=.193; R2 = .037; p<0.05) were explained by the critical thinking dispositions.

Table 14. Regression Analysis on the Predictive Power of the Critical Thinking Dispositions on their Educational Beliefs

Independent Variable	Dependent Variable	B	Std. Error	β	t	R	R2	F	p
Critical Thinking Dispositions	Progressivism	2.839	.334	.388	8.489	.388	.151	26.629	.000*
		.427	.083		5.160				
	Reconstructionism	2.553	.388	.347	6.583	.347	.120	20.494	.000*
		.435	.096		4.527				
	Essentialism	2.943	.443	-.105	6.648	.105	.011	1.674	.198
		-.142	.110		-1.294				
	Perennialism	1.753	.544	.187	3.225	.187	.035	5.448	.021*
		.314	.135		2.334				

*p < .05

As is figured in Table 14, the pre-service secondary mathematics teachers' critical thinking dispositions were determined to have a positive effect on their educational beliefs- progressivism (β= .388), reconstructionism (β=.347) and perennialism (β=.187). The explanatory power of the model, R2 value signifies that 15.1% of the progressivism (R=.388; R2 =.151; p<0.05) and 12% of the reconstructionism (R=.347; R2 =.120; p<0.05) were explained by the critical thinking disposition.

Table 15. Regression Analysis of the Educational Beliefs on their Epistemological Beliefs towards Learning

Independent Variable	Dependent Variable	B	Std. Error	β	t	R	R2	F	p
Progressivism	Epistemological Beliefs towards Learning (Total)	71.795	5.460	.186	13.149	.186	.035	5.366	.022*
		2.765	1.193		2.317				
	Attaining to Knowledge	26.671	2.639	.257	10.106	.257	.066	10.584	.001*
		1.877	.577		3.253				
	Nurture vs. Nature	18.728	3.675	.062	5.097	.062	.004	.584	.446
		.614	.803		.764				
	Absolute and Single Reality	12.598	1.479	.130	8.516	.130	.017	2.584	.110
		.520	.323		1.607				
	Epistemic Confliction	13.798	2.338	-.309	5.901	.039	.002	.231	.631
		-.246	.511		-.481				
Reconstructionism	Epistemological Beliefs towards Learning (Total)	77.627	4.578	.121	16.957	.121	.015	2.210	.139
		1.573	1.058		1.487				
	Attaining to Knowledge	27.152	2.167	.292	12.530	.292	.086	14.032	.000*
		1.876	.501		3.746				
	Nurture vs. Nature	22.900	3.053	-.037	7.500	.037	.001	.205	.652
		-.319	.706		-.453				
	Absolute and Single Reality	12.950	1.227	.134	10.553	.134	.018	2.732	.100
		.469	.284		1.653				
	Epistemic Confliction	14.624	1.935	-.082	7.556	.082	.007	1.023	.313
		-.452	.447		-1.011				
Essentialism	Epistemological Beliefs towards Learning (Total)	87.329	2.387	-.102	36.583	.102	.010	1.576	.211
		-1.237	.985		-1.255				
	Attaining to Knowledge	34.228	1.176	.070	29.099	.070	.005	.748	.388
		.420	.485		.865				
	Nurture vs. Nature	22.358	1.588	-.044	14.077	.044	.002	.286	.593
		-.351	.655		-.535				
	Absolute and Single Reality	15.977	.639	-.131	25.011	.131	.017	2.609	.108
		-.426	.264		-1.615				
	Epistemic Confliction	14.765	.995	-.172	14.833	.172	.030	4.589	.034*
		-.880	.411		-2.142				

Perennialism	Epistemological Beliefs towards Learning (Total)	84.917 -.173	2.452 .796	-.018	34.637 -.217	.018	.000	.047	.828
	Attaining to Knowledge	31.216 1.329	1.158 .376	.277	26.963 3.533	.277	.077	12.484	.001*
	Nurture vs. Nature	25.023 -1.159	1.598 .519	-.179	15.657 -2.233	.179	.032	4.987	.027*
	Absolute and Single Reality	14.611 .118	.658 .214	.045	22.214 .553	.045	.002	.305	.581
	Epistemic Confliction	14.067 -.461	1.026 .333	-.112	13.709 -1.382	.112	.013	1.910	.169

*p < .05

Table 15 reveals that only the progressivism educational belief of the pre-service secondary mathematics teachers had a positive but weak effect on their epistemological beliefs towards learning. Expressed as the explanatory power of the model, R2 value (R=.186; R2 = .035; p<0.05) proves that 3.5% of the epistemological belief towards learning variable (variance) was explained by the independent variable in the model, namely, progressivism. Moreover, the pre-service secondary mathematics teachers' educational beliefs of progressivism, reconstructionism and perennialism were determined to have a positive but weak effect on the dimension of attaining to knowledge epistemological belief. Regarded as the explanatory power of the model related to the dimension of attaining to knowledge, R2 values exhibit that 6.6% (R=.257; R2 =.066; p<0.05) of the dimension of attaining to knowledge was explained by progressivism, 8.6% (R=.292; R2=.086; p<0.05) by reconstructionism and 7.7% (R=.277; R2 =.077; p<0.05) by perennialism.

Table 16. Regression Analysis of the Educational Beliefs on their Critical Thinking Dispositions

Independent Variable	Dependent Variable	B	Std. Error	β	t	R	R2	F	p
Progressivism	Critical Thinking Dispositions (Total)	2.414 .353	.313 .068	.388	7.717 5.160	.388	.151	26.629	.000*
	Reasoning	2.586 .318	.394 .086	.289	6.560 3.696	.289	.083	13.663	.000*
	Reaching the Judiciary	2.733 .264	.368 .081	.258	7.420 3.272	.258	.067	10.708	.001*
	Seeking Evidence	2.506 .330	.468 .102	.255	5.359 3.227	.255	.065	10.416	.002*
	Seeking the Truth	2.315 .352	.405 .089	.309	5.712 3.973	.309	.095	15.785	.000*
	Open-mindedness	2.321 .412	.416 .091	.347	5.585 4.532	.347	.120	20.539	.000*
	Systematicity	1.779 .504	.432 .094	.399	4.119 5.335	.399	.159	28.461	.000*
Reconstructionism	Critical Thinking Dispositions (Total)	2.833 .277	.264 .061	.347	10.720 4.527	.347	.120	20.494	.000*
	Reasoning	2.861 .274	.328 .076	.283	8.728 3.611	.283	.080	13.036	.000*
	Reaching the Judiciary	3.089 .197	.309 .071	.219	10.005 2.754	.219	.048	7.585	.007*
	Seeking Evidence	2.862 .267	.390 .090	.235	7.335 2.959	.235	.055	8.757	.004*
	Seeking the Truth	2.123 .418	.321 .074	.417	6.605 5.623	.417	.174	31.613	.000*
	Open-mindedness	2.922 .296	.353 .081	.285	8.289 3.638	.285	.081	13.236	.000*
	Systematicity	3.000 .250	.381 .088	.226	7.878 2.835	.226	.051	8.039	.005*

Essentialism	Critical Thinking Dispositions (Total)	4.207	.146	-.105	28.858	.105	.011	1.674	.198
		-.078	.060		-1.294				
	Reasoning	4.323	.176	-.134	24.537	.134	.018	2.751	.099
		-.121	.073		-1.659				
	Reaching the Judiciary	4.031	.164	-.049	24.508	.049	.002	.360	.549
		-.041	.068		-.600				
	Seeking Evidence	4.173	.208	-.065	20.022	.065	.004	.638	.426
		-.069	.086		-.799				
	Seeking the Truth	4.073	.184	-.069	22.187	.069	.005	.727	.395
		-.065	.076		-.853				
	Open-mindedness	4.390	.191	-.084	23.021	.084	.007	1.064	.304
		-.081	.079		-1.032				
	Systematicity	4.284	.203	-.086	21.137	.086	.007	1.119	.292
		-.088	.084		-1.058				
Perennialism	Critical Thinking Dispositions (Total)	3.686	.147	.187	25.048	.187	.035	5.448	.021*
		.112	.048		2.334				
	Reasoning	3.893	.181	.066	21.477	.066	.004	.655	.420
		.048	.059		.809				
	Reaching the Judiciary	3.534	.165	.198	21.428	.198	.039	6.137	.014*
		.133	.054		2.477				
	Seeking Evidence	3.856	.213	.060	18.100	.060	.004	.545	.000*
		.051	.069		.738				
	Seeking the Truth	3.458	.184	.205	18.788	.205	.042	6.548	.011*
		.153	.060		2.559				
	Open-mindedness	3.670	.191	.225	19.261	.225	.050	7.973	.005*
		.175	.062		2.824				
	Systematicity	3.677	.205	.159	17.919	.159	.025	3.895	.051
		.132	.067		1.974				

*p < .05

As depicted in Table 16, the pre-service secondary mathematics teachers' progressivism, reconstructionism and perennialism educational beliefs were determined to have a positive effect on their critical thinking dispositions. R2 values, known as the explanatory power of the models, outline that 15.1% of the critical thinking disposition variance was explained by progressivism, 12% by reconstructionism and 3.5% by perennialism. Besides, the pre-service secondary mathematics teachers' progressivism and reconstructionism educational beliefs had a positive and significant impact upon all dimensions of critical thinking dispositions. Essentialism educational belief was noted to have a negative and insignificant effect on all dimensions of critical thinking dispositions. Considered as the explanatory power of the model, R2 values show that 15.9% of the systematicity dimension (R=.399; R2 =.159; p<0.05) and 12% of the open-mindedness dimension (R=.347; R2 =.120; p<0.05) were explained by progressivism. Likewise, the R2 value, which is expressed as the explanatory power of the model related to the reconstructionism indicates that 17.4% (R=.417; R2 = .174; p<0.05) of the seeking the truth dimension was explained by reconstructionism in the model.

Result, Discussion and Recommendations

This study attempts to identify the pre-service secondary mathematics teachers' epistemological beliefs towards learning, their educational beliefs and critical thinking dispositions and the relationship between them. Within the scope of the first research question, an answer to the following question was sought: "What are the pre-service secondary mathematics teachers' epistemological beliefs towards learning, educational beliefs and critical thinking dispositions?".

Based upon the findings, the pre-service secondary mathematics teachers' epistemological beliefs towards learning were determined to be above the average. Similar layouts emerged in various studies. In the study conducted with 987 pre-service teachers, Wu et al. (2021) concluded that the average of epistemological beliefs was above the normative value. Dorsah et al. (2020) carried out a study with 115 pre-service teachers and reported that their epistemological beliefs were above average. Moreover, in the study conducted with 472 pre-service teachers, Yalçın and Yıldız (2020) highlighted those pre-service teachers had sophisticated epistemological beliefs. In their study on pre-service teachers' epistemological beliefs, Langcay et al. (2019) noted that they have a complex structure along the source of knowledge, and they tend to be sophisticated. Tanık Önal and Saylan Kırmızıgül (2021) conducted their study with 182 pre-service teachers and pointed that they have sophisticated epistemological beliefs. In another study performed with 213 pre-service teachers, Altay (2021) outlined that teachers have medium level epistemological beliefs and their epistemological beliefs on learning are close to advanced level. The results regarding the dimensions of epistemological beliefs revealed that pre-service teachers' epistemological beliefs in the "epistemic confliction" dimension, which includes the information-cognitive conflict created by the phenomena of nature or society that seem to be chaotic, that have more than one solution, that cannot be resolved with a single algorithm, and that seem to be devoid of order, have a lower level of development than the other dimensions. The result regarding the dimension of "attaining to knowledge", referring to knowledge that is structured in degrees, the limits of knowledge and knowing, the methods of accessing knowledge and the effort to reach knowledge, indicated that pre-service teachers have more advanced epistemological beliefs compared to other dimensions. In addition, the pre-service teachers were determined to have developed beliefs in terms of the "absolute and single reality" dimension. The results of the study conducted by Vecaldo (2017) implied that 464 pre-service teachers and teachers hold mature epistemological beliefs about "effort and process in learning". Güler (2020) reported that the pre-service teachers have mature beliefs in the dimensions that "learning depends on effort and ability", but an underdeveloped belief as for the dimension of "there is only one truth". In the study conducted by Wong et al. (2009) with 604 pre-service teachers, the most adopted epistemological belief was identified to be the dimension of "effort and process in learning", while the least adopted one was the dimension of "belief in expert knowledge". In a similar vein, Chai et al. (2006) carried out a study with 537 pre-service teachers and reported that the beliefs about the significance of effort and process in learning were predominant. The results obtained from both this study and other studies indicate that the pre-service teachers have awareness of the significance of effort in the learning process, yet their beliefs related to the variability of the truths and multiple solutions do not have a sufficient level of development. Considering that epistemological beliefs are a feature that holds a significant impact on educational activities and affects the teacher's understanding of education and in-class practices, it is quite pleasing that pre-service teachers have epistemological beliefs that are higher than medium. However, the fact that each dimension of epistemological beliefs

does not have the desired level of development cannot be underestimated. Given that epistemological beliefs do not have an innate and unchanging structure and they have a structure that changes and develops over time (Özeren, 2020), we can shape our future generations by attaching more importance to the training of educators with advanced epistemological beliefs both within the scope of pre-service training and in-service training. As a result of the study conducted with 110 university students aged between "16-65", Bath and Smith (2009) emphasized that epistemological beliefs can be a key predictor of lifelong learning.

As for the pre-service teachers' educational beliefs within the framework of the first research question, they were found to have mostly progressivism and reconstructionism, while the lowest education belief was determined to be essentialism. Akagündüz Yinilmez and Soylu (2021) concluded that pre-service teachers mostly adopt contemporary educational beliefs (existentialism and reconstructionism) and that the least adopted educational belief is essentialism. In another study conducted by Gökbulut (2020), 233 pre-service teachers mostly adopt progressivism, while the least preferred one is essentialism. Likewise, Yaralı (2020) conducted a study with 657 pre-service teachers and reported that the least adopted educational belief is essentialism; moreover, Abalı Öztürk and Bilgen (2018) concluded that essentialism is the least adopted educational belief by 769 pre-service teachers. Fries (2012) signified that most of the education faculties have progressive education beliefs. Similar findings emerged in the study conducted by Minor et al. (2001). The findings of all the studies are congruent with those of the present study. This paves the way for the fact that the pre-service teachers' educational beliefs are in line with contemporary educational philosophies. Considering that the curricula in Turkey are built on the philosophy of progressivism, pre-service teachers may be said to have educational beliefs at a satisfactory level in order to achieve the objectives of curricula. It is likely that pre-service teachers are trained according to the targeted educational philosophy during their pre-service education, meaning that teacher-training programs also include educational beliefs concerning the educational philosophies of progressivism and reconstructionism. Hordvik et al. (2020) defined teacher education pedagogy as a process that is influenced by the beliefs, knowledge and experiences of teacher educators, the expectations of teacher educators and pre-service teachers as well as the traditions of the university, curricula and courses.

Within the scope of the first research question, the pre-service secondary mathematics teachers' critical thinking disposition levels were found to be higher than the medium value, furthermore, they had the highest score in terms of the "open-mindedness" dimension, and the lowest score in terms of the "Seeking the Truth" dimension. Upon analyzing the relevant literature regarding the pre-service teachers' critical thinking dispositions, similar results emerged in the studies conducted by Koçer (2021) with 165 pre-service teachers, Sevgi and Şahin (2021) with 424 pre-service teachers; Öztürk (2020) with 273 pre-service science teachers, Alkoç (2020) with 442 pre-service teachers, Yüzgeç (2020) with 135 pre-service teachers, Uysal et al. (2020) with 275 pre-

service teachers, Ocak et al. (2016) with 278 pre-service teachers; Piji Küçük and Uzun (2013) with 274 pre-service teachers and Durukan and Maden (2010) with 240 pre-service teachers. Accordingly, the majority of studies examining teachers' critical thinking dispositions have similar results (Arslan & Kutluca, 2021; Aslan, 2019; İzci & Özden, 2021). However, some research results in the related literature also suggested that pre-service teachers and teachers have lower level critical thinking dispositions (Burks, 2019; Çiçek Sağlam & Büyükuysal, 2013; Nickname & Royafar, 2019; Polat & Kontaş, 2018). In his study titled "Pre-service teachers critical thinking and developing and using models in science", Burks (2019) investigated the dispositions of pre-service teachers to develop models related to critical thinking skills, prejudices and active use in their lessons. The study results suggested that the pre-service teachers' knowledge level about critical thinking skills was low, their active use was low, and they were insufficient in defining and explaining the multiple dimensions of critical thinking. The results obtained from the studies may vary due to the differences of the working groups. Various recommendations could be provided by taking the studies conducted with teachers and pre-service teachers into consideration. Activities/elective courses may be included in teacher education to improve their dispositions and skills, online databases may be created so that pre-service teachers can benefit from them asynchronously, course definitions may be revised by associating the learning objectives of the courses in the undergraduate program with critical thinking skills, academic staff's critical thinking skills may be reviewed in order to make critical thinking dispositions more positive. The inclusion of the "critical and analytical thinking" course in the vocational knowledge elective course pool in education faculties in Turkey since 2018 is a favorable development in terms of developing critical thinking skills.

Based upon the second research question, an answer to the following question was sought: "Do the pre-service secondary mathematics teachers' epistemological beliefs towards learning, their educational beliefs and critical thinking dispositions differ significantly across gender, grade level, academic achievement and parents' educational level?". In this regard, the pre-service secondary mathematics teachers' epistemological beliefs towards learning did not significantly vary across their gender, and that female and male pre-service teachers had beliefs at approximately the same level of development. The relevant literature includes various studies indicating that teachers' and pre-service teachers' epistemological beliefs are free from a significant difference in terms of gender (Arseven et al., 2021; Chan, 2003; Chan, 2008; Chan & Elliott, 2000; Conley et al., 2004; Elmalı & Yıldız, 2017; Kaya & Ekici, 2017; Koç & Memduhoğlu, 2017; Olgun, 2018; Tanık Önal & Saylan Kırmızıgül, 2021). However, many studies also revealed that epistemological beliefs differed significantly in terms of gender (Avcı et al., 2020; Chai et al., 2006; Hofer, 2000; İçli, 2021; Kanadlı & Akay, 2019; Kutluca et al., 2018; Lodewyk, 2007; Özeren & Akpınar, 2020; Schommer & Dunnell, 1994; Soysal et al., 2018; Üztemur & Dinç, 2018; Vecaldo, 2017). Some of these studies suggested that males have more sophisticated epistemological beliefs, while a large number of them argued that females have

more sophisticated epistemological beliefs. Considering the different results from both this study and the related studies, it is unlikely to clarify the fact about whether gender is an effective factor in the epistemological beliefs of teachers and pre-service teachers. This study also determined that the pre-service secondary mathematics teachers' epistemological belief towards learning significantly differed against the 4th graders, and those of the 1st, 2nd, and 3rd graders were at approximately the same level of development and were higher than the 4th graders. The results of some studies are in parallel to that of the present study, yet most of these studies are in contrast to the result obtained from this study by showing that epistemological beliefs become more sophisticated the class promotes. Having taken the leading role in conducting the first study on people's epistemological beliefs, William Perry (1970) investigated the university students' views in order to examine the role of students and teachers during the learning process starting from the first to the last year. The results demonstrated that most of the first grade university students thought that knowledge is an unchangeable concept, whereas the fourth graders believed that the nature of knowledge is science and that it could be changed (İçli, 2021). In addition, there are also studies suggesting that epistemological belief levels do not significantly differ in terms of grade level (İçli, 2021; Kutluca et al., 2018). The difference in study results on whether university education develops individuals' epistemological belief does not present us clear information. Based upon the assumption that epistemological beliefs can be developed, university education is expected to have positive effects in this sense. The epistemological beliefs of the academic staff also play a significant role in this process. It is recommended to carry out studies on the development of the academic staff's epistemological beliefs. The findings of this current study also unveiled that the pre-service secondary mathematics teachers' epistemological beliefs towards learning are free from a significant difference in terms of their academic achievement. The results of some studies are in line with that of this study (Harteis et al., 2010; Mohamed & El-Habbal, 2013). Mohamed and El-Habbal (2013) concluded that students with sophisticated epistemological beliefs did not achieve high success in exams and those with naive epistemological beliefs showed higher academic performance. They cited the reasons as the inadequacy of teaching practices and the inclusion of cognitive-level questions based on recall and memorization in the exams. Unlike the result of this study, most of the related studies refer to significant and positive relationships between epistemological beliefs and academic achievement (Bozpolat & Durdu, 2020; Cano, 2005; Chen & Pajares, 2010; Conley et al., 2004; Hofer & Pintrich, 1997; Holschuh, 1998; Kanadlı & Akbaş, 2015; Schommer et al., 1992; Schommer-Aikins et al., 2005; Qian & Alvermann, 2000; Üztemur et al., 2020; Winberg et al., 2019; Zhou et al., 2019). The results of these studies can be explained by factors such as the fact that learners with sophisticated epistemological beliefs adopt deep rather than superficial learning approaches, they spend more effort on learning, they are persistent and responsible, and they tend to use learning strategies more effectively in challenging academic tasks. It is of great importance to develop the perceptions of learners with advanced epistemological beliefs towards academic achievement, which can be

achieved by the quality of the tools used in measurement and evaluation. Studies may be conducted on the preparation of the tools measuring academic performance and having the quality of measuring high-level skills for advanced epistemological beliefs. The results showed that the pre-service secondary mathematics teachers' epistemological beliefs towards learning differed significantly in terms of parents' educational level only in the dimension of "attaining to knowledge" between those whose parents' were primary school graduates and high school graduates in favor of those whose parents were high school graduates. The study carried out by İçli (2021) revealed that epistemological beliefs did not differ in terms of the father's educational level; however, a significant difference was identified in terms of the mother's educational level. Accordingly, primary school graduates were found to have more learner-centered pedagogical beliefs compared to the literate ones. Bozpolat and Durdu (2020) reported that the variables of father's educational level and mother's educational level have different results.

This study also concluded that the pre-service secondary mathematics' teachers' educational beliefs significantly differed in terms of gender in favor of females in the dimension of progressivism and in favor of males in the dimension of perennialism. This result is consistent with previous studies (Abalı Öztürk & Bilgen, 2018; Aydemir & Kaya, 2021; Dinamitçi, 2021; Gökbulut, 2020; Kumral, 2015; Yaralı, 2020; Yazıcı, 2017). All these studies showed that contemporary educational beliefs are more adopted by females, while traditional education beliefs by males. In addition, the literature also includes many studies indicating that educational beliefs do not significantly differ in terms of gender (Altınkurt et al., 2012; Demir et al., 2021; Fritz, 2008). The results of this study on whether the pre-service secondary mathematics teachers' educational beliefs differed significantly in terms of grade level, academic achievement and parents' educational level outlined that only the dimension of essentialism varied across grade level (between the fourth and second graders), but not in terms of academic achievement and parents' educational level. The results also showed that the second grade students mostly adopt essentialism educational belief. The results of some studies are line with that of this study indicating that the educational beliefs of teachers and pre-service teachers are affected by their grade levels (Demirtaş & Batdal Karaduman, 2016; Yaralı, 2020). Considering the average of each educational belief of the fourth grade level, it is unlikely to mention that the tendency towards contemporary education beliefs increases or decreases as grade levels increase.

This study analyzed whether the pre-service teachers' critical thinking dispositions significantly differed in terms of gender, grade level, academic achievement and parents' educational level. As a result, their critical thinking dispositions did not vary in terms of gender; moreover, the average of the female and male pre-service teachers were exactly the same. The related studies concluded that the teachers' and pre-service teachers' critical thinking dispositions are free from a significant difference in terms of gender (Akbulut, 2019; Alkoç, 2020; Demirbilek & Kırbaç, 2021; Erdem et al., 2013; Facione et al., 1995; Fitriani et al., 2019; Khandaghi et al., 2011; Mahmoud &

Mohamed, 2017; Öztürk, 2020; Polat & Kontaş, 2018; Soğukpınar, 2017; Tous & Haghighi, 2016; Uslu, 2020; Yüzgeç, 2020). Unlike the result of this present study, some studies found that critical thinking dispositions differed significantly in terms of gender (Ateş, 2018; Bulut, 2020; Kim et al., 2014; Koçer, 2021; Ocak et al., 2016; Shubina & Kulakli, 2019; Uysal et al., 2020). Most of these studies suggested that women have a higher level of critical thinking dispositions. Based on the results of both this study and related studies, it is impossible to put across whether gender is an effective factor in the teachers' and pre-service teachers' critical thinking dispositions. Another result of current study suggested that the pre-service secondary mathematics teachers' critical thinking dispositions did not vary in terms of grade level and the averages were quite close to each other. Similar layouts were identified within the relevant studies (Altuntaş et al., 2018; Ip, Lee et al., 2000; Khandaghi et al., 2011; Ocak et al., 2016; Uslu, 2020). Contrary to these studies, some studies conducted with pre-service teachers affirmed that the grade level had an effect on their critical thinking dispositions (Alkoç, 2020; Ateş, 2018; Kermansaravi et al., 2013; Noone & Seery, 2018; Öztürk, 2020; Sevgi & Şahin, 2021; Uysal et al., 2020; Yüzgeç, 2020). Pre-service teacher education is expected to positively affect critical thinking dispositions with regard to the quality of teacher education. In this case, a difference is foreseen in favor of the upper grade levels in terms of critical thinking disposition. Based on the results implying that grade level is not an effective factor, it may be wise to emphasize that pre-service teacher education is insufficient in terms of positively affecting critical thinking dispositions. In this context, it is paramount in conducting longitudinal studies with a view to revealing the current situation and educating teachers who have critical thinking dispositions. The results of this study on whether the pre-service secondary mathematics teachers' critical thinking dispositions differed significantly in terms of academic achievement and parents' educational level announced that as the academic achievement increased, critical thinking dispositions also increased, but no significant difference was found between them and critical thinking dispositions did not vary in terms of parents' educational level. Similar results emerged in previous studies (Akbulut, 2019; Polat & Kontaş, 2018; Şahin, 2018). Some studies (Altuntaş et al., 2018; Yakar et al., 2010;) examining the critical thinking dispositions in terms of academic achievement reached the conclusion that critical thinking disposition does not significantly vary in terms of academic achievement, while others (Abbasi & Izadpanah, 2018; D'Alessio et al., 2019; Ip et al., 2000; Wettstein et al., 2011) showed that critical thinking dispositions changes positively in terms of academic achievement. This may be due to the fact that the sample groups are pre-service teachers from different branches as their openness to critical thinking is not the same in each branch. In fact, some studies suggested that the critical thinking dispositions of pre-service science and social science teachers also vary (Rodzalan & Saat, 2015). Concentrated on the results obtained from the studies indicating that critical thinking disposition varies positively in terms of academic achievement; it can be said that one of the criteria of being successful in teacher training programs is critical thinking skills or that teacher education programs develop critical thinking. Making course definitions by associating the criteria for being

successful in the courses in teacher training programs with critical thinking skills will be positive in terms of educating teachers having critical thinking dispositions.

Besides, an answer to third research question was sought “Is there a significant relationship between the pre-service secondary mathematics teachers’ epistemological beliefs towards learning, educational beliefs and critical thinking dispositions?”. The results confirmed a positive and significant relationship between the pre-service teachers’ epistemological belief towards learning and their critical thinking disposition levels. In addition, positive and significant relationships were noted between the epistemological beliefs towards learning and the dimensions of “reasoning”, “seeking evidence”, “seeking the truth” and “systematicity” in critical thinking dispositions; between "attaining to knowledge", which is one of the dimensions of epistemological beliefs towards learning, and "reasoning", "seeking evidence", "seeking the truth", "open-mindedness" and "systematicity", the dimensions of critical thinking dispositions; between the dimension of "epistemic confliction" and those of "reasoning" and "seeking evidence". In parallel to the result of the present study, Koyunlu Ünlü & Dökme (2017) and Oğuz & Sarıçam (2015) found a positive significant relationship between the pre-service teachers’ epistemological beliefs and their critical thinking dispositions. Akbay et al. (2018) and Wyre (2007) concluded that epistemological beliefs have positive effects on university students’ critical thinking dispositions. In another study conducted by Kandemir and Eğmir (2020) with 678 secondary school students, a positive, medium level and significant relationship was determined between all dimensions of epistemological beliefs and critical thinking dispositions. Within the scope of the third research question, positive and significant relationships were found between the levels of epistemological belief towards learning and progressivism; between the dimension of "attaining to knowledge" and educational beliefs of progressivism, reconstructionism and perennialism. Besides, a negative but insignificant relationship was found between epistemological beliefs towards learning and essentialism and perennialism educational beliefs. Wong et al. (2009) carried out a study with 604 pre-service teachers and found that the "talent is innate" epistemological belief dimension negatively affected the constructivist understanding based on progressivism education belief, and the "effort in learning" epistemological belief dimension negatively affected the traditional understanding based on essentialism educational belief. Usta (2019) reported that there is a positive relationship between primary school teachers' naïve epistemological beliefs and their traditional educational beliefs. In another study conducted by Chai et al. (2011) with Singaporean pre-service teachers, pre-service teachers with sophisticated epistemological beliefs were identified to have a tendency towards adopting deep and contemporary educational beliefs in learning. Likewise, Saeed et al. (2014) noted that pre-service teachers with sophisticated epistemological beliefs have a constructivist understanding based mainly upon progressivism.

The research results also revealed positive and significant relationships between the pre-service secondary mathematics teachers’ critical thinking dispositions and their educational beliefs of

progressivism, reconstructionism and perennialism. A negative but insignificant relationship was observed between critical thinking dispositions and essentialism. The study conducted by Ağdacı (2018) with teachers showed that educational beliefs support the teachers' critical thinking skills no matter which educational belief they adopt. In their study with 908 pre-service teachers, Alkın-Şahin et al. (2014) supported the results of this study through revealing a significant relationship between educational beliefs and critical thinking dispositions.

Within the scope of the fourth research question, an answer to the following question was sought: "Do the pre-service secondary mathematics teachers' epistemological beliefs towards learning, their educational beliefs and critical thinking dispositions significantly predict each other?". In this regard, progressivism was found to be explained by epistemological belief towards learning, epistemological belief towards learning was explained by progressivism, epistemological belief towards learning was explained by critical thinking dispositions, the dimensions of "attaining to knowledge" and "absolute and single reality" were explained by critical thinking dispositions, progressivism and reconstructionism were explained at a high level by critical thinking disposition, and critical thinking dispositions were explained by reconstructionism and perennialism at a high level. Similarly, the study conducted by Kozikoğlu and Erden (2018) with 341 pre-service teachers found that progressivism, existentialism and reconstructionism are significant predictors of views on critical pedagogy principles. Üztemur et al. (2020) pointed out that secondary school students' epistemological beliefs significantly predicted their learning approaches. The results indicating positive relationships between epistemological beliefs on learning, critical thinking disposition and educational beliefs and their predictive roles suggest that none of them can be underestimated in teacher education. Given that the only way to implement the curricula that meet the needs of our age is to train teachers of this quality, it is possible to train contemporary educators with contemporary educational beliefs through curricula that enable the formation of sophisticated epistemological beliefs based on critical thinking in teacher education. In this regard, it is essential that teacher-training programs focus on thinking skills training and equip them with practices that aim at educating pre-service teachers who learn to learn. It is of great importance to create and test teacher-training programs, and to carry out academic studies that focus on the development of solution proposals in terms of creating future programs and raising future generations.

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Examination of Digital Literacy Levels of Science Teachers in the Distance Education Process

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Abstract

Digital literacy skills could make important contributions to teachers' learning and teaching process and professional skills. The purpose of this article is to examine the level of science teachers' digital literacy skills in terms of gender and the duration of professional experience. The sample of the study consisted of 88 science teachers working in various districts of Turkey. Digital literacy scale and distance education evaluation interview form were used as data collection tools. The results showed that, no statistically significant difference was found in the digital literacy levels of female and male science teachers. However, digital literacy of teachers with less professional experience is more positive than teachers with more professional experience. Also, science teachers mostly prefer lecturing during distance education. The results show that distance education should be strengthened in terms of infrastructure, implementation, quality in Turkey. Within the scope of the research, it was suggested to organize various trainings to improve the digital literacy levels of teachers, to enrich the content of EBA used in the distance education, and to increase the in-service trainings to improve the distance education skills of teachers.

Keywords: Coronavirus pandemic, digital literacy, distance education, science teachers

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Introduction

Throughout history, various disasters have emerged that have destroyed living life. The latest of these disasters was the Coronavirus pandemic, affecting the whole world at a global level. Accordingly, it was decided to temporarily close schools and learning areas. This affected 94 percent of the world's student population, up to 99 percent in low- and middle-income countries (UNESCO, 2020). As an alternative to face-to-face education, countries have decided to urgently transform the teaching process into distance education (DE) so that the crisis could be managed and education was not interrupted.

DE is defined as the web-based delivery of education with the support of internet technologies. Students are distinct from teachers in terms of time and place in the planned and organized learning and teaching process (Newby, Stepich, Lehman & Russell, 2006). DE is an educational field that focuses on teaching methods and technology to provide teaching on an individual basis to students which are not physically present in traditional educational environments such as classrooms (Bušelić, 2012). According to UNESCO (2002), DE has many technical, social and economic advantages and pedagogical values. Accordingly, DE reveals different ways of knowledge production and acquisition. DE supports the quality and diversity of existing educational structures and strengthens existing capacity. DE provides easy access to many technologies from home. DE, due to its flexibility, allows students to participate in lessons individually at any time (Franklin, Yoakam & Warren, 1996).

In order to ensure the continuity of education in the world, some countries have taken measures such as equipping schools with digital platforms and tools for DE, lending digital devices to less well-off students, and educating school staff about DE methodology and techniques (Schleicher, 2020). In Turkey, it has been decided to continue DE practices through TV channel and Education Information Network (EIN), an online social education platform offered free of charge to students by the General Directorate of Innovation and Educational Technologies. DE courses generally consist of basic courses (Turkish, mathematics, science, history). Therefore, it is seen that not all teachers at all levels of education are included in DE. Thus, it is important to determine science teachers', who are participating in DE, views toward DE.

The most important issue related to DE is the readiness of teachers for DE. For as much as many studies prove that educational initiatives fail because of teacher's beliefs and practices (Niederhauser & Stoddart, 2001). The other issue is related to students. If students do not see technology as useful, they will not be open to DE (Christensen, Anakwe & Kessler, 2001). Therefore, it is the responsibility of teachers to support positive views of the students and to develop their digital competencies.

The development of digital competencies is also possible with educational activities that increase the level of digital literacy. Thus, it is important to determine teachers' digital literacy. According to Gilster (1997), digital literacy is defined as the ability to understand, evaluate and use information from a wide variety of sources from the computer environment. Tyger (2011) stated that digital literacy is more than the knowledge, skills and ability required to use information technologies and internet. According to Ng (2012), digital literacy has a very broad definition that covers the technique, cognitive and social-attitude areas of learning with both online and offline digital technologies. Ng's (2012) digital literacy model proposes that digital literacy consists of technique, cognitive, social-emotional dimensions. The technique dimension requires having the necessary technical and operational skills to use information communication technologies in learning and daily activities. The cognitive dimension, on the other hand, requires critical thinking skills to be able to evaluate and select appropriate software programs to learn or perform a specific task. The social and attitude dimension refers to internet responsibility for communication, socialization and learning. This dimension includes communicating with appropriate languages and words, as well as face-to-face communication, protecting individual security and privacy, and being aware of how to deal with threats with respect and by avoiding misinterpretation and misunderstanding.

When the relevant literature is examined, it is seen that although digital literacy studies generally focusing on prospective teachers and undergraduate students (Bennet, Maton & Kervin, 2008; Hargittai, 2010; Ng, 2012; Ocak & Karakuş, 2019; Özerbaş & Kuralbayeva, 2018; Yazıcıoğlu, Yaylak & Genç, 2020; Yontar, 2019) there are a limited number of studies investigating the digital literacy level of teachers (Arslan, 2019; Korkmaz, 2020; Öçal, 2017). It is the teacher who has the greatest responsibility and critical importance in preparing students for the future in the DE process. Therefore, in the present study, teachers' digital literacy and DE from the perspective of teachers were evaluated. Öcal (2017) found that primary school teachers felt very sufficient in terms of digital literacy. In his study, he did not see any difference in digital competence perceptions depending on gender, but he found that digital literacy levels of primary school teachers decreased as their ages increased. Karavidas, Lim and Katsikas (2005) found that women have a higher level of digital anxiety than men and that men are more successful than women in digital skills However, Van Deursen and Van Diepen (2013), Tomczyk (2020) and Gnambs (2021) did not reveal gender differences on internet skills in their study. Arslan (2019) found that teachers working in primary and secondary schools have high levels of digital literacy and emphasized the importance of using digital tools correctly and effectively to keep up with the digital age. Korkmaz (2020) found that the digital literacy levels of male classroom teachers were higher than the digital literacy levels of female classroom teachers. In addition, he found that as the age of classroom teachers increased, their digital literacy levels decreased. However, unlike Öcal (2017) and Korkmaz (2020) studies, Tomczyk (2020) did not detect a significant difference between secondary school teachers' digital literacy skills

depending on the duration of their professional experience. According to Bakioğlu and Çevik's (2020) research, it was determined that science teachers felt inadequate in the DE process. Burke and Dempsey (2020) stated that teachers feel pressure to realize online learning and worry about being able to timely train curricula after the reopening of schools.

In the present study, science teachers' digital literacy levels and views toward DE was investigated. The reason of this is that determining the digital literacy levels of teachers will contribute to determining the needs of teachers in educational practices in pandemic. Thus, online and face-to-face in-service trainings for teaching will be reshaped. The studies conducted with students to evaluate the DE. Teachers are also primarily responsible for the positive development of students' perspectives on online learning in DE (Ottenbreit-leftwich & Ertmer 2010). In the present study, interviews were conducted with teachers, who are the most important part of DE, and it was evaluated. Bakioğlu and Çevik (2020) conducted a semi-structured interview about pandemic, problems experienced in DE, the science teachers' opinions about the teaching process and the teaching profession. However, different from this study, in the present study, science and technology teachers' DE views were examined in line with their digital literacy skills.

In the present study, the reason for studying the science teachers' DE views and digital literacy skills is that science and technology education has a meaningful partnership in this century. The work of scientists encompasses a range of technologies, and great achievements in science are often accompanied by complex applications of technology. As a result, a complete science education includes both a tool for learning science content and process skills and a commitment to incorporating technology into education (American Association for the Advancement of Science (AAAS), 1996; National Research Council (NRC), 1996). Thus, these elements became a part of the education of science teachers (Flick & Bell, 2000). Therefore, considering that science and technology develop with the support of each other, science teachers also have a greater responsibility. The unexpected transition to online learning with the Covid-19 pandemic requires more initiatives to improve the quality of science teachers' education and create a safe learning environment for students. The literature is insufficient in terms of evaluating the current situation of pandemic DE practices and digital literacy studies for science teachers who are the main responsible of education in DE. The current study will shed light on addressing these shortcomings, revealing the digital literacy skill level, a necessary skill for future global citizens, for science teachers and contributing to the ongoing development of DE. In the present study, unlike these studies, a digital literacy scale related to digital literacy of teachers was used.

Given the direct and indirect contribution of digital literacy skills to teachers' learning and teaching process and professional skills and contribution of society to the development of the education system, it is important to consider the current level of digital literacy skills of teachers.

Therefore, the aim of this research is to determine the digital literacy skills of science teachers in terms of various variables. For this purpose, the research questions of the study are follow:

1. Do the digital literacy skills of science teachers differ statistically significantly according to the gender?

2. Do the digital literacy skills of science teachers differ statistically significantly according to the duration of professional experience?

3. What are the views of science teachers on DE during the pandemic?

Method

This study was conducted with a mixed methods approach. The mixed method is a type of research that combines elements of qualitative and quantitative research approaches for the broad purposes of breadth and depth of understanding and corroboration (Burke Johnson, Onwueegbuzie & Turner, 2007). Mixed methods approach is one of the most extended modalities in Western educational research (Johnson & Christensen, 2012). In the quantitative part of the study, survey was used. The qualitative part was carried out using semi structured individual interviews with the teachers who participated in the questionnaire.

Sample

The sample of the study consists of science teachers working in public schools in various regions of Turkey in the fall semester of the 2020-2021 academic year. The questionnaire was administered via the internet. The link to the questionnaire has been directed to social media groups and science teachers' mailing groups. The study was conducted with a total of 88 (63 female, 25 male) science teachers who volunteered to participate in the study who filled the online questionnaire. Participating teachers were divided into two groups as less and more professional experience. The descriptive statistical results of science teachers are given in Table 1.

Table 1. Descriptive statistical results of science teachers by duration of professional experience.

Duration of professional experience	f	%
1-5 years	44	50.0
6+ years	44	50.0
Total	88	100.0

Data Collection Tools

Digital Literacy Scale was used for the determination of science teachers' digital literacy levels. Distance Education Evaluation Teacher Interview Form was used for the determination of science teachers' opinions about DE. The form was developed by the researchers. Digital Literacy Scale was developed by Ng (2012) and adapted to Turkish by Hamutoğlu, Güngören, Uyanık and

Erdoğan (2017) by conducting a validity and reliability study. The scale was completed by all 88 science teachers. The scale is a 5-point Likert-type scale consisting of 17 items (I Strongly Disagree, I Disagree, I am uncertain, I Agree, I Strongly Agree). The highest score that can be obtained from the scale is 85 and the lowest score is 17. The scale has four dimensions: “attitude", “technique", “cognitive” and “social”. The Cronbach Alpha internal consistency coefficient calculated based on the research data is 0.89. Since it is between $0.80 \leq \alpha \leq 1.00$, the scale is highly reliable.

“Distance Education Evaluation Teacher Interview Form" developed by the researchers was used to determine the opinions of science teachers about DE. The questions are given in the Appendix. The interview technique was preferred because of its features that allow the participants to obtain in-depth information on any topic and to express the participants’ opinions without being influenced by any effect (Cohen & Manion, 1994). A list of interview questions has been developed based on the relevant literature (Kaden, 2020; Koçoğlu & Tekdal, 2020; Putri et al., 2020). The interview form consists of nine semi-structured questions. Within the scope of validity and reliability studies, the interview form was presented to three science education and measurement and evaluation experts. In addition, pilot study was carried out with two science teachers. After expert opinions and pilot study, the final form of the scale was developed. The participants to be interviewed were selected on a voluntary basis. Face-to-face and telephone interviews were conducted with ten teachers who responded the scale.

Data Analysis

Prior to data analysis, histogram, coefficient of variance, skewness kurtosis values, Detrended Normal Q-Q Plot were used to check whether the data showed normal distribution and parametric statistics were used in the analyses. Independent samples t-test was conducted for whether there was a statistically significant difference on science teachers’ digital literacy levels in terms of gender and duration of professional experience.

The data obtained from the interview form were also categorized and subjected to content analysis. Content analysis method was used to analyze the data obtained from the interview form. In the content analysis, the data were read by two researchers and codes were created according to the research questions. Reliability in coding was calculated with the formula Reliability= Consensus/ (Consensus+ Disagreement) proposed by Miles and Huberman (1994). As a result of the calculation, the reliability of the research was calculated as 90%. Categories and themes were created. The findings were supported and interpreted with direct quotations from the participants.

Results

The results are given in terms of the research sub-problems.

Do the Digital Literacy Levels of Science Teachers Show a Statistically Significant Difference in terms of Gender?

The results of the independent samples t-test are presented in Table 2.

Table 2. Independent Samples t-Test Results

Dimensions	Gender	N	X	S	df	t	p
Attitude	Female	63	29.52	3.76	86	.18	.85
	Male	25	29.36	3.71			
Technique	Female	63	24.28	3.24	86	.66	.50
	Male	25	24.80	3.37			
Cognitive	Female	63	8.61	1.11	86	1.12	.26
	Male	25	8.32	1.14			
Social	Female	63	7.38	1.61	86	.68	.49
	Male	25	7.64	1.55			
Digital Literacy	Female	63	69.80	8.20	86	.16	.87
	Male	25	70.12	7.75			

According to Table 2, there is no statistically significant difference between male and female science teachers' digital literacy [t(86)=.16 p>0.05] and digital literacy dimensions [t(86)=.18 p>0.05; t(86)=.66 p>0.05; t(86)=1.12 p>0.05; t(86)=.68 p>0.05]. Although the total digital literacy scores of men were higher than female teachers, this difference was not enough to create a significant difference between them.

Do the Digital Literacy Levels of Science Teachers Show a Statistically Significant Difference in terms of Professional Experience Duration?

The results of the independent samples t-test are presented in Table 3.

Table 3. Independent Samples t-Test Results

Dimensions	Duration of professional experience	N	X	S	df	t	p
Attitude	1-5 years	44	29.84	4.03	86	.91	.36
	6+ years	44	29.11	3.40			
Technique	1-5 years	44	25.36	3.36	86	2.77	.00
	6+ years	44	23.50	2.92			
Cognitive	1-5 years	44	8.61	1.06	86	.66	.51
	6+ years	44	8.45	1.19			
Social	1-5 years	44	7.81	1.68	86	2.9	.03
	6+ years	44	7.09	1.41			
Digital Literacy	1-5 years	44	71.63	8.77	86	2.0	.04
	6+ years	44	68.15	6.89			

When Table 3 is examined, digital literacy of science teachers shows a statistically significant difference in terms of the duration of professional experience [t(86)=2.0 p< 0.05]. Digital literacy of teachers with less professional experience is more positive than teachers with more professional experience. While there is a statistically significant difference between 1-5 years and 6+ years of professional experience of science teachers in terms of technique ([t(86)=2.77 p< 0.05]) and social

dimensions ([t(86)=2.9 p< 0.05]); there is no statistically significant difference between 1-5 years and 6+years of professional experience of science teachers in terms of attitude and cognitive sub-dimensions. Digital literacy of science teachers with less professional experience are more positive than teachers with more professional experience in terms of technical and social dimensions.

What are the Views of Science Teachers on DE During the Pandemic?

Distance Education Evaluation Teacher Interview Form consisted of nine questions. The responses to the questions were evaluated in three themes: quality of DE, technique and equipment, and teaching method.

Science Teachers' Opinions on the Quality of DE

Science teachers were asked about the general evaluation of DE, its positive/negative aspects and whether they would continue DE practices after the pandemic. The answers given by the teachers were coded and presented in Table 4.

Table 4. Science Teachers' Opinions on the Quality of DE

Sub themes	Codes	f
Quality of DE is good	Student participation	1
Quality of DE is moderate	Pandemic	1
Quality of DE is poor	Student follow-up	4
	Communication with family	1
	Hardware	3
Positive aspects of DE	Health	4
	Continuity of education	1
	Cost reduction	2
Negative aspects of DE	Technology	2
	Reaching the student	5
	Getting feedback from students	2
	In-class communication	1
Advantage of DE	Health	7
Disadvantage of DE	No learning by doing	3
I am considering DE after the pandemic	Reinforcing topics/problem solving	4
I am not considering DE after the pandemic	Efficiency	6

As can be seen in Table 4, science teachers generally evaluated the quality of DE as good, moderate and poor. Two science teachers stated that it was quite good for the students who constantly follow DE courses; 1 science teacher stated that it was moderate because it was not very fruitful; 4 science teachers stated that it was poor because each student could not be reached and teachers could not follow them; 1 science teacher stated that it was poor because there was not enough communication with the families and 3 stated that it was poor because of insufficient internet and technological equipment for both the student and the teacher.

Science teachers stated the following aspects as positive aspects of DE ensuring the continuation of education (1), not risk for teachers' and students' health during the pandemic (4),

reducing the cost of teaching by providing the opportunity without leaving home (2). They also expressed the following aspects as the negative aspects of DE: not every student and teacher has enough technology at home (2), not every student in the classroom can attend online lessons (5), not enough feedback from students (2) and preventing students' in-class communication and socialization (1).

While 7 of the science teachers see DE as an advantage in terms of health factor during the pandemic, 3 of these see DE as a disadvantage because it does not provide learning by doing.

Four science teachers stated that they could continue DE after the end of the pandemic period in order to compensate students' deficiencies and to reinforce their understanding; while 6 teachers stated that they would not continue DE after the end of the pandemic, because of the lack of efficiency. Some answers to these questions are as follows

Teacher (female, 6+years experience): DE is not as good as the quality of the education provided at school. It's impossible to reach all students.

Teacher (male, 6+years experience): I can assess the quality of DE as inadequate. Teachers, students and parents do not have sufficient knowledge and equipment about DE and the use of technological devices. It is up to the parents to follow the students, and most parents fail to do so. DE has serious shortcomings in infrastructure. Most students either don't have the device or have difficulty accessing the internet.

Teacher (female, 1-5 years experience): DE is positive because we are safe during the pandemic, however DE is negative because not every student has access to computers and the internet.

Science Teachers' Opinions on the Technical-Equipment of DE

Under this theme, firstly, science teachers were asked which device they use in the lessons in DE. While 6 of the teachers stated that they taught the lessons with computers, 5 stated that they taught the lessons with phones and 2 stated that they taught the lessons with tablets. Some teachers stated that they used both devices. Science teachers were also asked whether they had sufficient information about the technical problems they experienced during the DE and their solution, the practices they used and the problems they experienced, and whether EIN supported DE. Teachers' answers are presented in Table 5.

Table 5. Science Teachers' Opinions on the Technical-Equipment of DE

Sub-themes	Codes	f
I am familiar with the solution of technical problems.	Hardware problems	3
	Connection problems	2
I am not familiar with the solution of technical problems.	Technique	4
	Connection problems	1
EBA	Connection problems	3
	Material upload	2
	Communication problems	3
	Difficulties during writing	2
ZOOM	Connection problems	3
	Material upload	2
	Communication problems	3
	Difficulties during writing	2
I think EBA supports DE.	Assessment- evaluation	1
I do not think EBA supports DE.	Infrastructure problem	3
	Lecturing	4
	Assessment- evaluation	5

As can be seen in Table 5, 3 of the science teachers stated that they had hardware problems during DE, 2 stated that they had connection problems and 4 stated that they had technical problems. While 5 of the science teachers stated that they were informed about technical problems, 5 of them stated that they were not informed. The problems experienced by teachers who have knowledge about the solution of technical problems are generally hardware problems (difficulty in writing) (3) and problems in connecting to the internet (2).

Teachers who were not informed about the solution of technical problems stated that they had technical problems (4) and connection problems (1) and that they needed technical support to solve the problems.

All 10 science teachers stated that they used both EIN and ZOOM in the DE process. Teachers generally stated that they had connection problems when using EIN and ZOOM (3) and that the system meaninglessly threw out the student or teacher during the course. Teachers stated that uploading materials to EIN (2) took a lot of time and could not upload materials in every format. They stated that they could not make eye contact with the students while using applications in DE, that some students turned off the microphone when they did not want to hear; and that they turned off the camera when they did not want to see it and this caused serious communication problems with the students.

A science teacher thinks that EIN contains sufficient exercise questions in terms of measurement and evaluation and supports DE. Nine science teachers do not think that EIN sufficiently supports DE. Science teachers stated that EIN has an infrastructure problem (3), that topic narratives are insufficient (4) and that the questions in EIN are at a simple level, that there are no

questions in LGS(The examination for secondary school entrance) format and that the number of questions is low (5). Some answers to these questions are as follows.

Teacher (male, 6+ years): We are experiencing internet connection problems in DE. Students are interrupted or unable to connect to the course. This causes them to miss certain parts of the lesson.

Teacher (male, 6+years): I'm having hardware problems, and I had hard times in writing. I do not have the necessary equipment.

Teacher (female, 1-5 years): We're having trouble writing at EIN and ZOOM. Especially most of the students can't write. For this, you need to buy extra devices, which are financially burdensome.

Science Teachers' Opinions on Teaching Methods Applied in DE and the Effectiveness of Courses

It was asked which teaching methods science teachers are taught the courses in DE and whether they prepared the course contents themselves. Teachers stated that they taught courses with direct instruction (8), ppt presentation (6), video (6), z book (3), web-2 tools (1) and experiment (1). Two of the teachers stated that they occasionally prepare the course contents themselves, two of the teachers stated that they prepare the course contents themselves and other teachers used ready-made course contents because they did not have sufficient knowledge about preparing digital content. In addition, science teachers were asked about the effectiveness of DE. Teachers' answers are presented in Table 6.

Table 6. Science Teachers' Opinions on the Effectiveness of Courses in DE

Sub-themes	Codes	f
Considering that courses are effective in DE	No answer	-
Considering that courses are partially effective in DE	Family support	2
Considering that courses in DE are ineffective	Method	2
	Course duration	1
	Material	2
	Student-derived factors	3
	Communication	1
	Internet problems	1

According to Table 6, 2 of the science teachers stated that courses are partially effective and emphasized the importance of family support. Eight science teachers think that the courses are ineffective due to the use of teacher-centered methods (2), inadequate course duration (1), inadequate materials for teachers and students (2), inability of students to participate in the course, not knowing whether they follow the course during the course (3), inability to provide two-way communication in a healthy way (1) and problems caused by the internet (1). Some answers to these questions are as follows:

Teacher (female, 1-5 years): I prepare course contents according to the content and objectives of the course. I teach courses with my own ppt presentations, videos on the subject, z-books, competitions I have prepared with web 2 tools.

Teacher (female, 6+years): DE courses cannot be as effective as face-to-face courses. It is difficult to determine whether each student attends the course or not. Adequate resources for course content are difficult to reach. There is very little concrete work done by the students.

Teacher (male, 6+years): I don't think DE lessons are effective. There is not enough communication with the students.

Discussion, Conclusion and Recommendations

In this study, it was aimed to evaluate the digital literacy levels of science teachers in terms of gender and professional experience variables. Additionally, the science teachers' opinions about DE were determined through semi-structured interviews.

This study revealed that there is no statistically significant difference between male and female teachers' digital literacy levels. This finding is similar to the findings obtained in the studies of Argelagos and Pifarre (2017), Arslan (2019), Karagözoğlu & Gezer, 2022, Kozan & Bulut Özek (2019), Ocak & Karakuş (2019), Tomczyk (2020), Van Deursen & Van Diepen (2013). However, there are also different findings (Arcagök, 2020, Aslan, 2022, Gnambs, 2021, Özerbaş & Kuralbayeva, 2018; Yontar, 2019). It could be stated that male teachers are better at using technology and that men generally have more curiosity and interest in technological tools and developments than women teachers. However, the effective participation of women in the digitalization process in recent years and the increase in projects and education programs aimed at improving the digital citizenship skills of female students and women may have positively affected women's perceptions and attitudes towards using technology. Therefore, this could be the reasons of the nonsignificance difference on digital literacy in terms of gender.

The other result of the study is that there is a statistically significant difference between 1-5 years and 6+ years science teachers' digital literacy. As the duration of professional experience increases, digital literacy levels decrease. This may be due to the fact that new teachers have included the use of digital technologies in all areas of their lives in line with the requirements of the digital age. In addition, new teachers may have taken more courses in using digital technologies during their educational lives than teachers with a long professional experience. Again, this may be due to the fact that the internet and digital technologies entered the lives of the older teachers quite late, and this situation makes it difficult for them to adapt to the digital world. This finding obtained in the study is similar to the findings obtained in the studies of Öçal (2017), Arslan (2019), Gomez- Trigueros, Ruiz-Banuls and Ortega- Sanchez, (2019) and Korkmaz (2020). There are also different findings (Yontar,

2019; Tomczyk, 2020). In Yontar's study, the reason of no difference between 22 years and 21 and below pre-service teachers' digital literacy was explained as the ages of two groups are similar and there were no enough participants in the study.

There is no statistically significant difference between 1-5 years and 6+years digital literacy level of science teachers in terms of attitude and cognitive dimensions. This may be due to their awareness that digital technologies should be used more in line with the requirements of the age. There is a statistically significant difference between 1-5 years and 6+years digital literacy level of science teachers in terms of technical and social dimensions. This may be due to the fact that teachers with longer professional experience use digital technologies more superficially and therefore behave more shy and passive in using digital technologies in the technical and social field. This finding is similar to the study conducted by Arslan (2019). The findings obtained from the interview form were examined in three themes: quality of DE, technical and equipment and teaching method. Science teachers generally evaluated the quality of DE as good, medium and poor and 80% of the teachers generally evaluated the quality of DE as poor. This is due to the inability to follow up the students, inadequate equipment of teachers and students to participate in DE and unhealthy teacher-family communication. Science teachers mostly stated the negative aspects of DE. Science teachers who stated the positive aspect of DE mostly stated that individuals' health should not be put at risk. In the negative aspects of DE, 50 percent of teachers stated that they could not reach all students in the lessons. 50% of the teachers stated that there was not enough technology in the houses, there was not enough feedback from the students and it prevented in-class communication and socialization of the students. While 70% of science teachers see DE as an advantage in terms of health factor during the pandemic, 30% see it as a disadvantage because it does not provide learning by doing. This finding is similar to the research results of Bakioglu and Cevik (2020). In this study, it was seen that the biggest problem experienced by teachers in DE was hardware and student-related problems. Thus, it could be stated that the fact that not every student has internet and computer, that they do not have the full skills to use DE and that participation in DE is low.

While it was observed that 50% of the teachers who evaluated DE in terms of technical/equipment had knowledge about the solution of technical problems experienced in DE, it was concluded that 50% did not have knowledge. It was concluded that both teachers with and without knowledge about the solution of technical problems mostly experienced hardware and connection problems. This may be due to teachers' inadequate in-service training in using DE. These results are similar to the studies of Burke and Dempsey (2020). Researchers evaluated this situation as teachers' inadequate skills in hardware and software for DE.

It was observed that all science teachers used EIN and ZOOM. During the DE process, it was determined that teachers who teach through EIN and ZOOM mostly had problems in connection,

communication, uploading materials and writing. In addition, 90% of the teachers thought that EIN did not support DE. It was found that teachers mostly thought that EIN was insufficient in terms of measurement and evaluation. In addition, it has been stated that the topic statements in EIN are superficial and the EIN system has an infrastructure problem.

It has been concluded that science teachers mostly prefer direct instruction during DE. While it was observed that most science teachers taught the lessons with ppt presentation and z-book; very few teachers use web 2 tools, do experiments and prepare education materials. These results are similar to the studies of Çalışkan (2022). In addition, it was concluded that only 20% of science teachers prepared the teaching materials for the course themselves and that other science teachers used ready-made materials. This is likely due to the fact that science teachers do not have sufficient skills in preparing course materials by using digital tools. While 20% of science teachers who evaluate DE in terms of the effectiveness of the courses think that the courses are partially effective, 80% think that the courses are not effective. It was determined that teachers mostly thought that the courses were not effective due to student-induced factors. Other factors that prevent the courses from being effective were determined to be course materials, method/technique, course duration, and communication and internet problems.

In line with the results obtained in the research, the following suggestions and recommendations can be made:

1. The participants of this research were science teachers. Similar studies can be carried out with teachers in other branches.
2. Various trainings can be organized to improve teachers' digital literacy levels.
3. In-service trainings can be organized to improve DE skills of teachers.
4. Applications for enriching the content of the digital education platform (EIN) can be increased.

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The Role of Social Support and Lifestyle in Pre-Service Teachers' Psychological Well-Being

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Abstract

The main purpose of this study was to explore the predictive utility of demographic, social and lifestyle variables in psychological well-being. The participants were 410 pre-service teachers in Turkey. Three research instruments were utilized in the current study: Psychological Well-Being Scale, Lifestyle Inventory and Multidimensional Scale of Perceived Social Support. Both social support and lifestyle variables accounted for the additional variance in psychological well-being above and beyond the effects of demographic variables. Purpose in life was best predicted by being-married; lifestyle variables made the most contribution to autonomy; and social support-friend were found to be the best predictor of positive relations with others. It seems that demographic, social support and lifestyle variables play a differential role in psychological well-being.

Keywords: Psychological well-being, social support, lifestyle

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Introduction

Psychological well-being can be defined as "the ability to develop, maintain, and appropriately modify interdependent relationships with others to succeed in achieving goals" (Johnson & Johnson, 1996). It is about happiness, feeling good, positive emotions, functioning effectively, possessing a sense of life's aim and how well life is going on (Huppert, 2009). Ryff (1989) proposed six psychological well-being domains: (1) self-acceptance, (2) positive relationships with others, (3) autonomy, (4) environmental mastery, (5) purpose in life, and (6) personal growth. Self - acceptance can be defined as having positive attitudes towards self and accepting. Positive relations with others can be characterized as sincerity, trust in relationships, empathy, satisfaction and having close relationships. People high in autonomy are independent, persist long in the face of obstacles and social pressures and evaluate self based on their personal standards. Environmental mastery can be defined as people's ability to choose and create environment which fit their personal values and to possess control over the external world. Purpose in life can be characterized as a sense of meaning of life, present and past time. In addition to having life goals, these people also have the ability to comprehend these goals. Personal growth can be characterized as improving one's potential and viewing self as growing and expanding.

Ryff (1989) found that demographic factors accounted for low levels of variance (range= 3% to 24%) in the psychological well-being domains. Among demographic variables, only finance predicted autonomy and accounted for 3% of its variation. On the other hand, three variables (finance, health and age) significantly predicted environmental mastery and accounted for 24% of its variation. Being married predicted self-acceptance and purpose in life, being male was a predictor of positive relations with others and personal growth. Andrew and Withey (2012) and (Argyle, 1999) found that demographic and socioeconomic factors accounted for around 10% of variation in psychological well-being.

Personality also plays an important role in the prediction of psychological well-being. For example, one study found that when demographic variables were controlled, Extraversion and Openness made a contribution to predict positive affect, Neuroticism and Openness predicted negative affect, and, Neuroticism and Extraversion significantly predicted affect balance (Gutierrez, Jimenez, Hernandez, & Puente, 2005). McCrae and Costa (1991) indicated that Extraversion and Neuroticism result in positive and negative effect, respectively.

In addition to demographic, socioeconomic and personality factors, factors such as lifestyle (Witmer, Sweeney, & Myers, 1993), social support (Masini & Barrett, 2008), physical exercise (Hassmen, Koivula, & Uutela, 2000), and Internet on social involvement (Kraut, Patterson, Lundmark, Kiesler, Mukophadhyay, & Scherlis, 1998) seem to be associated with psychological well-

being. The current study focused on the predictive utility of lifestyle, social support and demographic variables (gender, marital status) in psychological well-being.

Kern and Cummins (1996) classified people into 5 groups in terms of their lifestyle: (1) Control-oriented, (2) Perfection-oriented, (3) Appreciation-oriented, (4) Self-esteem-oriented, (5) Expectation- oriented. Control-oriented individuals are influential, powerful, and persuasive; persist in their ideas and like managing and controlling other people's activities. Those with a perfection-oriented lifestyle are neat, organized, meticulous, pay attention to details and try to do everything perfect. Appreciation-oriented individuals are sincere, social, loyal, and sensitive to others' feelings and needs and avoid breaking their hearts and help to mend them when they can. Those with self-esteem life styles tend to have a strong belief in their capabilities to overcome life's challenges. Expectation-oriented individuals are hardworking, competitive and ambitious and make a lot of efforts to attain their goals.

A number of studies established a significant relationship between lifestyle and psychological well-being (e.g., Burrell Adams, Durand, & Castro, 2006: Hermon & Hazle, 1999). Using the Wellness Evaluation of Lifestyle scale developed by Witmer et al. (1993), Hermon and Hazler (1999) explored the relationship between college students' (Midwestern United States university) perceived psychological well-being and the quality of their lives on 5 dimensions and found that students' ability to self-regulate, identity with work, and friendships made the most contribution to psychological well-being. Burrel et al. (2006) investigated the relationship between military lifestyles and psychological well-being and found a negative relationship between foreign residence and psychological well-being.

Social support plays an important role in psychological well-being since it may act as a mediator of life stress (Cobb, 1976; Wang, Shukla, & Shi, 2021). A number of researchers explored the predictive utility of social support in psychological well-being. For example, in one study with 220 lesbian, gay, and bisexual (LGB) adults over 50-years old, support from friend made a significant contribution to the prediction of higher mental quality of life and lower depression, anxiety, and internalized homophobia while support from family did not (Masini & Barrett, 2008). Rook (1984) found that negative social outcomes were more consistently and more strongly associated with well-being than positive social outcomes. Winefield et al. (2008) study revealed that community-living adults' psychological well-being was related to their level of life stress; and more importantly, that adding social support to the regression equation after life stress doubled the explained variance in psychological well-being.

Through conducting an extensive literature review on the causes and consequences of psychological well-being, Huppert (2009) concluded that positive mood states made a contribution to attention (e.g. seeing the big picture), cognitive process (e.g. producing new ideas, thinking creatively

and flexibly) and physical health. Psychological well-being is highly influenced by people's early environments and external circumstances; however, actions and attitudes may have a bigger impact. Other researchers found that social support (Alimoradi et al., 2014; Malkoç & Yalçın, 2015), lifestyle (Harrison, 1982; Kilpatrick & Trew, 1985; Nishita, 2000; Sezer, Aktan, Tezci, & Erdener, 2017), marital status (Bennett, 2005; Gove et al., 1983; Wilson, & Oswald, 2005), gender (Roothman et al., 2003; Kuyumcu, 2012) personality (Argyle & Lu, 1990), social ties (Fuller-Iglesias, 2015), mindfulness (Brown & Ryan, 2003), Internet on social involvement (Kraut et al., 1998), parent and peer attachment (Armsden & Greenberg, 1987) were associated with psychological well-being. Psychological well-being is an important factor that enables the individual to manage situations such as helping him / her to pursue his / her goals, personal development and build quality relationships with others. It is important to determine the level of lifestyle adopted by the individual and to predict the level of perceived social support, and to determine the relationship between these variables and psychological well-being.

It is clear from these studies that psychological well-being plays an important role in human functioning and is associated with many factors. As it is impossible to examine the role of all of these factors in psychological well-being in one study, I specifically chose the role of demographic variables, social support and lifestyle for two main reasons: (1) the joint predictive utility of these three variables in psychological well-being did not seem to have received attention in the literature. (2) Examining the role of both an internal variables (life style, gender and marital status) and external influence (social support) in psychological well-being in one study enables to see which variable serve as more powerful predictor.

The current study was guided by Adler's Theory of Individual Psychology. Adler (2013) defined the lifestyle as a concept that reflects the organization of personality, which includes the meaning that individuals give to the world and to themselves, their fictional ultimate goals, and the emotional, cognitive and behavioral strategies they use to achieve the goal (Rule, & Bishop, 2006).

According to this theory, work, love/intimacy and social life the three life tasks with which every person must deal with and try to find solutions (Adler, 2013). Adler distinguished four basic types of life style: (1) the ruling type, (2) the getting type, (3) the avoiding type, (4) the socially useful type. People with ruling type tend to be aggressive, dominant and have high energy. Those with getting type seem to lack energy, be sensitive and dependent people who rely on energy of others. Avoiding people tend to escape life's problems and have low energy. Socially useful people tend to be healthy and have a great deal of social interest and activity (Gentry et al., 1980; Stoltz & Kern, 2007; Adler, 2013; Erdener, Sezer, & Tezci, 2017a; Erdener, Sezer, & Tezci, 2017b).

This theory emphasizes the importance of lifestyle in the development of personality and states that people's lifestyle develops as a result of their interaction with environment (e.g. spending

time with parents, using computers, watching TV). These interactions, in turn, shape their personality in cognitive, behavioral and affective domains and may affect their behavior and psychological well-being. Consistent with this, in a study with Turkish students found that (Sezer & İşgör, 2017) the lifestyles of individuals are related to their internet usage habits and purposes. Another study on Turkish pre-service teachers found that individuals with high lifestyle focused on control, excellence, satisfaction, expectation and self-esteem had higher levels of self-regulatory learning strategies (Tezci et al., 2015). These findings and Adler's theory clearly indicate a relationship between lifestyle and psychological well-being.

Unlike life-style, the selection of social support as a predictor variable of psychological well-being is not grounded in theory. Rather, it is based on research studies which suggest a relationship between social support and psychological well-being. Many studies conducted since the 1970s (Zimet et al., 1988) have that adequate social support is an important source in dealing with the individuals' psychological problems such as general psychological stress and emotional problems, anxiety, fear and loneliness, depression, violent behavior and drug addiction (DuRant et al., 1994; Colarossi & Eccles, 2003; Demaray et al., 2005; Holt & Espelage, 2005; Erdogan & Stuessy, 2022; Sezer, Erdener, & Tezci, 2019). Thus, it can be hypothesized that social support can play a pivotal role in the individuals' psychological well-being.

Guided by Adler's Theory and other studies, the current study examines the role of life style and social support on different aspects of psychological well-being. Although many researchers examined the predictors of psychological well-being (Rook, 1984; Kilpatrick, & Trew, 1985; Ryff, 1989; Roothman et al., 2003), I failed to identify any study which combined demographic, internal and external variables to predict psychological well being. The current study was conducted to fill this gap in the literature. Thus, it makes a unique contribution to the literature by showing which type of factor plays a pivotal role in understanding individuals' level of psychological well-being.

Three research questions were addressed:

1. Are lifestyle, social support and psychological well-being significantly related to each other?

2. What is the relative contribution of gender, marital status, lifestyle, social support on psychological well-being?

3. Does lifestyle make a significant contribution to predict psychological well-being above and beyond the effects of gender, marital status and social support?

Method

Correlational survey research model was conducted in this study. The relationships between variables and to find out any change are presented by correlational survey studies. As such, this research design was preferred to explore the predictive utility of demographic, social and lifestyle variables in psychological well-being (Karasar, 2011).

Participants

At the time of data collection, the researcher of this study was serving as the instructor of the course "Guidance" for a number of departments. As part of the curriculum, he taught the topic of psychological well-being in one week. A total of 550 students were enrolled in this class but 455 of them attended this class. After finishing this topic, he talked about his study and its importance for the field of guidance. He also mentioned how filling out the research instruments would contribute to their knowledge of well-being. Then, he left the classroom. In order to ensure confidentiality, those willing to participate in the study filled out the research instruments without indicating their name and submitted to the research assistant. Thus, convenience sampling was used to collect data for the current study.

Of the 455 students, 90% decided to take part in the study. The participants consisted of 410 pre-service teachers (67% female, 33% male). Of these participants, 335 (81%) were single, and 75 (19%) married. These participants were chosen from classes in which the researcher of the current study served as the instructor. Due to the nature of education classes, the majority of the participants were female.

Research Instruments

Three research instruments were utilized in the current study: Psychological Well-Being Scale (Ryff, 1989), Lifestyle Inventory (Kern & Cummins, 1996) and Multidimensional Scale of Perceived Social Support (Zimet et al., 1988). In addition, the participants were asked to indicate their gender and marital status for demographic information.

Developed by Ryff (1989) and adapted into Turkish by Cenkseven (2014), "Psychological Well-Being Scale" was used in the current study to measure the participants' level of psychological well-being in 6 dimensions: Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life and Self-Acceptance. Each dimension consisted of 14 items. Some of the items included "I have confidence in my opinions, even if they are contrary to the general consensus" (Autonomy), "People would describe me as a giving person, willing to share my time with others" (Positive Relations with Others), "Some people wander aimlessly through life, but I am not one of them" (Purpose in Life).

Using a sample of 475 Turkish university students, Cenkseven (2014) provided evidence for the validity of the scale through examining item-total item correlations for each item. In addition, Cronbach's alpha value was reported to be 0.93 for the overall scale. Test re-test correlation value was found to be 0.84. These results provided evidence for the validity and reliability of the scale.

The participants indicated their level of agreement with each item on a 6- point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Negatively written items were reversed scored to yield a summated score for each dimension with higher scores indicating higher mastery in that area in their life and lower scores reflecting lower mastery. The participants' possible scores in each dimension ranged from 14 to 84.

"Lifestyle Inventory" was originally developed by Kern and Cummins (1996) and consisted of 35 items. This scale was and adapted into Turkish by Ozpolat (2011) Using a sample of 362 university students, Ozpolat (2011) provided evidence for the construct validity through conducting exploratory factor analysis. However, 10 items removed from the original scale as a result of the analysis. Cronbach's alpha value was reported to be .93 for the overall scale.

The Turkish version of this scale (Ozpolat, 2011) was used in the current study consisted of 25 items and 5 dimensions: control, perfectionism, appreciation, self-respect, and expectations. Each dimension consisted of 5 items. Some of the items included "I especially try to avoid hurting people" (Appreciation), and "My life seems to be full of disappointments" (self-esteem).

The participants indicated their level of agreement with each item on a 5- point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Negatively written items were reverse scored to yield a summated score for each dimension. The participants' possible scores in each dimension ranged from 5 to 25 with higher scores indicating more preference of the respective lifestyle.

The 12-item Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) was used to measure the level of the support that participants receive from others. This scale was adapted into Turkish by Eker et al. (2001) using a sample of 150 people from a large hospital, these researchers provided evidence for the construct validity through conducting exploratory factor analysis. Cronbach's alpha value was reported to be 0.89 for the overall scale.

The scale consisted of 3 dimensions (special person, family and friend). Each dimension contained 4 items. Some of the items included "There is a special person who is around when I am in need" (Special Person), "My family really tries to help me" (Family), "I have friends with whom I can share my joys and sorrows" (Friends). The participants indicated their level of agreement with each item on a 7- point scale ranging from 1 (strongly disagree) to 7 (strongly agree). All of the items were

positively worded. Scores in each dimension ranged from 4 to 28 with higher scores reflecting higher perceived social support.

The instruments used in the research were abbreviated in the finding as follow; Lifestyle Inventory (LS), Psychological Well-Being (PWB) and Multidimensional Scale of Perceived Social Support (SS).

Data Analysis

This is a correlational study that employed a hierarchical linear regression model. Data analysis started with exploring the reliability of the research instruments as measured by Croncbach's Alpha. Then, descriptive statistics were calculated regarding each dimension of the research instruments. Skewness and Kurtosis were used as indicators for checking multivariate normality. Correlation analysis was conducted to examine interrelationships among variables of interest. Finally, two types of regression analysis (hierarchical and stepwise) were conducted to examine the predictive utility of the variables on each domain of psychological well-being.

In the hierarchical regression analysis, predictor variables were entered into the regression equation in the following order: demographic variables (gender, marital status), three social support variables as a block and five lifestyle variables as a block. This analysis enabled to examine if social support and five lifestyle variables account for unique variance in different domains of psychological well-being when the effects of demographic variables were controlled. The p value of R2 change was examined to determine statistical significance.

All the predictor variables were regressed on each domain of psychological well-being in the stepwise regression. Instead of entering social support and lifestyle variables as a block, they were treated as individual predictor variables. This analysis enabled to examine which variables make a significant contribution to the equation predicting psychological well-being domains.

Result

The Cronbach's alpha values ranged from 0.75 to 0.92 for each variable. Table 1 presents descriptive statistics for the dependent and predictor variables. All of the mean values of social support dimensions were more than 20, which indicated a relatively high social support. The mean values of the lifestyle variables ranged from 16.17 to 19.40 with pleasing had the highest mean score. Among the psychological well-being domains, the mean value of the personal growth was the highest. All of the skewness and kurtosis values were within the desired range of between -2 to +2, which indicated multivariate normality.

Table 1. Descriptive Statistics

Variables	Mean	SD	Skewness	Kurtosis
SS Family	23.20	5.824	-1.478	1.678
SS Friend	21.71	6.351	-1.040	0.292
SS Special person	20.16	7.291	-0.680	-0.785
LS Control	16.17	3.585	-0.172	-0.023
LS Perfection	19.35	2.965	-0.412	-0.138
LS Pleasing	19.40	3.206	-0.606	1.039
LS Self-esteem	16.26	3.156	0.077	-0.238
LS Expectation	17.02	3.448	-0.065	-0.012
PWB Positive Relations with Others	59.72	11.458	0.386	-0.720
PWB Autonomy	55.63	8.703	0.342	-0.250
PWB Environmental Mastery	57.74	8.976	0.294	-0.125
PWB Personal Growth	60.36	9.474	0.276	-0.597
PWB Purpose in Life	58.56	10.849	0.422	-0.639
PWB Self-Acceptance	56.32	9.564	0.490	-0.302

Table 2 presents the interrelationships among the variables of the current study. While gender was found to be significantly correlated with two dimensions of psychological well-being in favor of males, marital status was significantly correlated with all dimensions of psychological well-being. Marital status had the highest correlation with purpose in life ($r = 0.26$, $p < 0.01$).

All social support variables (Special Person, Family, Friends) were found to be significantly correlated with all of the dimensions of psychological well-being. The highest correlation was found to be between friend and positive relations with others ($r = 0.33$, $p < 0.01$). Family and autonomy had the lowest correlation ($r = 0.14$, $p < 0.01$).

Among the lifestyle variables, perfection was found to be correlated with five dimensions of well-being. Control and self-esteem were significantly correlated with four and two dimensions of psychological well-being, respectively. Control-oriented lifestyle appeared to be negatively correlated with self-acceptance, positive relationship with others, purpose in life and personal growth. While self-esteem-oriented lifestyle was positively related to purpose in life, it negatively correlated with self-acceptance. Pleasing and expectation-oriented lifestyles were not significantly correlated with any dimension of psychological well-being.

Table 2. Interrelationships among Variables (N=410)

Variable		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Demographic	1.Gender	-															
Variables	2.Marital Status	0.11*	-														
	3.Family	-0.04	0.00	-													
Social Support	4.Friend	-0.05	-0.01	0.53**	-												
	5.S.Person	-0.11*	0.02	0.41**	0.62**	-											
	6.Control	-0.06	-0.15**	-0.18**	-0.14**	-0.08	-										
	7.Perfection	-0.12*	-0.05	0.19**	0.27**	0.35**	0.22**	-									
Lifestyle	8.Pleasing	-0.20**	0.00	0.16**	0.17**	0.14**	0.17**	0.37**	-								
	9.Self-esteem	-0.14**	-0.12*	-0.12**	0.00	0.06	0.38**	0.20**	0.40**	-							
	10.Expectation	-0.11*	-0.20**	-0.05	0.03	0.10	0.55**	0.36**	0.30**	0.41**	-						
	11.Self acceptance	0.14**	0.17**	0.22**	0.24**	0.21**	-0.22**	0.19**	-0.05	-0.16**	-0.03	-					
	12.Positive Relations	0.08	0.23**	0.16**	0.33**	0.20**	-0.19**	0.02	0.08	-0.02	-0.03	0.64**	-				
Psychological	13.Autonomy	0.02	0.15**	0.14**	0.23**	0.23**	-0.09	0.18**	-0.07	-0.02	0.07	0.62**	0.53**	-			
Well-Being	14.Environmental Mastery	0.10*	0.22**	0.18**	0.23**	0.24**	-0.13	0.22**	0.06	0.06	0.04	0.68**	0.65**	0.47**	-		
	15.Purpose in Life	0.20**	0.26**	0.20**	0.18**	0.15**	-0.15**	0.16**	0.04	0.19**	-0.03	0.73**	0.67**	0.53**	0.73**	-	
	16.Personal Growth	0.02	0.12*	0.23**	0.25**	0.22**	-0.15**	0.11*	0.02	-0.08	0.03	0.66**	0.64**	0.61**	0.64**	0.73**	-

*p < 0.05, ** p < 0.01

Table 3 presents the results of the hierarchical regression analysis for variables predicting self-acceptance. Demographic variables accounted for 4% of variation in self-acceptance. Social support variables accounted for an additional 8% above and beyond demographic variables and lifestyle variables accounted for an additional 8% of variation in self-acceptance above and beyond demographic variables and social support variables. As presented in table 2 before, all of the social variables were significantly correlated with self-acceptance; nevertheless, none of them made a significant contribution to predicting self-acceptance in the regression equation when they were used in conjunction with demographic and lifestyle variables (see Model 3). This result suggested that lifestyle variables were more powerful predictor variables of self-acceptance than the social support variables.

Table 3. Summary of Hierarchical Regression Analysis for Variables Predicting Self-Acceptance

Model/Predictor	Model 1	Model 2	Model 3
1.Gender	0.11*	0.13**	0.12*
Marital Status	0.15**	0.15**	0.15**
2.Social Support- Family		0.12*	0.08
Social Support- Friend		0.11	0.09
Social Support- Special Person		0.11	0.04
3. Lifestyle- Control			-0.22
Lifestyle- Perfection			0.21**
Lifestyle-Pleasing			-0.11**
Lifestyle-Self-esteem			-0.08
Lifestyle- Expectation			0.13*
R2	0.04	0.12	0.20
F for change in R2	8.99**	11.79**	7.76**

Table 4 presents the results of the hierarchical regression analysis for variables predicting positive relations with others. Demographic variables accounted for 5% of variation in positive relations with others. Only marital status was a predictor of positive relations with others, however. Social support variables accounted for additional 12% of variation in positive relations with others above and beyond demographic variables. Nevertheless, only social support-friend made a significant contribution to the regression equation. Lifestyle variables accounted for only 2% of variation in positive relations with others above and beyond demographic and social support variables and only lifestyle-control made a significant but negative contribution to the regression equation. As model 3 indicates, social support-friend emerged as the most powerful predictor of positive relations with others followed by marital status.

Table 4. Summary of Hierarchical Regression Analysis for Variables Predicting Positive Relations with Others

Model/Predictor	Model 1	Model 2	Model 3
1.Gender	0.04	0.06	0.07
Marital Status	0.22**	0.22**	0.21**
2.Social Support- Family		0.03	0.04

Social Support- Friend		0.36**	0.34**
Social Support- Special Person		0.02	0.00
3. Lifestyle- Control			-0.16**
Lifestyle- Perfection			-0.06
Lifestyle-Pleasing			0.05
Lifestyle-Self-esteem			0.04
Lifestyle- Expectation			0.08
R2	0.05	0.17	0.19
F for change in R2	11.73**	18.21**	2.24*

Results of the hierarchical regression analysis for variables predicting autonomy are presented in Table 5. Demographic variables accounted for only 2% of the variation in positive relations with others. Gender variable's was not found to be a significant predictor of autonomy in all of the three models. Social support variables accounted for an additional 7% of variation above and beyond demographic variables; however, social support-family did not make a significant contribution to the regression equation. Lifestyle variables accounted for an additional 6% of variation in autonomy above and beyond the demographic and social support variables. The lifestyle-pleasing variable emerged as the most powerful predictor of autonomy; however, its contribution to the regression equation was negative.

Table 5. Summary of Hierarchical Regression Analysis for Variables Predicting Autonomy

Model/Predictor	Model 1	Model 2	Model 3
1.Gender	-0.01	0.01	0.00
Marital Status	0.15**	0.14**	0.17**
2.Social Support- Family		0.01	0.03
Social Support- Friend		0.14*	0.14*
Social Support- Special Person		0.14*	0.07
3. Lifestyle- Control			-0.14**
Lifestyle- Perfection			0.16**
Lifestyle-Pleasing			-0.21**
Lifestyle-Self-esteem			.05
Lifestyle- Expectation			.16**
R2	.02	.09	.15
F for change in R2	4.51*	9.71**	5.47**

As table 6 reveals, demographic variables accounted for 5% of the variation in environmental mastery. Social support accounted for an additional 8% of variation in environmental mastery above and beyond demographic variables. Only social support-special person dimension made a significant contribution to the regression equation, however. Lifestyle variables accounted for an additional 4% of variation in environmental mastery above and beyond demographic and social support variables. Lifestyle-perfection and lifestyle-expectation made a positive and significant contribution to the regression equation whereas the contribution of lifestyle-control was negative. None of the social support variables significantly predicted environmental mastery in model 3 whereas gender and marital status did.

Table 6. Summary of Hierarchical Regression Analysis for Variables Predicting Environmental Mastery

Model/Predictor	Model 1	Model 2	Model 3
1.Gender	0.06	0.08	0.10*
Marital Status	0.21**	0.20**	0.21**
2.Social Support- Family		0.06	0.04
Social Support- Friend		0.10	0.07
Social Support- Special Person		0.16**	0.10
3. Lifestyle- Control			-0.16**
Lifestyle- Perfection			0.18**
Lifestyle-Pleasing			-0.02
Lifestyle-Self-esteem			-0.05
Lifestyle- Expectation			0.13*
R2	0.05	0.13	0.17
F for change in R2	11.24**	11.13**	4.44**

As Table 7 indicates, gender and marital status accounted for 9% of the variation in purpose in life and made a significant contribution to the regression equation in all of the three models. Social support variables accounted for an additional 5% of variation in purpose in life above and beyond demographic variables. However, only social support-family made a significant contribution to the regression equation. Lifestyle variables accounted for additional 6% of variation in purpose in life above and beyond demographic and social support variables. None of the social support variables served as a predictor in model 3. Lifestyle-self-esteem made a significant but negative contribution to the model. In addition, lifestyle-perfection made a positive contribution to the model.

Table 7. Summary of Hierarchical Regression Analysis for Variables Predicting Purpose in Life

Model/Predictor	Model 1	Model 2	Model 3
1.Gender	0.15**	0.17**	0.17**
Marital Status	0.23**	0.23**	0.22**
2.Social Support- Family		0.13*	0.09
Social Support- Friend		0.09	0.07
Social Support- Special Person		0.05	0.01
3. Lifestyle- Control			-0.10
Lifestyle- Perfection			0.16**
Lifestyle-Pleasing			0.05
Lifestyle-Self-esteem			-0.18**
Lifestyle- Expectation			0.09
R2	0.09	0.14	0.20
F for change in R2	20.25**	8.27**	5.34**

Table 8 presents the results of the regression analysis for variables predicting personal growth. Demographic variables accounted for only a 2% of variation in personal growth. Gender did not significantly predict personal growth in all of the three models. Social support variables accounted for an additional 7% of variation in personal growth above and beyond demographic variables in

model 2. Lifestyle variables accounted for an additional 3% of variation in personal growth above and beyond demographic and social support variables. None of the social support variables significantly predicted personal growth in model 3.

Table 8. Summary of Hierarchical Regression Analysis for Variables Predicting Personal Growth

Model/Predictor	Model 1	Model 2	Model 3
1.Gender	0.00	0.02	0.01
Marital Status	0.12*	0.12*	0.13**
2.Social Support- Family		0.13*	0.11
Social Support- Friend		0.13*	0.11
Social Support- Special Person		0.09	0.06
3.Lifestyle- Control			-0.17**
Lifestyle- Perfection			0.05
Lifestyle-Pleasing			-0.05
Lifestyle-Self-esteem			-0.05
Lifestyle- Expectation			0.17**
R2	0.02	0.09	0.12
F for change in R2	3.12*	11.63**	2.62*

Table 9 presents the results of stepwise regression analysis. Six variables predicted self-acceptance and collectively accounted for 18% of variation. Lifestyle-perfection emerged as the best predictor of self-acceptance. Three variables made a significant contribution to predict positive relations with others and social support served as the best predictor. Five variables emerged as significant predictor of autonomy and lifestyle-perfection were found to make the most contribution to the regression equation. Environmental mastery had six predictors with marital status as the most powerful predictor. Purpose in life was significantly predicted by five predictors. Like environmental mastery dimension, purpose in life was best predicted by marital status variable. Three variables made a significant contribution to predict personal growth but accounted for only 9% of the variation in this variable. None of the lifestyle variables significantly predicted personal growth.

Table 9. Results of Stepwise Regression Analysis

Criterion and predictor	B	β	R2
Self-Acceptance			
Social Support-Friend	0.25	0.16	0.06
Lifestyle-Control	-0.55	-0.21	0.09
Lifestyle-Perfection	0.80	0.25	0.13
Gender	2.34	0.11	0.15
Marital Status	3.10	0.14	0.17
Lifestyle-Pleasing	-0.33	-0.11	0.18
Positive Relations with Others			
Social Support-Friend	0.57	0.32	0.11
Marital Status	5.81	0.22	0.16
Lifestyle-Control	-0.34	-0.10	0.17
Autonomy			
Social Support-Special Person	0.11	0.10	0.05
Marital Status	3.21	0.16	0.07

Lifestyle-Perfection	0.52	0.18	0.09
Lifestyle-Pleasing	-0.47	-0.17	0.11
Social Support-Friend	0.21	0.15	0.13
Environmental Mastery			
Social Support-Special Person	0.19	0.16	0.06
Marital Status	4.28	0.20	0.11
Lifestyle-Perfection	0.55	0.18	0.13
Lifestyle-Control	-0.47	-0.19	0.15
Gender	1.92	0.10	0.16
Lifestyle-Expectation	0.29	0.12	0.17
Purpose in life			
Marital Status	5.68	0.22	0.07
Social Support-Family	0.27	0.15	0.11
Gender	3.70	0.16	0.13
Lifestyle-Perfection	0.72	0.20	0.16
Lifestyle-Self Esteem	-0.55	-0.16	0.18
Personal Growth			
Social Support-Friend	.26	0.18	0.06
Marital Status	2.79	0.14	0.08
Social Support-Family	.22	0.13	0.09

Discussion

The main purpose of the current study was to examine the predictive utility of demographic, social and lifestyle variables on psychological well-being. Results revealed that predictor variables accounted for 18% of variation in self-acceptance, 17% in positive relations with others, 13% in autonomy, 17% in environmental mastery, 18% in purpose in life and 9% in personal growth. Demographic variables alone accounted for small but significant percent of variation (range= 2% to 9%) in the psychological well-being indexes. Both social support and lifestyle variables accounted for additional variance in psychological well-being above and beyond the effects of demographic variables. Purpose in life was best predicted by being-married; lifestyle variables made the most contribution to autonomy; and social support-friend was found to be the best predictor of positive relations with others. Based on these results, it seems that demographic, social support and lifestyle variables play a different and unique role in psychological well-being.

To begin with, aligning with other studies (e.g., Ryff, 1989) demographic variables accounted for a small but significant portion of variation in psychological well-being indexes. While being married emerged as a significant predictor in all dimensions of psychological well-being indexes, being male predicted three (Environmental Mastery, Purpose in Life and Self-Acceptance) dimensions. More importantly, among all of the predictor variables, being married appeared to be a leading predictor of purpose in life. Studies have shown that individuals' having a happy marriages affects their life quality positively (Lawrence et al., 2019; Robles et al., 2014).

The correlation between social support variables and psychological well-being domains deserve attention. All of the social support variables were found to be significantly related to all of the psychological well-being domains. More importantly, they accounted for an additional and significant

portion of variation in all psychological well-being indexes above and beyond the effects of demographic variables. This finding was consistent with other studies (Taylor, 2011; Wilson et al., 2020; Winefield et al., 2008) which found that social support made a contribution to psychological well-being after controlling for other variables.

Consistent with the findings of other studies (e.g., Hermon & Hazler, 1999), lifestyle variables seemed to play an important role in understanding psychological well-being. More importantly, even when demographic and social support variables were controlled for, lifestyle variables accounted for significant and additional variation in psychological well-being domains. For example, when the variance associated with other variables were partialed out, all of the lifestyle variables significantly predicted self-acceptance and collectively accounted for an additional 8% of its variation. Among life style variables, perfection and control (avoiding type) seemed to be better predictor of psychological well-being than the other lifestyle variables. It is important to note that the contribution of control to the regression equations was negative. In the light of these data, it might be said that the lifestyle has a decisive role on psychological well-being.

The current study has three main limitations. First, due to the observational nature of the current study, the cause and effect relationship cannot easily be established. For example, the relationship between being married and psychological well-being seems to be controversial. While Diener (2000) indicated that people high in psychological well-being tend to get married, Zimmermann and Easterlin (2006) stated that getting married not being married is good for psychological well-being. Second, convenience sampling was used to collect data for this study, which prevented generalizations to other samples. Third, data was collected after a week of teaching the topic on psychological well-being. Thus, there is the possibility that responses may have been different if data had been collected prior to the lectures of psychological well-being in class.

Lifestyle appeared to play an important role in psychological well-being. Thus, it is important for counselors to examine students' lifestyle to better understand their levels of psychological well-being. In addition, since individuals' lifestyle is shaped in early ages (Anderson & Golden, 1984), it is important to educate parents and future parents on how they can shape their lifestyle. This circumstance leads to the formation of other habits in life.

The current study revealed a relationship between perfectionist lifestyle and psychological well-being. Similarly, Hermon and Hazler (1999) found that a student's ability to self-regulate makes a contribution to psychological well-being. Hence, parents and future parents should learn how they provide their students with self-regulation skills such as concentrating, organizing social environment and being systematic.

Since psychological well-being influences how people live, think, function, and regulate their behavior, more research is needed in this area. The predictor variables accounted for around 20% of variation in psychological well-being, which indicated that 80% of variation was not explained. Future researchers may use other variables to predict psychological well-being. Through future research we will have a chance to learn why some people have high levels of psychological well-being while others do not.

The current study has a number of implications. The current study revealed that the social support that the individual perceives from the people around and the lifestyle are the two variables that seem to play an important role in psychological well-being. Thus, it is important for parents, educators and counselors to take into account both social support and lifestyle to understand why some students have positive psychological well-being and why some do not. Interventions that might change their lifestyle and giving them a feeling that they will get help when they encounter difficulties in life might enable them to have more positive well-being. This, in turn, may make them more happy, function more effectively, have a better sense of the aim of life and become more productive individuals. It is also important for school leaders to organize activities for students such as organizing a trip, going to theatre and other social activities. Involving students' in these activities enable them to socialize, make new friends and learn how to establish good friendships with others.

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An Investigation of the Relationship between the Parents' Math Literacy Self-Efficacy and Their Math Anxieties*

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Abstract

Mathematics anxiety can be defined as negative feelings towards mathematics and mathematical operations in general. Math anxiety is seen in many students, and even in parents. In fact, parents' own anxiety regarding mathematics may lead to their children experiencing angst over the subject as well. This can be a problem considering parents are considered one of the basic components of education and have important responsibilities to guide the education process of their children. Mathematical literacy is one of the research topics that have come into prominence in recent years due to PISA. Consequently, the purpose of this study is to determine the relationship between the parents' mathematical literacy self-efficacy and mathematics anxieties. Additionally, through examining the participation of parents in mathematic teaching during the COVID-19 pandemic, it is hoped to better understand their views and methodologies. All participants in this study are parents themselves. The study is designed with an explanatory sequential design among mixed method research designs. The grade in which the students are educated does not make any difference in the self-efficacy and anxiety perceptions of the parents regarding their mathematics literacy. Also, the parents' mathematical literacy self-efficacy and anxiety levels were high.

Keywords: Mathematics anxiety, self-efficacy of mathematical literacy, parents' participation, teaching, Covid-19

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Introduction

Math anxiety is seen in many students and their parents. The reason for this concern may be derived from parents' lack of mathematical literacy or their own math anxiety. That being the case, it becomes important to investigate the relationship between mathematical literacy and math anxiety. Parents have been especially active in helping their children' math lessons during the COVID-19 pandemic. So, it is important to analyze this experience of parents who had to help their children in math lessons despite having math anxiety. In this context, the problem situation of the study is presented under the sub-headings of mathematics anxiety, mathematics literacy, and parents' contribution to teaching.

Mathematics Anxiety

Mathematics anxiety can be defined as negative feelings towards mathematics and mathematical operations in general. As a matter of fact, mathematics anxiety is defined as an excessively emotional or physical reaction to a negative attitude towards mathematics (Nolting, 2012). Mathematics anxiety; is classified into three categories as mathematics test anxiety, numerical anxiety and abstraction anxiety (Nolting, 2012). There are many studies in the literature on children's mathematics anxiety (Cakir, 2015; Konca, 2008; Yildirim, 2017). The fact that such a wide array of studies have been conducted on the topic of math anxiety verifies the severity of the problem in students. Through examination of the different variables of math anxiety in Turkey, anxiety levels of teachers and students of mathematics, causes of math anxiety, math anxiety levels and studies about scale development, and its effect on mathematics anxiety of math topics important conclusions can be drawn (Baylan, 2020). Studies have indicated the factors that cause math anxiety are most often teachers, classmates, mathematics proficiency, negative experiences, and parents (Herts, Beilock & Levine, 2019; Mutlu, et al., 2018). In studies examining mathematics anxiety in terms of variables, a significant relationship was found between the educational status of the family and the child's mathematics anxiety (Konca, 2008; Saglam, 2019). On the other hand, there are not many studies on parents' math anxiety.

Math anxiety is seen in many students, but it is often evident in parents as well. As a matter of fact, Soni and Kumari (2017) state that parents can be more anxious regarding mathematics than children are, and the relationship between parents and children's math anxiety is significant. Nolting (2012) conducted a study that showed that parents who try to help with homework cause their children to experience math anxiety. As evidenced by the various studies, parents are among the primary factors that cause math anxiety in children. Accordingly, parents' anxiety about mathematics may cause their children to develop anxiety about mathematics (Mutlu et al., 2018; Oztop & Toptas, 2019). Therefore, when adults with math anxiety teach math to children, they unwittingly express their own angst on the topic. This, in turn, is likely to dissuade their children from enjoying math and

may actually lead them to avoid it altogether (Herts et al., 2019). Clearly, parents with math anxiety can unintentionally instill this anxiety in their children while trying to help them learn. On the other hand, families have to support their children both cognitively and affectively for mathematics lesson, especially during the distance education process.

Studies show that children of parents who experience fear or discomfort in mathematics tend to perform more poorly in mathematics achievement tests when compared to their peers (Arem, 2010; Herts, et al., 2019). It is important to analyze this through the lens of parents who had to help their children in math lessons despite having math anxiety. In addition, another factor that affects mathematics achievement is mathematics literacy (Efe Cetin & Mert Uyangor, 2019). Oguz Hacat and Demir (2019) in their research focus on, the effect of literacy education on literacy education, the relationship between access to information technology tools and mathematics literacy, the effect of literacy teaching on writing PISA questions, factors affecting the level of literacy, prediction skills and literacy relationship. They stated that adults' level of mathematical literacy, the effect of modeling on mathematics literacy, the relationship between arithmetic performance and mathematics literacy, the examination of mathematics curriculum programs in terms of mathematics literacy, the relationship between mathematics literacy and achievement, teacher candidates are subjects to develop mathematical literacy problems. In addition, many studies aimed at researching mathematics literacy of students (Aksu, 2019; Cilingir, 2015; Taskin, 2017), teachers (Genc, 2017), and prospective teachers (Kirmali, 2015) are present in the literature. When looking at the subjects, however, there are surprisingly few studies on parental literacy.

Self-efficacy of Mathematical Literacy

The language of mathematics is complex and its relation to everyday language is far from simple (Solomon, 2009). However, individuals with mathematical literacy have the ability to relate mathematics to daily life, using it to make more sense out of the world around them. Self-efficacy beliefs of the students are related with mathematics achievement (Imer-Cetin, Timur & Timur, 2021). So, we can say that self-efficacy of mathematical literacy is important for overall achievement because it is related to the capacity of an individual to formulate, use, and interpret mathematics in various contexts and includes mathematical reasoning, using mathematical concepts, procedures, facts, and tools (OECD, 2013). We need mathematical thinking to solve the problems we encounter in daily life. It may be possible to ensure this occurs by raising "mathematical literate" individuals (Taskin, Ezentas & Altun, 2018).

Mathematical literacy is one of the research topics that have come into prominence in recent years due to PISA. As regards the PISA test results have demonstrated that related parents have led many researchers to basic math skills to adults and adults need to focus on arithmetic in Turkey (Atakli, 2011). The fact that lifelong learning has become one of the staples of developed countries

has revealed the importance of studies on adults' education. In addition, “New literacy studies” propose to consider literacy as a social practice rather than a technical skill (Yildiz, 2010). Therefore, conducting studies on math literacy in adults will help inform our understanding of it as a social practice. However, regarding the interpretation used and can be expressed as mathematical literacy mathematical knowledge can be said to be facing a lot of work to adults in Turkey. In Demir's (2019) study on adults' mathematical literacy, it was found that adults' self-efficacy beliefs were found to be at a good level, while Atakli's (2011) study found that adults' basic mathematics skills were low. There was no significant difference according to age, but there was to education. And it was determined that there was a difference in numerical and problem-solving skills in adults as well as students. Revealing adults mathematical literacy self-efficacy can contribute to adults use of mathematical skills in their daily lives and have an impact on their children's mathematical literacy. As a matter of fact, as stated in the previous sections, parents actively participated in their children's education during the distance education process and had to use the language of mathematics.

Parents' Participation in Teaching

The education of most children starts in the family with parents as the first teachers. With the beginning of formal education, while the teacher takes the place of the parent, the child participates in a learning process that will continue at home, at school and in out-of-school learning environments. For this reason, parents are considered one of the basic components of education and have important responsibilities to guide the education process of their children (Sarigol, 2019).

The education process, which normally originates in the physical classroom environment, was forced to adapt to distance learning programs as of March 23, 2020, with the beginning of the COVID-19 pandemic. With this distance education process being implemented, the responsibilities of parents regarding their children's participation in the learning process have increased, and the education has turned into a triple-legged structure consisting of teacher-child-parent participation. As the responsibilities of teachers increased, the responsibilities of parents and of the child who continues his/her education at home have also increased. In fact, parents who began trying to make contributions to their children’s homework have had to participate in the learning processes as well.

Math performance is adversely affected when parents cannot provide sufficient support to their children in homework (Herts, et al., 2019). Parents who have had to provide the bulk of the mathematics support during distance education often find that they are not well enough equipped to guarantee their child is learning, which certainly affects the potential for future mathematics achievement. Studies show that not only children have math anxiety, but their parents have math anxiety as well (Herts, et al., 2019); and math anxiety of the family can be transferred to the child as a fear of math. This condition in the child may be due to insufficient family support (Oztop & Toptas, 2019). Therefore, it is important to reveal the variables with which the parents' math anxiety is

associated. In examining the literature regarding these variables, there is no sign of any research examining the relationship between mathematics literacy and mathematics anxiety. Through this study, we hope to reveal the relationship between parents' mathematical literacy and mathematics anxiety and to answer the question of what can be done to prevent this negative development. Parent interviews will be the primary source of data. The relationship between the mathematics literacy and mathematics anxiety of the parents was examined; and a main goal for the interviews with the parents was to reveal their concerns and experiences in terms of their participation in the teaching process.

In this context, the purpose of this study is to determine the relationship between the parents' mathematical literacy self-efficacy and mathematics anxieties, and to determine the views of the parents regarding their participation in mathematics teaching during the COVID-19 pandemic. The aim is to reveal the effect of parents literacy self-efficacy related to mathematics on their children's mathematics anxiety and their parents' participation in the education process. We hope that presenting the views of parents who have had to be active participants in their children's ongoing education will contribute to future studies. Sub-problems determined for the purpose of this study are:

- What is the parents' level of mathematical literacy self-efficacy and mathematics anxiety?
- Is there a significant difference between parents' mathematical literacy self-efficacy and mathematics anxiety levels and their children's grade level variable?
- Is there a significant difference between the parents' mathematical literacy self-efficacy and mathematics anxiety levels and the variable of education levels?
- Is there a relationship between parents' mathematical literacy self-efficacy and mathematics anxiety levels?
- What are the effects of parents on their children's mathematics teaching during the pandemic? What are the parents' opinions regarding their children's concerns about mathematics teaching?
- What are the parents' views on their children's participation in mathematics education in the distance education process during the COVID-19 pandemic?
- What are the mathematics teaching resources that parents have benefited most from during the COVID-19 pandemic?

Method

Research Design

For quantitative data, the Parental Math Anxiety Scale and self-efficacy scale for mathematics literacy were applied to the participants. Then, semi-structured interviews were conducted with the participants to collect qualitative data. In this study both quantitative and qualitative data collection tools were used. The study is designed with explanatory sequential design among mixed method research designs.

In explanatory sequential design researchers collect the quantitative and qualitative data at different times. According to this design, quantitative data are obtained first, then qualitative data are ascertained to explain the results from the quantitative data more deeply (Creswell, 2007).

Participants

Participants in this study are parents. According to the G power analysis, the number of samples was determined as 204. Data collection tools of the study were applied to 394 parents. According to G power analysis, this number is quite sufficient. In the quantitative part, scales were applied to parents whose children were at the grade of 1-4, and in the qualitative part, parents whose children were at the grade of 1-8 were interviewed.

Data Collection Tools

Parental Math Anxiety Scale

The Parental Math Anxiety Scale, one of the quantitative data collection tools utilized in the study, was developed by Mutlu et al. (2018). The scale is a five-point Likert-type scale and has three sub-dimensions: enjoyment, usefulness, and anxiety. It consists of a total of 16 items: 6 in the observed emotions regarding mathematics, 6 in the perception of inadequacy in mathematics, and 4 in the sense of difficulty in mathematics. Mutlu et al. (2018) found the reliability coefficients to be as follows: 0.75 for the observed emotions regarding mathematics dimension, 0.85 for the perception of inadequacy in mathematics dimension, and 0.88 for the sense of difficulty in mathematics dimension. In addition, the researchers calculated the reliability coefficient for the entire scale to be 0.90.

Self-Efficacy Scale for Mathematics Literacy

The second quantitative data collection tool employed in the study was the Self-Efficacy Scale for Mathematics Literacy developed by Ozgen and Bindak (2008). The scale is a five-point Likert-type scale consisting of one dimension with 35 total items. Ozgen and Bindak (2008) calculated the reliability value of the scale as 0.942.

Semi-structured Interview Form

To obtain the quantitative data, a semi-structured interview form was prepared by the researchers. The interview form contained information belonging to the parents and their children (age, gender, education level, career, and grade level of their children). There were 8 open-ended questions and 17 follow up questions.

Validity and Reliability Data Collection Tools

For the reliability of quantitative part of the study, the Croanbach alpha values obtained from the Attitude Towards Geometry Scale were examined. During the pre-test applications, the Croanbach alpha value obtained from the enjoyment dimension of the scale was 0.84. From the usefulness dimension the alpha value was 0.29, and from the anxiety dimension it was 0.54. On the other hand, the Croanbach alpha values obtained from the post-test application of the scale were 0.91 for the enjoyment dimension, 0.42 for the usefulness dimension, and 0.39 for the anxiety dimension. It is thought that the low reliability values obtained from the usefulness and anxiety dimensions of the scale were due to the low number of items in these dimensions. Research confirms that reliability values will be low in cases where the number of items is less than ten (Fraenkel & Wallen, 2006). The Croanbach alpha value of the whole scale, however, was calculated as 0.84 for the pre-test and 0.90 for the post-test. These values are at an acceptable level for reliability (Fraenkel & Wallen, 2006).

Furthermore, the Croanbach alpha values obtained from the Self-Efficacy Scale for Geometry were also examined. In the pre-test application of this study, the reliability coefficient value obtained for the positive self-efficacy beliefs dimension of the scale was 0.89; for the usefulness of geometrical knowledge dimension, it was 0.63; and for the negative self-efficacy dimension, the reliability coefficient value was 0.60. The whole scale scored 0.91 for its reliability coefficient value. When the values obtained from the post-test applications were examined, the reliability coefficient value obtained for the positive self-efficacy beliefs dimension was 0.86; the usefulness of geometrical knowledge was 0.82; the negative self-efficacy dimension was 0.89; and the whole scale was calculated as 0.94. These values are thought to be sufficient according to Fraenkel and Wallen (2006).

To confirm the validity of the inferences resulting from the qualitative data and the analysis process of the data were presented in detail. Since the coding was made by two different researchers, the reliability between these encoders was checked to make sure the inferences were consistent. As suggested by Miles and Huberman (1994), the percentage of agreement was checked. As a result, the agreement rate between the opinions of the two researchers was determined as 0.89.

Data Analysis

In the study, parents' mathematical literacy self-efficacy levels and mathematics anxiety were considered dependent variables, and grade level and education level were considered independent

variables. Since the differentiation of two dependent variables according to the categories of independent variables was investigated, multivariate analysis of variance (MANOVA) was used to keep the amount of error at the lowest level.

Before starting the analysis, the data were examined in terms of missing and extreme values, and a normality test was performed. After editing the data, the assumptions required for MANOVA were tested and the results were reported.

No missing data was observed in the study. When the Z values for the extreme value were calculated, the value out of +3 and -3 was not observed. According to the Kolmogorov Smirnov test result applied for the normality test, mathematical literacy self-efficacy variable (MÖKS=.047, p<.05) and mathematics anxiety variable (MKKS=.105, p<.05) did not show normal distribution, but when the coefficients of skewness were examined, (self-efficacy; -.347, anxiety; -562) it was observed that there was a distribution close to normal.

Mahalanobis distance values were calculated to test the assumption of multiple normality from the assumptions required for MANOVA (Pallant, 2005; Tabachnick & Fidel, 2007). Although Mahalanobis p value is less than .001, it is an extreme sign (De Maesschalck, Jouan-Rimbaud & Massart, 2000), as it was observed that all p values of variables are higher than .001. Multiple normality was provided for the variables in the study. When the Levene test was examined for the homogeneity of the variances, it was determined that the p values of the mathematical literacy self-efficacy and mathematics anxiety dependent variables were over .05 in the grade level and parental education level categories (Field, 2009). Box's M test, which is very sensitive for the homogeneity of another assumption, variance-covariance matrices, was examined. And .001 was taken as a significance criterion because it is a sensitive test (Tabachnick and Fidell 2012).It was noted that the covariance matrices, which is the H0 hypothesis, were equal (p <.001) (Secer, 2015). The correlation between variables was examined for the multiple normality test. Tabachnick and Fidell (2012) stated that a relationship of less than .90 between variables provides the assumption of multiple linearity. Since the correlation coefficient between the two dependent variables was .36, the assumption was satisfied.

Results

The dependent variables (Parental Mathematical Literacy Self-Efficacy Level and Mathematics Anxiety Level) in each category of the grade level and parental education level were examined in order to discern significant differences. It was aimed to keep the margin of error to a minimum by applying one-way MANOVA. Analysis results were reported to observe the change of dependent variables under each independent variable.

MANOVA Results of Parents' Mathematical Literacy Self-efficacy and Mathematics Anxiety Levels and Grade Level Variable

First, the significance of the Wilks' Lambda value was analyzed in order to observe whether or not the dependent variables (Mathematical literacy self-efficacy and Mathematics anxiety) in the study differ according to the four-category grade level variable. In general, it is the most preferred index in the absence of small sample, unequal groups and assumption violations (Tabachnick & Fidell, 2012). The Wilks' Lamda index was interpreted due to the fact that the sample size between groups was very close and variations were provided in the study. The test result revealed that the parents' mathematical self-efficacy level and mathematics anxiety linear combinations did not show a significant difference in terms of grade level (Wilks' =. 986, F (3, 370) =. 886, p = .505). Moreover, it is said that mathematics literacy self-efficacy and mathematics anxiety behavior are similar among the parents of 1st grade, 2nd grade, 3rd grade and 4th grade students. Descriptive statistics and single-factor ANOVA results according to the class levels of the variables are presented in Table 1.

Table 1. One-factor ANOVA results for parents' Math literacy self-efficacy and Math Anxiety Levels and grade level variable

Dependent Variable	Class Level	n	$\overline{X}$	SS	Sd	F	p
Math Self-Efficacy	1st Grade	117	3.67	.57	3-370	1.435	.232
	2nd Grade	98	3.76	.64			
	3rd Grade	92	3.67	.66			
	4th Grade	87	3.64	.62			
Math Anxiety	1st Grade	117	3.77	.93	3-370	.713	.545
	2nd Grade	98	3.64	1.05			
	3rd Grade	92	3.61	1.00			
	4th Grade	87	3.54	.96			

As seen in Table 1, according to the results of one-factor ANOVA for Mathematics literacy self-efficacy and Math Anxiety Levels of the parents, self-efficacy (F3-370 = 1.435, p> .05) and anxiety (F1-370 = .713, p> 05) variables do not differ significantly between grade level categories. Since the difference is not significant, the effect size is not mentioned. It does not make a difference in parents' perceptions of self-efficacy and anxiety regarding mathematical literacy in the grade of students. Parents whose students attend primary school demonstrate similar anxiety and self-efficacy behaviors. When the average and standard deviation values according to the class level are examined, it can be said that the group mean and standard deviation values are similar. When the averages are examined on scales scored between 1 and 5, the mathematics literacy self-efficacy levels of the parents vary between 3.64 and 3.76. That is, they show a high level of self-efficacy behavior. Likewise, anxiety level average scores range between 3.54 and 3.77. In other words, the anxiety levels of the parents are also quite high.

According to qualitative findings, the reasons for parents' high anxiety levels are not only related to the level of self-efficacy, but also the inability to spare time for the child as a result of the increased workload during COVID-19. In addition, parents say they cannot get down to the level. Since the math program builds on the foundation one year at a time, parents do not struggle in the beginning, but they start to have problems towards high school.

Parents with mathematical competence state that they do not have any difficulties in terms of both mastering the subjects and supporting the child in mathematics. In this sense, we can say that parents with mathematical competence think their mathematical literacy self-efficacy is high.

MANOVA Results Regarding the Education Level Of Parents' Mathematics Self-Efficacy and Mathematics Anxiety Levels

Parental education status was considered as primary school, secondary school, high school, associate degree, undergraduate and graduate; and Pillai's trace value was examined as a result of the MANOVA test, in which the significant difference was tested for the educational status variable. Pillai's trace is considered to be one of the most powerful statistics ranging from 0 to 1 (Olson, 1974). Unequal groups are preferred because of the small sample size and the fact that they are more resistant when variance homogeneity is violated (Tabachnick & Fidell, 2012). In the study, Pillai's trace value was examined because the parental education status was not evenly distributed among primary school, secondary school, high school, associate degree, undergraduate and graduate (58, 44, 84, 38, 147, 23, respectively) categories. It was observed that the linear combinations of mathematical literacy self-efficacy and anxiety variables differed significantly in terms of parental education level (Pillai = .222, F (5, 370) = 9.25, p = .000). The results of one-way ANOVA conducted to examine the differences of dependent variables according to education level are given in Table 2.

Table 2. Differences of Dependent Variables according to Education Level

Dependent Variable	Parental Educ. Lv.	n	$\overline{X}$	SS	Sd	F	p	h2	Difference
Mathematical Literacy Self-Efficacy	Primary S.	58	3.45	.74	5 - 370	10.51	.000	.124	Postgrad Primary, Secondary, High
	Secondary S	44	3.47	.66					
	High S.	84	3.52	.52					
	Assoc.Degree	38	3.75	.58					Undergrad Primary, Secondary, High
	Undergrad	147	3.87	.56					
	Postgrad	23	4.04	.42					
Math Anxiety	Primary	58	2.95	1.02	5 - 370	15.85	.000	.176	Postgrad- Primary, Secondary, High
	Secondary	44	3.12	.96					
	High	84	3.48	.97					
	Associate Dg	38	3.89	.77					Undergrad Primary, Secondary, High
	Undergrad	147	4.03	.81					
	Postgrad	23	4.16	.85					Associate Deg-Primary, Secondary

As seen in Table 2, the differences observed in the educational status categories of mathematics literacy self-efficacy (F5-370= 10.51, p <.05) and mathematics anxiety (F5-370= 15.85, p <.05) are significant at .05 level. Furthermore, 12% of the mathematics self-efficacy variable (h2 = .124) and approximately 18% of the anxiety variable (h2 = .176) are explained by the educational status variable.

When the direction of the difference is examined, the mathematics literacy self-efficacy levels of the parents with graduate education ($\bar{X}$= 4.04) is higher than parents at the primary school ($\bar{X}$= 3.45), middle school ($\bar{X}$= 3.47) and high school ($\bar{X}$= 3.52) education levels. That is, parents with graduate degrees consider themselves more competent in terms of mathematics compared to primary, secondary and high school graduates. Likewise, parents whose educational background is undergraduate ($\bar{X}$ = 3.87) have higher levels of mathematics literacy self-efficacy compared to parents with a primary school ($\bar{X}$= 3.45), middle school ($\bar{X}$= 3.47) or high school ($\bar{X}$= 3.52) education level. Self-efficacy levels of parents with associate degree education ($\bar{X}$= 3.75) do not differ from other groups. Postgraduate and graduate parents also have similar behavior in terms of mathematical literacy self-efficacy.

For the mathematics anxiety variable, parents whose education level is graduate ($\bar{X}$= 4.16); primary school ($\bar{X}$= 2.95), secondary school ($\bar{X}$= 3.12) and high school ($\bar{X}$= 3.48) education level is higher than parents. Parents with undergraduate education ($\bar{X}$= 4.03) have higher anxiety levels when compared to parents with primary school ($\bar{X}$= 2.95), middle school ($\bar{X}$= 3.12) and high school ($\bar{X}$= 3.48) education. Parents at associate degree education level ($\bar{X}$= 3.89) are more anxious than parents with primary school ($\bar{X}$= 2.95) and secondary school ($\bar{X}$= 3.12) education. While parents at graduate ($\bar{X}$= 4.16), undergraduate ($\bar{X}$= 4.03) and associate degree ($\bar{X}$= 3.89) levels have similar anxiety levels, parents of primary school ($\bar{X}$= 2.95), middle school ($\bar{X}$= 3.12) and high school ($\bar{X}$= 3.48) education levels also have similar math anxiety levels.

When the different education levels are examined, the data shows that as the education level increases, the mathematics literacy self-efficacy increases. On the other hand, parents with higher self-efficacy also have higher math anxiety levels.

The correlation coefficient between mathematics literacy self-efficacy, mathematics anxiety and parental education status is given in Table 3. While the Pearson correlation coefficient of mathematics literacy self-efficacy and mathematics anxiety are variable at the level of equal intervals and show normal distribution, the educational status was interpreted with Sperman's Rho correlation coefficient because it was at the level of the ranking scale.

Table 3. Correlation Coefficient Results Regarding the Variables of Mathematics Self-efficacy, Mathematics Anxiety and Parental Education Level

	Anxiety		Education Level	
	Pearson	p	Spearman's rho	p
Self-Efficacy	.404	.000	.295	.000
Education Level	-		.425	.000

As seen in Table 3, there is a meaningful medium-positive ($r = .404$, $p < .05$) relationship between mathematics literacy self-efficacy and mathematics anxiety levels. In other words, as the mathematics literacy self-efficacy of parents increases, a moderate increase is observed in their level of anxiety about mathematics. When this relationship is examined with educational status, there was a positive medium ($rho = .295$, $p < .05$) relationship between educational status and self-efficacy and a positive medium ($rho = .425$, $p < .05$) level relationship between anxiety. As the education level of the parents increases, their mathematics self-efficacy behaviors increase at a moderate level and their mathematics anxiety levels increase at a moderate level. The most feasible interpretation for this is that parents with high mathematics self-efficacy are more anxious as they possess a higher knowledge of mathematics subjects and, therefore, have higher awareness of the abstract and difficulty of teaching these subjects.

There is a requirement of mathematical competence in the calculation of verbal, equal weight and the numeric field in the ALES exam, which is a prerequisite for starting postgraduate education in Turkey. In this context, parents' graduate education is also an indicator of their math competence. As a matter of fact, according to qualitative findings, parents who have postgraduate education think that their mathematical self-efficacy is sufficient.

Findings Regarding Parents' Views On Their Children's Participation in Mathematics Teaching In The Distance Education Period During the COVID-19

Ten parents were interviewed with questions related to their children's participation in mathematics education during the distance education process during the COVID-19 pandemic. As a result of the interviews, the themes of parental support, sources of anxiety of the child, mathematics sources used and parental influence were formed. The theme of parental support was analyzed under mathematical competence, parental division of labor, child's grade level, teacher support, anxiety and time codes. The theme of the sources of anxiety of the child was examined under the codes of not being anxious, anxieties originating from the child, anxieties originating from the parent, and concerns originating from the distance education process. The theme of mathematics resources which provided benefit was examined under platform, material, and course codes. The parental influence theme was examined under positive and negative codes.

Table 4. Findings Regarding Children's Opinions on Participation in Mathematics Teaching in the Distance Education Process in the COVID-19 Period

Theme	Code	Frequency	Sample Statement
Parental Support	Mathematical Competence	10	I guess I'm not good enough because of my education level. I do not have a grasp of the subjects that my child is dealing with in mathematics. (E4) Yes, I think I can be of sufficient support. I do my best with homework and school math. As a math educator, I know what a child can achieve. (E5)
	Parent division of labor	3	Since we usually solve the problems in distance education, my husband sometimes supports me either when I am available or because my wife is good at math. (E7)
	Child's grade level	6	I understand at this stage, but I don't think I can understand after 8th grade. There are subjects and concepts that I have been familiar with until now. However, I know that after 8th grade, there will be concepts that I am not very familiar with. (E8) I was familiar with the subjects at 1st grade. For instance, they had recently learned the whole concept of half-quarters. We practiced this with the items in the house. (E9)
	Teacher support	9	I cannot say that I have contacted the teacher. I am a math educator, and I took care of the situation myself. If I couldn't find a solution, maybe I could have contacted the teacher. (E5) Sometimes there are wrong questions. In such cases, I contacted him. The teacher gives extra tests to aid the child, and we also contribute. That is parent-teacher collaboration. But we can help him advance to a the next level. (E10)
	Anxiety	4	Not mathematically, but I'm worried about whether I can catch up to his level. I have difficulties because I do not receive any pedagogical formation and always learn advanced mathematics. (E6)
	Time	5	We are currently running live classes at home and planning and organizing homework. Since these are the things that I have to control, there is inevitably no time to do other mathematical activities. (E5) I think I cannot support much due to my working hours. (E9)
Child's Sources of Anxiety	Absence of anxiety	7	Both of my children are very good at math. (E1)
	Anxiety of based-child	3	He had anxiety. Or rather, the level of anxiety increases as he moves on to different subjects, particularly subjects he does not know. (E5) He thought he couldn't do math. We go to a psychologist to work on this issue. (E8)
	Anxiety based-parents	3	Daily hustle and bustle and not being able to spare time led to anxiety for me. Actually, this is a very good process in terms of helping the child. But it doesn't always take place because we have other responsibilities. (E5)
	Concerns based from distance education	3	Mathematics is not a branch to be taken by distance education, especially for children at this age. When I explain the issues he encounters for the first time, the learning process takes longer. (E7)

Used Mathematical Resources	Platform	9	No. I'm not taking advantage of internet. They were exposed to computers due to an intensified distance education. (E3) I don't use it, but I'm searching (E6) Morpa Campus and EBA (E10)
	Materials	10	Until recently my son did not understand the concepts of whole and half. I use household materials, such as apples. (E1) Ruler, compass and meter (E2) There are many resource books and entertaining materials. (E8) Objects for counting, length measures, beads, meter, tape measure (E9)
	Courses	3	I can direct to private lessons or to his/her mother. (E2) Some of our relatives are math teachers. I contact them when needed. (E4)
Influence of Parents	Positive	10	I was emotionally relieved. Apart from that, I helped him with his homework when he did not understand. (E5) It has contributed positively. We do repetitions. I supported him because there was distance education where he was lacking. (E6)
	Negative	3	There were times when our patience as parents was inevitably weakened. Maybe I made him feel a little anxious when he struggled with things. I expected him to learn more easily. (E5) We may be overdoing it a little. (E9)

Table 4 shows that some of the parents consider themselves as mathematically competent, while others do not. Parents who consider themselves competent stated that they can support their children, but those who do not consider themselves as competent concluded that they cannot provide sufficient support to their children. Some of the parents said that they divide the work to provide support to their children.

There are parents who express that they can or cannot provide sufficient support according to the grade level of the child. Parents who think that they will not be able to master the subjects, especially in classes to come, think that they will have difficulty in providing support to their children.

Some parents contacted the teacher during the distance education process and others did not. Parents contact the teacher to get advice from the teacher for the resource book and to consult the erroneous questions. Parents who did not contact the teacher stated that they chose not to because they could handle the problems on their own.

It is also noted that some parents have difficulty supporting their children due to lack of time. In other words, the increased workload of parents throughout this process sometimes prevented them from providing adequate support to their children. It has also been observed that the sources of anxiety in the child may originate from the child himself, from the parent or from the distance education process. Parents who think that their children are not anxious stated that they are not anxious because their children love mathematics.

Parents who did not want to expose their children to more computer screens during the distance education process stated that they did not benefit from any platform in their children's education. Conversely, there are parents who use platforms such as MORPA, EBA, YouTube; or even if they do not use these applications themselves, they may consider them as suitable platforms for their children.

In the interviews, parents discussed positive and negative effects. Positive effects are generally stated as helping their children when they do not understand and applying repetition for further understanding. In addition, parents stated that motivating and emotionally supporting their children in this process was a positive effect. The negative effects were identified as the parents' decrease in patience, taking care of their children, and the child's inability to understand based off of the parent's explanation.

Related Qualitative and Quantitative Findings

1. Parents demonstrated a high level of self-efficacy behavior (Table 1). When the difference between quantitative findings and educational status is examined, as the level of education increases, mathematical literacy self-efficacy increases. This was also confirmed in the qualitative interviews. Parents who study numeracy have an especially high self-efficacy in mathematics.

2. The quantitative part of the study was conducted among parents whose children attend primary school, and there was no significant difference according to grade level. In the qualitative findings, there was no anxiety related to support in parents whose children attend to primary school. However, the interview with parents (E4) whose child attends secondary school showed that there is a difference between primary and secondary school in terms of contribution.

3. According to quantitative findings, parents' anxiety levels are high (Table 1). In the qualitative portion of the study, it was observed that the parents of primary school children were not very concerned about this period, though they were concerned about the following periods.

4. According to quantitative findings, parents with higher self-efficacy tend to have higher math anxiety levels, though no inquiry was made regarding the fields of the parents. However, in the qualitative interviews, they stated that those who were in the numerical field had high self-efficacy in mathematics.

Discussion, Conclusion and Recommendations

According to the quantitative findings, no significant difference has been found between the variables of mathematics literacy, self-efficacy and mathematics anxiety and grade level categories. That is, the grade in which the students are educated does not make any difference in the self-efficacy and anxiety perceptions of the parents regarding their mathematics literacy. Therefore, parents whose students attend primary school exhibit anxiety and self-efficacy behaviors. This result coincides with the result of Oztop & Toptas's (2019) study. One possible reason for this may be the absence of a centralized examination in the transition from primary school to secondary school. As a matter of fact, it has been seen in studies conducted with students that math anxiety is higher at grade levels with central exams (Dursun & Bindak, 2011; Oksal, Durmaz & Akin, 2013). In accordance with the qualitative findings of the study, parents have low anxiety and high self-efficacy at the primary school level because they do not expect difficulty in explaining the subjects. However, they expressed that this situation would change in the following grade levels. Actually, interviews with the parents who have a child at the secondary school level confirm this.

There are studies in the literature that show an adverse relationship between students' self-efficacy and anxiety (Ipek, 2019; Turkmenoğlu & Yurtal, 2020). As for the quantitative findings of this study, it has been observed that the parents' mathematical literacy self-efficacy and anxiety levels were high, and as the parents' mathematical literacy self-efficacy increased, there was a moderate increase in their math-related anxiety levels. In the results of PISA (2012), unlike other countries, Turkish students have high self-efficacy and self-confidence, despite the fact that their anxiety level is normally higher (Usta, 2016). One of the reasons for this may be that parents greatly affect their children's anxiety and self-efficacy. As a matter of fact, there are studies in the literature showing that anxiety is high in both parents and children and that parents' anxiety affects children's anxiety (Kesici, 2018; Sarigol, 2019; Soni & Kumari, 2017; Vukovic, Roberts & Green Wright, 2013). The qualitative findings have indicated that the reasons for the high levels of anxiety of the parents were not only related to the level of self-efficacy, but also the inability to spare time for the child due to the increased workload during the pandemic. However, it is also known that parental support is effective when it comes to children’s academic success (Herts, et al., 2019; Vukovic, Roberts & Green Wright, 2013). Therefore, it can be recommended to analyze the difference in mathematics achievement of children who received and did not receive parental support during the distance education brought on by the spread of COVID-19. In addition, parents occasionally point out that they cannot get down to their children's level. The failure of parents to catch up to the math level of their children can cause anxiety and failure in the child. For this reason, studies should be carried out to provide pedagogical support to parents. Indeed, some parents have said that when they try to explain the subjects and their children do not understand, they are also negatively affected. Also, some parents want to benefit from various educational platforms to support their children.

In quantitative findings, the differences observed in the educational status categories of the variables of mathematical literacy, self-efficacy and mathematics anxiety are remarkable. In other words, postgraduate and graduate parents consider themselves more competent in mathematics than primary, secondary and high school graduates. When compared to parents with primary, secondary and high school education, parents with a bachelor's degree similarly have higher mathematical literacy self-efficacy levels. Self-efficacy levels of parents with an associate degree education do not differ from other groups. Besides, graduate and undergraduate parents also have similar behavior in terms of mathematical literacy self-efficacy. Qualitative findings support the quantitative data. As a matter of fact, the qualitative findings, especially parents with graduate education think that their mathematical self-efficacy is sufficient. The reason for this likely has to do with the mathematical proficiency requirement in the calculation of verbal, equal weight and numerical scores in the ALES exam, which is a prerequisite for starting graduate education. In this respect, having a postgraduate education is also an indicator of parents' mathematical competence. Parents with high mathematics proficiency state that they do not have any problems in terms of both mastering the subjects and supporting the child in mathematics. In this sense, we can say that parents with mathematical competence think that their mathematical literacy self-efficacy is high. It has been observed that parents who studied mathematics in particular were more confident in the field. Many studies have shown that the education level of parents has an effect on mathematics self-efficacy and anxiety (Demir, 2019; Konca, 2008; Ozgen & Bindak, 2011; Saglam, 2019).

As for the mathematics anxiety variable in the quantitative findings, parents with a graduate level of education; primary, secondary and high school education levels are higher than parents. Parents with an undergraduate education have higher levels of anxiety compared to parents with primary, secondary, and high school education. Parents at the associate degree education level are more anxious when compared to parents at primary, secondary, and educational level. While parents at graduate, undergraduate and associate degree levels had similar anxiety levels, primary, secondary and high school educated parents also have similar math anxiety levels. That is, when the difference of the education level is examined, as the education level increases, mathematical literacy self-efficacy increases. On the other hand, parents with higher self-efficacy also have higher math anxiety levels. The underlying reason is that parents with high mathematics self-efficacy are more aware of mathematics subjects, and so they are more aware of the difficulty of teaching these subjects. This demonstrates that they are more anxious. In addition, according to Vukovic, Roberts & Green Wright, (2013), parents do not cause anxiety in their children because they do not try to provide support in higher mathematics subjects. In other words, parents with high self-efficacy may be worried based off of their experience with these issues and may think that they need to explain to the children. On the other hand, according to Oztop and Toptas's (2019) study, parents who graduated from a lower educational level were more anxious than those who graduated from a higher one.

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Perception of Safe School in Turkey: Opinions of Parents, Students and Teachers*

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Abstract

This study examined the phenomenon of school from the point of view of teachers, students and parents, and the question as to who wants what and who can do what and it was tried to make decisions about school safety and to determine strategies with opinions of stakeholders. The design of the study, which was designed according to the qualitative research model and which aims to examine the phenomenon of school safety in depth by benefiting from the views, experiences and perceptions of the school stakeholders, is phenomenology. The stakeholders of primary and secondary schools in Sivas city centre during the 2018-2019 school year were included in the study group. The participants of the study consist of 50 teachers, 48 students and 50 parents. As a result of the interviews conducted through semi-structured interview form, it is seen that teachers, students and parents address the phenomenon of safe school under the categories of "Psycho-social", "Administrative", "Physical", "External Factors" and "Employee Characteristics" and express their expectations from National education, school management, teachers, parents and students in physical, educational, administrative, disciplinary, legislative aspects and the aspects of courtesy, financial support, responsibilities, personnel and media.

Keywords: Safe school, Safety, School, Expectations related to Safety, School stakeholders

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Introduction

In general, safety can be defined as the state of danger, damage and risk protection. Schools can be seen as hygienic environments. Being hygienic can be defined as not only cleanness but also the school is healthy, effective, physically equipped and being in a good state as a whole.

Safety is considered an important area of need for human beings. A safe life can significantly determine a person's quality of life. In the hierarchy of needs, the need for safety is one of the needs that come after physiological needs and must be met. A person's holding on to life, being successful, reaching effective and productive results in production is related to meeting many of their needs. Schools are institutions that are directly affected by the need for safe living. The nature of schools as an important social institution in social life requires the management of safety actions.

Schools are obliged to provide a comfortable working environment for their employees. The main determinant of comfort and peace in the working environment is safe. Whereas a safe learning environment means that physical elements in school do not pose a danger in terms of the physical environment, it might be defined as the food consumed in school being clean and sanitary in terms of food safety (Turhan and Turan, 2012). Schools should be safe havens (Croft, Moore and Guffy, 2019; Marcella, 2018; Eren, 2019; Xaba, 2006). Crimes and violence in schools affect not only the people involved but the school as a whole. In this sense, it is also necessary to describe, update and monitor the safety indicators of schools for societal security as a whole. Security incidents such as student victimisation, bullying, fights, possession of weapons, drug and alcohol use at school might occur inside or outside the school (Wang, Chen, Zhang and Oudekerk, 2020; Fennelly and Perry, 2014; Xaba, 2006) and might affect the school culture and climate. According to Conaway (2014), education, safety and health in learning and work environments are inseparable concepts. Thus, a state of insecurity in terms of physical, emotional and social conditions jeopardises not only the intellectual development of students, but also the basic principles of education.

According to Gairin and Castro (2011), the concept of school safety and the approach underlying the concept is prevention and reduction of risk factors and encouraging the actions that refrain from consequences or circumstances of unsafe works. Safety at schools has been a constant source of concern in the educational community (as cited in Conaway, 2014). Although the problem of school safety is tried to be solved with different practices over time, the effects of disrupting the quality of learning environments have started to be discussed more. One of the main goals of the school is to provide education and training in a healthy environment. It is necessary to address and evaluate school safety within the framework of the concept of a healthy school.

In ensuring school safety, school management can make significant contributions to the school knowing what is happening in the school and being aware of the risks that may affect the

educational community (Conaway, 2014; Marcella, 2018). By identifying risks and analysing the physical and psycho-social environment, the school administration should make appropriate decisions, set safety policies, and develop prevention plans for each school. In recent years, schools have used specific tools to assess the risks that affect them and to engage in different areas. Fire-related conditions of buildings and facilities, threats, bullying, substance use or work-related safety issues of the teaching staff were identified as risk areas (Conaway, 2014).

The school as a whole can fulfill its functions depending on its structure of being safe in the realisation of its goals. The fact that all stakeholders of the school feel safe socially, emotionally and physically holds an important place in the realisation of the goals of the school. Opportunities provided to classrooms and students in classrooms as a production subsystem of schools by both their teachers and school administrators might reflect positively on their learning outcomes. Students can participate more eagerly and effectively in learning activities in a safe environment that the school provides for the students. According to Hanaya, McDonald and Balie (2020), teachers are the most critical mass after students in schools. Teachers thus represent an important figure for safety in schools. In many ways, teachers' attitudes, approaches and skills most directly affect a student's learning outcomes. Therefore, safety problems that may disrupt learning should be far from school and classrooms. Students are often left out in school safety issues and strategies. However, students, teachers, and parents are responsible for school safety as equal parts of a whole.

Students ' physical freedom in a school building, feelings of social belonging, sincerity in relationships, and protective attitudes and actions will make them feel more free and comfortable.

Whereas the physical robustness, usefulness of the building are considered as a sort of safety at school, a climate, where psychologically good relationships, value-driven behaviours, mutual acceptance are exhibited, might also increase student safety at school. In other words, safety at school points to a situation beyond just preventing violence, reducing fights, and controlling school accidents.

School violence can become a national concern due to the number of violent incidents. It is possible to mention the violence that goes so far as to lead students to lose their lives. Violence comes in different forms in school environments. These include fights, bullying, verbal abuse, cyber-bullying, emotional-psychological abuse and sexual violence, gang violence and bringing guns to school. These raise significantly more concerns about safety at schools and incidents are featured in newspapers, television and other media Violence is one of the most important security problems and can damage the culture and climate of the school. According to De Wall and Grösser (2009), situations such as violence against students, abuse, a tendency towards crime, and insufficient support for appropriate education and training materials strengthen safety problems. Safety barriers can affect the nature of the relationships between teacher and student by reflecting on paedagogical results.

School climate often refers to interrelated aspects of the quality and character of school life. Factors such as serious crimes related to safety at school, physical facilities or restrictions, legal barriers, bullying and violence might affect school climate (School climate and safety, 2018). Recent researches have shown that better outcomes will be achieved by focusing on more proactive approaches to student behaviour and using interdisciplinary supportive programmes at schools. It is necessary to support school safety with strategies and processes that will improve climate and overall academic results (Matthew, Cuellar, Susan, Elswick and Matthew, 2018)

Opportunities offered to its students by a school in physical, social and emotional dimensions are increasing day by day, however, the safety gaps are increasing to the same extent through changing technology, human needs and psychological pressures (Dönmez, 2001, Memduhoğlu and Taşdan, 2007). Thus, schools today need to be interested not only in ensuring safety for their employees, but also in the dimension of reflection of this safety in their learning and teaching activities. In addition to elements such as physical order, violence, fighting in school, safety should also be aimed at the environment and relationships in which people feel good and connect psychologically and socially.

Building characteristics of schools, crowded school sizes, dual education practices, heavy weekly course loads, as well as the uniform organisation of classes as closed spaces can further expose these problems. Therefore, over time, the traditional concept of school safety is being redefined to include other aspects related to emotional and social well-being. The ultimate goal of safety has become to be thought of as creating a strong school culture with emotional and social ties.

School culture creates identity. The school identity is formed and developed in a healthy school environment (Lunenburg and Ornstein, 2011). It is always more and more an urgent need to determine what school safety problems are and to develop suggestions and solutions for school safety problems in this context. What is more interesting is that the measures, suggestions and solutions developed for these needs must be updated under changing circumstances.

The first of these measures is to utilise developing technologies (Perumean-Chaney and Sutton, 2013). Another is the security guard, which can be seen and criticised as an element that increases tension since it is perceived as police. For example, video cameras, extreme rules can affect the learning climate at school socially and psychologically. For the school to be a healthy and safe place, practices aimed at increasing the school climate and culture should be implemented with a more desirable and flexible attitude; approaches to resolving conflicts should be included and managed, inclusion in decision making, co-deciding areas should be expanded and social ties should be strengthened. At this very point, it is stated with this research that it is needed to define what school safety is and to develop suggestions with regards to necessary measures in the field. According to Matthew and others (2018) (2018), current researches suggest widespread authoritarian strategies

for safety practices in schools, such as metal detectors and security. However, cameras and guards in schools are not effective methods of preventing violence at school. According to Hanaya, McDonald and Balie (2020), "safety is something greater and more valuable than the absence of violence in school" (pp., 5). Therefore, it is necessary to consider many factors related to learning together while establishing the school safety framework. Çankaya (2009) emphasises that besides school safety, changing inside and outside the school environment, it is also necessary to take measures to reduce aggression and similar undesired student behaviours and to make school programmes effective, social and individual-oriented.

When it comes to school safety, it should be understood that all activities and practices of the school are carried out in an environment supported by cultural elements shared in an open climate. In a safe school, every student can express themselves freely and develop their skills. In this context, this study examined the phenomenon of school from the point of view of teachers, students and parents, and the question as to who wants what and who can do what and it was tried to make decisions about school safety and to determine strategies with opinions of stakeholders. For this purpose, answers were sought for the following questions. What are the opinions of

1. Teachers, students, and parents on the phenomenon of a safe school?
2. What are their opinions on the phenomenon of unsafe school?
3. What are their opinions regarding what kind of practices they expect from whom to increase school safety?

Method

This study was conducted using the qualitative research method. The pattern of the study, which aims to examine the phenomenon of school safety in depth by utilising the opinions, experiences and perceptions of school stakeholders regarding the concept of a safe school, is phenomenology. Because the phenomenological pattern focuses on understanding how people perceive themselves and the world around them. It tries to reveal and convey the hidden meanings of daily life experiences (Robson, 2015).

Study group

The study group of the research included stakeholders of primary and middle schools in Sivas city centre during the 2018-2019 school year. The participants of the study consist of 50 teachers, 48 students and 50 parents. The study group was determined according to maximum diversity sampling, one of the purposeful sampling methods. In order to examine the experiences, perceptions and opinions of individuals with different responsibilities and duties regarding school safety and the

phenomenon of school safety in depth, sampling utilizing maximum diversity sampling was preferred. Table 1 includes demographic information of the participants.

Table 1. Information on the study group

Participants		Students	Teachers	Parents
Gender	Female	21	19	20
	Male	27	31	30
Level of Education	Primary school			13
	High School			16
	Bachelor's Degree		45	21
	Master's Degree		5	
School type	Primary school	14	20	22
	Middle school	17	14	16
	High School	17	16	12
Total		48	50	50

According to Table 1, participants consisted of 48 students, 50 teachers and 50 parents, 21 of them were female students, 27 male students; 19 were female teachers, 31 were male teachers, 20 were mothers, 30 were fathers. 45 of teachers were undergraduate, whereas 5 were graduates. 13 of parents were primary school graduates, 16 were middle school graduates and 21 were undergraduates. Since students continue their education, the level of education of students has the same frequency as the type of school. Therefore, the part about the education level of the students is left blank. 20 of the teachers work in primary school, 14 in middle school and 16 in high school. The type of school in which parents' children study consists of 22 primary schools, 16 middle schools and 12 high schools.

Data collection

Interviewing (Stewart and Cash, 1985), a reciprocal and interactive communication process by posing questions and answering was preferred in order to achieve a predetermined and serious purpose. Data were collected using a semi-structured interview form. Before the semi-structured interview form was prepared, the researchers reviewed the relevant literature and asked opinions of two faculty members that are experienced and expert in qualitative studies. A semi-structured interview form was drafted in line with the opinions of researchers and faculty members, and it was reviewed by two experts in the field of educational management. The semi-structured interview form was finalised considering issues and suggestions, for which opinions were expressed. The clarity and comprehensibility of the semi-structured questions were checked through the pre-application. It was decided to ask questions in the semi-structured interview form clearly and comprehensibly according to teachers, students and parents and to ask additional questions or to make explanatory interventions (without exceeding the scope of the research) based on answers given. For example, they were asked to evaluate the question of what does the concept of safe school mean in physical, administrative, and psycho-social dimensions. The interviews with each participant were conducted at a time when the participant was available at school, and the average time allocated to the interview was determined as

20 minutes. This study was conducted with the permission of Ethics Committee of Sivas Cumhuriyet University. Care was taken to ensure that interviews with students were conducted with the consent of parents and identity information of participants was kept confidential.

Data analysis

The data were analysed with content analysis for the research. Content analysis is the technique of collecting and analysing text content. In qualitative content analysis, the researcher uses symbolic and systematic counting and recording procedures of a text (Neuman, 2008). In the content analysis, five stages were followed in order. First, open coding was conducted in order to generate initial codes to determine and categorise themes, then the date was reviewed and axial coding was conducted in order to create additional codes or new themes. In the third stage, analytic reminder notes (Miles and Huberman, 1994) were utilised by taking into account discussion notes regarding each theme and concept coded during and after selective coding in order to review all data and previous codes. Finally, the data were analysed through the process of interpretation and elaboration (Neuman, 2008).

The validity and reliability of the study

The paradigm of qualitative researches is different from that of quantitative researches. Therefore, the concepts of plausibility, transferability, consistency and confirmability that correspond to the validity and reliability of study in quantitative research are more appropriate to the nature of qualitative research (Mills, 2003). In this context, the procedures and principles are taken into account to ensure the plausibility, transferability, consistency and confirmability of the research are explained below.

In order to ensure plausibility the participants of the research were informed about the purpose and content of the research and were asked to answer relevant questions accordingly. During the process of converting each opinion into text, participant opinions were recorded, confirming whether the statements are written were in line with the opinion that the participants wanted to express. In the analysis of the data, the credibility of the study was tried to be ensured by the two researchers for themes to be consistent in generating categories and codes, by clearly reviewing code-theme compatibility.

Detailed information about the purpose, content, method, findings and how these stages were carried out were expressed within the scope of the study. Besides, the opinions of participants, where were source of the themes obtained within the scope of the study, were supported by direct quotations.

The demographic characteristics of the participants of the study are detailed in order to ensure consistency. Opinions of participants were coded by the researchers and it was tested whether

participants expressed their opinions consistently with each questions, then data related to the participants were analysed. It was paid attention that the time allocated to each participant and the research environment was similar. The consistency between the themes reached in the study and the theoretical information was also taken into account.

Ensuring the confirmability is about whether similar data can be obtained by re-posting the questions prepared within the scope of the research to the study group. In this study, the opinions of certain participants were taken through pre-application of interview forum and the same participants were found to express similar opinions during the application. Besides, the raw data of the study and the documents related to obtaining the categories are reserved for the concerned parties to review.

Results

The results of the research are presented under the headings of the opinions of teachers, students, and parents "on the phenomenon of safe school", "on their phenomenon of unsafe school", and "on their expectations from students, teachers, and parents to increase school safety".

Opinions of students, teachers and parents on the phenomenon safe school

In order to take opinions of students, teachers and parents on the phenomenon of safe school, the following questions were posed to the participants "How would you define the concept of safe school? What does it mean for you that a school is a safe place (environment)? ", "Please state the words that come to your mind when it comes to safe school?" and "What are the factors/situations that you think increase the safety of the school?" - The categories of the safe school phenomenon are seen in the graphic created within the framework of the answers to the questions.

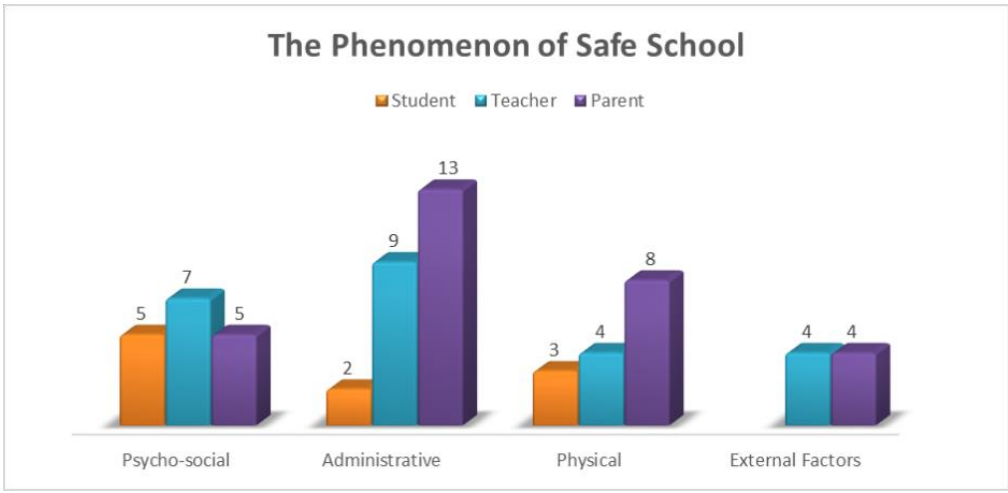


Figure 1. The Phenomenon of Safe School

Teachers, students and parents explained the phenomenon of safe school with categories of *"Psycho-social", "Administrative", "Physical"* and *"External Factors"*. When evaluated overall, while

the participants mentioned the phenomenon of safe school mostly in administrative dimension (f=24); this is followed by psycho-social (f=17) and then physical dimension (f=15). The fact that school it is thought that the administration has primary responsibility in ensuring school safety, might explain the answers that mostly express the administrative dimension regarding the phenomenon of safe school. The phenomenon of a safe school related to external factors (f=8) appears to be the least mentioned dimension.

For example, teacher coded as 7 mentioned external factors as *"In my opinion, school safety means ensuring safety, well-functioning of control mechanisms, minimising physical risks, absence of insult, violent and fear in terms of occupational safety, public order and civil defence and all personnel including school bus drivers and auxiliary staff being reliable people"*.

When evaluated separately, while parents and teachers mostly consider a safe school with its administrative dimensions; students, on the other hand, mostly mentioned about safe school with its psycho-social dimensions. The following answer of student coded as 32 might be an example to this *"According to me, safe school means going to school willingly and with pleasure, feeling comfortable, happy and peaceful. Trust is more valuable than love"*. Similarly, parent coded 21, who frequently emphasised the phenomenon of safe school with its administrative dimension stated their opinion as follows *"Places, where there is no fear or anxiety, which is free, peaceful and successful academically, where parent-school relations are developed, where emergency and crisis management is established, where measures to ensure school safety are taken and where inspections are conducted"*.

Besides, the fact that parents (f=8) mostly emphasised the phenomenon of school in physical dimensions and teachers (f=7) mostly emphasised it in psycho-social dimension and the fact that students' answers did not include the phenomenon of safe school related to external factors, are amongst other findings of the research.

Following the answer given by student coded as 1 might be an example of physical safety *"I think that safe schools are places that provide physically safe conditions for their students. The presence of security camera at the school, the presence of iron fences around the school, locked windows and presence of net in stairwells indicate that the school is safe"*.

Table 2. The Phenomenon of Safe School According to Opinions of Students, Teachers and Parents

Categories	Subcategories		
	Student	Teacher	Parent
Psycho-social	Peace Happiness Comfort Friendship Love	Peace Happiness Comfort Care-love-respect Belonging Consciousness Positive school climate	Peace Happiness Comfort Care-love-respect Consciousness
Administrative	Authoritarian school Orderly school	Academic achievement Transparency Occupational safety Being cautious Healthy school Continuity Positive relationships Cooperative school Orderly school	Academic achievement Transparency Occupational safety Accessibility Cooperative school Orderly school Discipline Permission to go out of the school Clarity Justice Freedom Crisis management Inspection
Physical	Security camera Being equipped Safeguarded buildings	Security camera Being equipped Hygiene Material safety	Security camera Being equipped Hygiene Safeguarded buildings Material safety Robustness of school building Entrance-exit security Canteen health
External Factors		Safety of the school environment Safety of school bus Security Guard Competence of auxiliary staff	Safety of the school environment Safety of school bus Security Guard Isolation of school location

The subcategories, based on which teachers, students and parents consider school safety, are seen in Table 2. When evaluated overall, teachers, students and parents both agree that the subcategories of *peace, happiness* and *comfort* in the *psycho-social* dimension express the phenomenon of a safe school; students also believe that a safe school is a place of *friendship* and *love*, as well. Similarly, teachers and parents believe that the subcategories of *care-love-respect* and *consciousness* should also be in a safe school; teachers believe that the sense of *"belonging to their schools"* and *a positive school climate* also express school safety.

When evaluated in *administrative* terms, students, teachers and parents think that a safe school should necessarily *be an orderly* school; *teachers and parents also think that they should be places that are academically successful, transparent,* that care about occupational safety and *cooperation* in all matters. Besides, students describe the phenomenon of a safe school as an

authoritarian school, while teachers *believe that being cautious and healthy, continuity of safety measures,* and *positive relationships* established with other school stakeholders in the administrative dimension also express school safety. Besides, parents define a safe school in an administrative dimension as *accessible, disciplined, open, fair and free places,* and also state that a safe school must have *crisis management* skills and must be inspected.

When the physical dimension is examined, whereas teachers, students and parents agree that a school must have a *security camera* and *be equipped* for the school to be considered safe, students and parents think that schools must be *safeguarded buildings*; teachers and parents state that schools must be reliable in terms of *material safety* and *hygiene*. Additionally, parents believe that the *robustness of school building, entrance-exit security* and *canteen health* are qualities that a safe school should have.

Lastly, when the dimension of external factors is examined; teachers and parents believe that a safe school should also ensure that the *school environment and school busses* should be safe and there should be a *security guard*. Also, teachers stated that *the competence of auxiliary staff* is related to school safety whereas parents stated that *school is located in an isolated area* is related to school safety.

Opinions of students, teachers and parents on the phenomenon unsafe school

In order to take the opinions of students, teachers and parents on the phenomenon of unsafe school, the following questions were posed to the participants "How would you define the concept of unsafe school?" What does it mean for you that a school is an unsafe place (environment)? ", "Please state the words that come to your mind when it comes to unsafe school?" and "What are the factors/situations that you think violate the safety of the school?" - The findings obtained as a result of the analysis of the answers can be seen in the graphic below.

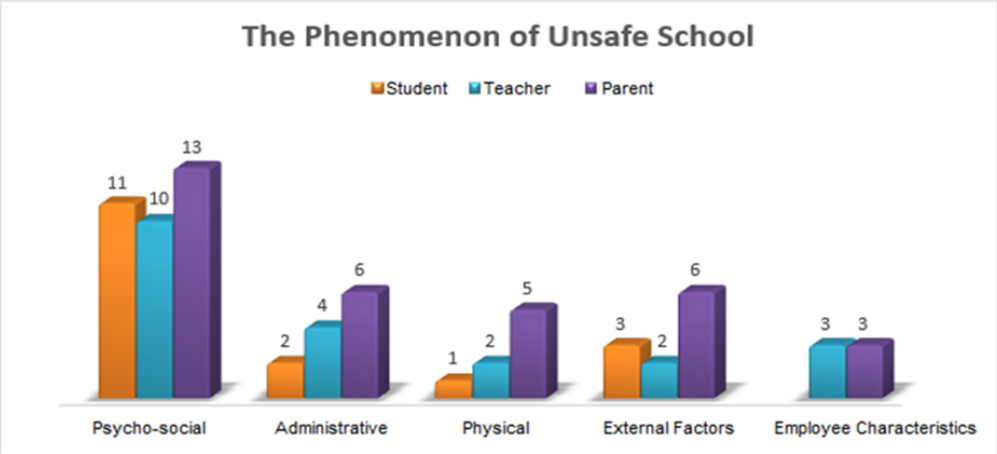


Figure 2. The Phenomenon of Unsafe School

The phenomenon of unsafe school was evaluated by teachers, students and parents under the categories of *"Psycho-social", "Administrative", "External Factors"* and *"Employee Characteristics"*. When examined overall, teachers, students and parents explain the phenomenon of unsafe school mostly with its psycho-social dimensions (f=34). The reason for this finding may be that the unsafe school is mostly matched with psychological and social concepts. Psycho-social dimension is followed by administrative dimension (f=12), dimension of external factors (f=11) and physical dimension (f=8). Employee characteristics (f=6) appear to be the least mentioned dimension in the answers.

For example, the answer of parent coded as 44 as follows *"Especially unreliable personnel, entrance and exit of strangers to and from school and different attitudes of employees indicate an unsafe school for me"* and answer of parent coded as 12 as follows *"When it comes to an unsafe school, non-disciplinary school and unreliable school bus drivers come to my mind"* might be examples for the dimension of employee characteristics regarding the phenomenon of unsafe school.

When we evaluate it separately from the point of view of students, teachers and parents, all 3 groups seem to mention unsafe school most often in the psycho-social dimension, while students seem to mention other dimensions other than the psycho-social dimension in their answers. At this point, it can be said that students mostly want to feel safe in their schools, both psychologically and socially.

The answer of student coded 33 as follows *"Unsafe school means worrying about what will happen to me at school today"*, the answer of student coded 30 as follows *"I fear at an unsafe school and get anxious"*, the answer of student coded 47 as follows *"The concept of unsafe school scares people, they are places of violence, bullying, fear and oppression"* might be examples for this.

The fact that parents mostly mentioned concepts in administrative dimension (f=6) and dimensions of external factors (f=6) and in physical dimension (f=5), teachers criticised the phenomenon of unsafe school mostly in administrative dimension (f=4) after psycho-social dimension is amongst other findings of the research. Teacher coded as 32, emphasising the concepts in administrative dimensions in their answer stated their opinions as follows *"An unsafe school is an uninspected school, where neglected dangers occur, where strangers enter and exit school, where there is no action plan in cases of extraordinary situations, where health and hygiene rules are not followed"*.

The subcategories, based on which teachers, students and parents consider the phenomenon of unsafe school, are seen in Table 3.

Table 3. The Phenomenon of Unsafe School According to the Opinions of Students, Teachers and Parents

Categories	Subcategories		
	Student	Teacher	Parent
Psycho-social	Peer bullying Discrimination Anxiety Violence Disrespect Doubt Fear Uneasiness Abuse Fight Bullying	Peer bullying Anxiety Violence Disrespect Uneasiness Abuse Dislike school Insincerity Disharmony Negative school climate	Peer bullying Violence Unconsciousness Indifference Insecurity Dislike school Unhappiness Disorder Uneasiness Threat Abuse Oppression Harassment
Administrative	Indiscipline Uncontrolled entrance and exit	Indiscipline Uncontrolled entrance and exit Lack of inspection Lack of disaster and emergency management	Indiscipline Uncontrolled entrance and exit Lack of follow-up of absenteeism Lack of parent-school cooperation Absence of social activities Lack of crisis management
Physical	Lack of hygiene	Lack of equipment Lack of equipment during entrance and exit	Lack of equipment Unsound buildings Lack of hygiene Absence of an infirmary No security camera
External Factors	Theft Substance abuse Pressure groups	Insecurity of the school environment Bad habits	Insecurity of the school environment High traffic density Insecurity of school road Substance abuse Ganging up Theft
Employee Characteristics		The impropriety of criminal records Lack of reliable staff Inadequate staff	Unreliability of school bus drivers Lack of reliable staff Irresponsible behaviour of employees

When categories in Table 3 are evaluated separately; whereas all participants match the phenomenon of unsafe school in *psycho-social* dimension with the concepts of *peer bullying, uneasiness, violence and abuse;* teachers and students agree that unsafe school is related to the concepts of *anxiety, disrespect* and teachers and parents agree that it is related to the concept of *dislike school*. Apart from these, students think that there is *doubt, fear, fight, bullying* and *discrimination* in an unsafe school; teachers are of the opinion that schools, where *insincerity, disharmony* and *a negative school climate* are present, are unsafe. Lastly, when the answers of parents are examined, it is seen that the phenomenon of unsafe school is matched with subcategories of *unconsciousness, indifference, insecurity, unhappiness, disorder, threat, oppression and harassment*.

When *the administrative* dimension is examined, it is seen that all teachers, students and parents emphasise that *indiscipline* and *uncontrolled entrance and exit* indicate the phenomenon of unsafe school. Additionally, teachers stated that an unsafe school lacks *disaster and emergency management*; *parents stated that lack of follow-up of absenteeism, lack of social activities* and *lack of crisis management* evoke unsafe school.

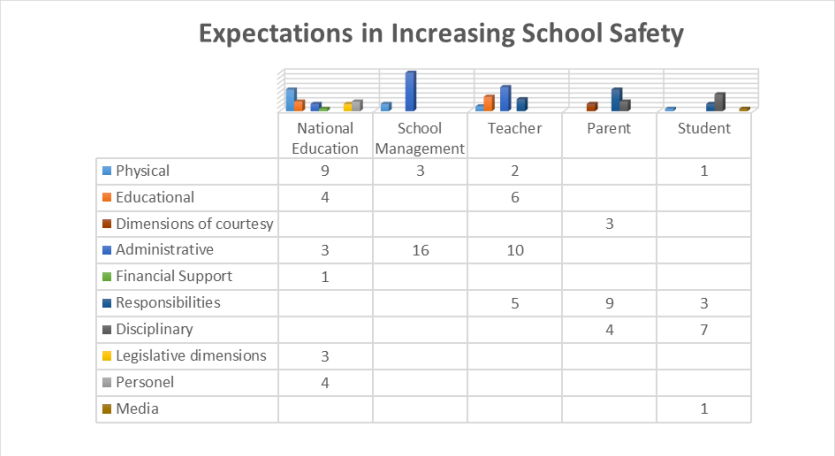
When the *physical* dimension of the phenomenon of unsafe school is examined, it can be said that students and parents associate *lack of hygiene* with the phenomenon of unsafe school and parents associate *lack of equipment* with the phenomenon of unsafe school. Apart from these, *lack of equipment as stated by teachers* and *unsound buildings, lack of infirmary* and *security camera* as stated by parents, are other factors that indicate a deficiency in physical terms and affect the phenomenon of safe school negatively.

When we evaluate the phenomenon of unsafe school in the dimension of *external factors*; it is seen that teachers and parents agree that *insecurity of school environment* is associated with the concept of unsafe school and students and parents agree that *substance abuse* is associated with the concept of unsafe school. Besides this finding, students believe that *theft* and *pressure groups* violate safety of school, teachers think that *bad habits* violate the safety of the school and parents believe that *high traffic density, insecurity of school road, ganging up* and *theft* violate the safety of a school.

Lastly, when it is evaluated in terms of dimension of employee characteristics, teachers think that *lack of reliable staff, inadequate staff* and *impropriety of criminal records of employees* violate the safety of a school. Additionally, parents, like teachers, associate the phenomenon of unsafe school with *lack of reliable staff, the unreliability of school bus drivers* and *irresponsible behaviours of employees* in terms of characteristics of employees.

Opinions on expectations of students, teachers and parents in increasing school safety

In order to take the opinions of students, teachers and parents in increasing school safety, the participants were asked following questions “What kind of practices from whom do you expect to make a school a safe school? Within the scope of the safe school, specify your expectations and the group from which you have expectations”. As a result of the analysis of the answers given to the question, the graphic below was created.



	National Education	School Management	Teacher	Parent	Student
Physical	9	3	2		1
Educational	4		6		
Dimensions of courtesy				3	
Administrative	3	16	10		
Financial Support	1				
Responsibilities			5	9	3
Disciplinary				4	7
Legislative dimensions	3				
Personel	4				
Media					1

Figure 3. Expectations in Increasing School Safety

As can be seen in the graph, the participants stated their expectations from national education, school management, teachers, parents *and* students in increasing school safety, with *physical*, *educational*, *administrative*, *disciplinary*, *legislative dimensions* and *dimensions of courtesy*, *financial support*, *responsibilities* and *media*. When evaluated overall, expectations of participants are mostly from National Education (f=24), teachers (f=23) and school management (f=19). When school safety is considered with all its dimensions, this finding might be explained with the fact that it is primary responsibility of central organisation to make a school safe against risks related to physical and external factors and it is primary responsibility of school management and teachers to make a school safe against psycho-social and administrative risks.

When evaluated separately, the expectations of participants from *National Education* are mostly in physical, educational, administrative, legislative dimensions and dimensions of financial support and personnel. Additionally, it is seen that participants mostly expect from National Education to make a school safe in *physical* (f=9) terms and awareness to be raised in educational (f=4) terms, then *personnel* (f=4) employment that will affect the safety, to be provided.

The answer of teacher coded as 12 as follows *"I expect from National Education to inspect the school and its environment, to inform parents, students and teachers, to implement deterrent punishments"* might be an example for this.

Expectations of participants from *school management* are in *administrative* (f=16) and *physical* (f=3) dimensions. Because it is the responsibility of school management to take measures for all kinds of security gaps in the school, to ensure the safety of students and employees, and to coordinate interventions against safety problems.

For example, parent coded as 25 stated their opinion in this regard as follows *"My expectation from a school principal is to take all kinds of measures in and around the school, in cases of*

situations that will disrupt physical and psychological health and to request help from relevant institutions, if necessary and to intervene in events that violate safety".

When their expectations from *teachers* are examined, it is seen that expectations of participants from teachers are mostly in *administrative* (f=10) dimension such as management, inspection in classroom and providing cooperation and secondly in *educational* (f=6) dimensions and ~~in~~ terms of *responsibilities* (f=5) and thirdly in *physical* (f=2) dimensions.

Student coded as 21 stated their opinion from teachers in terms of school safety as follows *"They should warn students without breaking their hearts or without scaring them"* and student coded as 37 as follows *"They should inform students about situations that jeopardise safety in order to raise awareness among students".*

The fact that teachers, parents and students have expectations from *parents* mostly in terms of *responsibilities* (f=9), secondly in *disciplinary* (f=4) dimension, thirdly in the dimension of *courtesy* (f=3); and they have expectations from *students* mostly in *disciplinary* (f=7) dimension, secondly in terms of *responsibilities* (f=3) and thirdly in *physical* (f=1) dimension and dimension of *media* (f=1), are other findings of the research.

To give an example, teacher coded as 4 stated their expectations from parents as follows *"They should obey school rules, cooperate with school and raise awareness of their children about safety problems that they might encounter".* Parent coded as 11 stated their expectations from students as follows: *"Students should attach importance to socialisation as well as academic success at school. Besides they should share safety problems with their teachers and families in dialogue with their class teachers and school counsellors."*

Table 4. Opinions of Students, Teachers and Parents Regarding What Their Expectations are in Increasing School Safety and from Whom They Expect

	Categories	**Subcategories**		
		Student	Teacher	Parent
National Education	Physical	Camera system Fingerprint application	Camera system Small school buildings Adequacy of equipment Suitable playgrounds	Safety means Safety of school environment Spatial separation of school types
	Educational		Activities to raise awareness Seminars	First aid training Activities to raise awareness
	Staff		Healthcare professionals Security Guard	Security Guard Teacher circulation
	Legislation		Safety policies Legislation to protect teacher Deterrent punishments	
	Administrative		Inspection Cooperative management	Inspection
	Financial Support			Allocation of allowance

School management	Administrative	Increasing counselling services Increasing shift duties Inspection	Transparent management approach Control by on-duty teacher Knowing school and student Safety measures Inspection Cooperative management approach (Directorate of National Education-Parent-Student cooperation) Implementation of disciplinary rules	Safety measures Inspection Student ID card application Rules Cooperative management approach (school-parent cooperation) Participation in decisions
	Physical	Regulation of entrance and exit of schools according to age	Security camera Material safety	
Teacher	Educational		In-service training Raising awareness Love-interest	Raising awareness Preventive counselling Love-interest
	Administrative	Classroom rules Inspection	Family visits Classroom rules School-family cooperation	Inspection Instant absenteeism notification School-family cooperation Parent-teacher meetings Family visits
	Physical		Material safety	Material safety
	Responsibilities	Informing parents	Informing management about safety Colleague collaboration Being on duty responsibly	Informing parents
Parent	Responsibilities	Keeping communication channels open Raising awareness of children Cooperation with school	Providing a safe and peaceful home environment Raising awareness of children Cooperation and communication with school	Raising awareness of children Cooperation and communication with school Being in constant contact with their children
	Courtesy		Not to interfere with teacher Respectfulness	Respectfulness
	Discipline		Obeying school rules Ensuring children behave following the rules	Obeying school rules Ensuring children behave following the rules
Student	Physical	Protecting school		
	Discipline	Obeying rules Protecting and looking after their friends Being respectful Not communicating with people they do not know	Obeying rules Avoiding uncontrolled behaviours	Obeying rules
	Responsibilities		Reporting problems to authorised persons	Informing families Keeping in touch with the counsellor
	Media		Avoiding violent stimuli (movies, TV shows, series ...)	

In Table 4, the expectations of students, teachers and parents from National education, school administration, teachers, parents and students are presented in separate sub-categories.

When expectations from National education are examined, teachers, students and parents mentioned expectations in *physical* dimension such as *camera system, fingerprint application, small school buildings, adequacy of equipment, suitable playgrounds, safety means, the safety of school environment* and *spatial separation of school types* and *educational* dimension, they expect from

National Education to *conduct activities to raise awareness, to provide first aid training* and to hold *seminars* about school safety. Expectations in the dimension of *personnel were expressed with subcategories of the* presence of healthcare professionals *and* security guards at schools *and* occurrence of teacher circulation*; and in administrative dimension with subcategories of* the presence of inspection *and* cooperative management. Lastly, participants expected security policies, *legal regulations to protect teachers and legal regulations regarding deterrent punishments from National Education* in *legislative* dimensions and they stated that *an additional allowance should be allocated* in order to ensure safety at schools in the dimension of *financial support*.

Expectations from school management in *administrative* dimensions can be summarised with subcategories such as *increasing counselling services, inspection, transparent management approach, implementing disciplinary rules, taking safety measures, student ID card applications* and cooperative *management approach*; whereas expectations in *the physical* dimension are *regulating entrance and exit according to ages, security camera* and *ensuring material safety*.

Teachers, students and parents stated their expectations from teachers in *the educational* dimension with subcategories such as *conducting preventive counselling activities and raising awareness* and *showing love and care to students*; and in *administrative* dimension with subcategories such as *establishing classroom rules, inspection, family visits* and *holding parent-teacher meetings, ensuring school-parent cooperation, instant absenteeism notification*. Besides, while *ensuring material safety* is expected from teachers in *the physical* dimension, responsibilities such as *informing parents, informing management about safety, colleague cooperation* and *being on duty responsibly* are also expected.

When expectations from parents in increasing school safety are examined, it is seen that responsibilities such as *keeping communication channels open, raising awareness of children, cooperating and communicating with the school and their children, providing a safe and peaceful home environment* are expected. Besides, in the dimension of *courtesy, not interfering with teachers, being respectful* and in *disciplinary* dimension, *obeying school rules* and *ensuring children obey school rules* are expectations from parents.

Lastly, when expectations of teachers, students and parents from students are examined, in *physical* dimension students are expected to *protect their school*; in the dimension of *responsibilities* they are expected to *inform authorised persons of problems, inform their families* and *communicate with school counsellors*. Additionally, in *the disciplinary* dimension, *obeying rules, protecting and looking after their friends, not communicating with people they do not know, avoiding uncontrolled behaviours* and in the dimension of *media, refraining from violent stimuli (movie, TV shows, series...)* are expectations of teachers, students and parents from students.

Discussion, Conclusion and Recommendations

In line with the opinions of teachers, students and parents, the data obtained on safe schools, unsafe schools and who is expected to improve school safety were analysed and the phenomenon of school safety was tried to be examined in depth. In order to determine the content of school safety and explain the dimensions of a safe school, opinions about the perception of a safe school were evaluated in the dimensions of teachers, students and parents.

Opinions of school stakeholders on the concept of safe school

The opinions of parents and teachers about a safe school mostly concentrate on the administrative category; the opinions of students mostly concentrated on the psycho-social category. Other categories with regards to the perception of the phenomenon of the safe school were determined as physical and external factors. It is understood that adults focus on different subjects than students in creating a perception of a safe school. Whereas students define a safe school as an environment that is happy and peaceful etc., adults, on the other hand, depicted with administrative factors such as academic success, transparency, occupational safety etc. In the literature, it is stated that modern school principals play a role in ensuring a safe environment for school and students (Bayer, 2012; Minkos et al., 2017; Turhan and Turan, 2012). Besides, as per "Regulation on Occupational Health and Safety Boards" published in Official Gazette with number 28532 on 18.01.2013, school principals are responsible for occupational health and safety (OHS, 2012). A study conducted by Karakütük, Özbal and Sağlam (2017) found that the purpose of the school administration's use of security cameras to ensure school safety is to identify people coming to school from outside and monitor their behaviours within the school, and to detect conflicts between students. In the study conducted by Özbaş and Badavan (2009), ensuring school safety was stated as the highest responsibility to be realised in school-parent cooperation. The finding indicating that administrative factors are important and priority in creating a safe school, parallels with the results of the mentioned research and the literature.

The students matched school safety with a psycho-social dimension of peace, a happy and comfortable environment. Loving their school is one of the primary conditions for students to have confidence in it, to learn and to develop (Döş, 2013). Schools must be happy environments and for them to be happy environments, they must be safe, fair and far from violent (Calp, 2020). Likewise, Salmon (2016) stated that one of the characteristics of a happy school is the school being safe. Sezer and Can (2018) found in their study that a happy school is expressed in the categories of attractive school, safe school and school that values students. It is seen that safe school expression of students as a happy and peaceful environment corresponds to the results of the mentioned study. In this context, a safe school can be specified as a basic requirement in creating a happy school.

Opinions of school stakeholders on the concept of unsafe school

Another result of the study revealed with opinions of teachers, students and parents that an unsafe school is firstly present in the psycho-social dimension, secondly in administrative dimension and as other factors, in physical dimension and dimensions of external factors and employee characteristics. It was concluded that each subsystem was evaluated with the system approach of an unsafe school. Bullying, violence, anxiety, abuse, fight, negative school clime etc. in occurring in psycho-social dimension within the system were found to be primary factors threatening safety at schools. Results of research conducted on violence and bullying in schools indicate that they are serious problems in our country (Yavuzer, Gündoğdu and Dikici, 2009; Yavuzer, 2011). In a study conducted by Çalık et al. (2009) negative school climate was found to be effective in increasing bullying and violence in schools. In a study conducted by Yang et al. (2018) bullying, a type of violence at schools, was found to be associated with a negative school climate. Studied revealing that there is a negative relationship between positive school climate and bullying (Farina, 2019; Aldridge, McChesney and Afari, 2018; Yang, Chan and Ma, 2020) confirm that one of the indicators of a positive school climate in the psycho-social dimension in being a safe school is being free from negative incidents such as violence, bullying, abuse, fight etc. Another characteristic of an unsafe school is that problems are arising from the administrative structure and practices of the school. İnandı and Yıldız (2012) found in their study that expectations of school managers from teachers in reducing violence at school, in other words, regarding their abilities in ensuring school safety, are high. In a study conducted by Teyfur (2014) on media coverage related to the frequency and subjects of incidents of violence at schools, it was found that before the year 2000, the first reason was the attitude of teachers, the second reason was the attitude of a school principal; and after the year 2000 the first reason was the attitude of parents. Teyfur's study finding shows that characteristics of an unsafe school can change over time. The results of this study on school safety may differ from the results of the related study, as it focuses on in-depth examination rather than generalisation. The fact that school management is effective in being a safe school however it is also one of the characteristics of an unsafe school, indicates parallelism between the findings of our study. On the other hand, in the literature and related study results, it has been revealed that the finding indicating that school management is a factor in school safety (Dönmez, 2001; Conaway, 2014; Sindhi, 2013; Karakütük et al., 2017) was found to be confirmed.

Opinions of school stakeholders regarding what their expectations are in creating a safe school and from whom they expect

Another result of the study is the opinions of teachers, students and parents about what is expected from whom to create a safe school. It was found that the expectations of school stakeholders from national education in creating a safe school are especially concentrated in the physical domain (camera system, fingerprint application). As for other expectations, it was revealed that there are

expectations in terms of providing training about safety, providing personnel need to increase safety, focusing on the relevant legislation, administrative implementations and financial support. Expectations from the school management are related to administrative issues and practices involving the regulation of physical factors. Also, expectations from teachers for a safe school are practices about educating students about safety, taking measures for safety problems including classroom management and informing parents about safety. The expectations of school stakeholders from parents for school safety are taking responsibilities related to safety and obeying disciplinary rules-ensuring that the rules are obeyed and exhibiting appropriate behaviours in terms of courtesy. In ensuring school safety, the expectations of school stakeholders from students are not to damage their school, to act knowing that there are a certain order and rule, to fulfill their responsibilities, and to avoid media practices that damage school safety. It was seen that school stakeholders (ministry of national education, school principals, teachers, students and parents) create expectations within their authorities/responsibilities.

Comments and suggestions

It was seen that the factors underlying the concepts creating the perception of safe/unsafe school in Turkey mostly focused on administrative structure and psycho-social dimension; and external factors are effective in the physical dimension. It is seen that the ministry of national education, which is responsible for the management of school structure, functioning, planning and all resources related to education-training, plays a key role in establishing a safe school. The fact that Memduhoğlu and Taşdan (2007) asserted that education policies related to safety must be established to ensure school safety, is parallel to the finding indicating that the Ministry of National Education creates an expectation in establishing safe school. It is seen that preparation of safety policies that constitute the legal basis and bindingness in ensuring school safety, is of the essence in terms of determining safe school standards by the Ministry of National Education. Provision of necessary equipment and materials (security camera, preventive materials for emergencies and disasters, physical equipment etc.) by the Ministry of National Education for all schools to ensure school safety, might be suggested. Besides, the inclusion of legal regulations by the Ministry of National Education within the framework of teaching profession law, to ensure the protection of teachers and instructors against security threats from other school stakeholders, might be suggested. In order to apply the first response to unexpected situations such as accidents, injuries, falls that may occur in school, it is necessary to introduce a mandatory certification requirement by the Ministry of Education for the provision of First Aid training to security guards of schools.

School stakeholders have considerable expectations from teachers, who are primarily responsible for the learning and education of students during the education-training process, in ensuring school safety. In a study conducted by Tavşanlı, Birgül and Oksal (2016), the finding

indicating that the first factor in cultivating a positive school environment, which is one of the safe school indicators as stated by students, is supportive and positive behaviours of teachers, confirms that teachers have an important role in establishing a safe school. Besides, in a study conducted by O'Breannan, Bradshaw and Furlong (2014) one of the reasons why students exhibit destructive and aggressive behaviours was found to be related to the way they reflect perceptions of teachers related to school climate. The fact that establishing a safe classroom environment and a classroom with a positive climate, constitutes the basis in establishing a safe school and teachers create an expectation in school stakeholders in this regard, is consistent with the results of the mentioned study. In this context, it may be suggested to provide practical in-service trainings on the development of classroom management skills for teachers to create a positive classroom climate in a safe environment.

The fact that school principals have roles and responsibilities in ensuring school safety showed that school stakeholders might have expectations from school principals in this regard. It is important for school principals to create and implement school safety programmes in cooperation with school stakeholders in ensuring school safety. On the other hand, awareness of parents about school life and order and educating students by parents in this regard, might be considered as results that are parallel to each other. Hoşgörür and Orhan (2017) found that the opinions of school principals regarding the reasons for violence and bullying at school, arise from the way parents raise their children and domestic violence. Yıldırım, Akan, and Çiftçi (2018) found in their study that one of the factors that threaten school safety is the attitude of parents and this is also reflected in behaviours of students. It is understood that behaviours towards the realisation of expectations from parents and students regarding school safety are similar to the results of the relevant research. Students can be given responsibilities to ensure school safety by teachers and parents according to student development characteristics. It might be necessary for school management, to ensure participation of students in decision-making in establishing school and classroom rules in student board meetings; and to grant student representatives authorities for them to democratically affect their classmates. It may be suggested to hold periodic meetings on the planning and putting plans into practice within the framework of school-parent and the teacher-parent cooperation regarding the responsibilities that parents will take in establishing a safe school and the behaviours that they will exhibit.

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