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Comparative Analysis of Multiple Intelligence Domains and Learning Styles of Gifted Students

Özel Yetenekli Öğrencilerin Çoklu Zekâ Alanları ile Öğrenme Stillerinin Karşılaştırılmalı Olarak İncelenmesi

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Abstract. This study aims to describe the relationship between the multiple intelligence domains and learning styles of gifted students in terms of gender, grade, maternal and paternal educational status. Therefore, the relational scanning model was used in the research. The study group consists of a total of 250 students, 5th, 6th, and 7th graders, studying at Antalya/Turkey Science and Art Center in the spring semester of the 2020-2021 academic year. As a result, it was concluded that the multiple intelligence domains of the gifted students were at an advanced level and there were significant differences between some intelligence domains of the students in terms of gender, grade level, and maternal educational status. Also, there were significant differences between some learning styles of students in terms of gender, grade levels, and maternal educational status. In addition, a negative, significant and weak correlation was found between some intelligence domains and the learning styles of gifted students.
Keywords: Gifted students, Multiple Intelligence theory, Learning styles.

Öz. Bu araştırmanın amacı özel yetenekli öğrencilerin çoklu zekâ alanları ile öğrenme stillerini cinsiyet, sınıf düzeyi, anne öğrenim durumu ve baba öğrenim durumu değişkenleri açısından inceleyerek arasındaki ilişki durumunu betimlemektir. Bu amaç doğrultusunda araştırmada tarama modellerinden ilişkisel tarama modeli kullanılmıştır. Araştırmanın çalışma grubunu 2020-2021 eğitim-öğretim yılı bahar dönemi, Antalya/Türkiye Bilim ve Sanat Merkezi'nde öğrenim gören 5, 6 ve 7. sınıf olmak üzere toplam 250 öğrenci oluşturmaktadır. Araştırma sonucunda özel yetenekli öğrencilerin çoklu zeka alanlarının gelişmiş düzeyde olduğu ve bazı zeka alanları ile cinsiyet, sınıf düzeyi ve anne eğitim durumu değişkenleri arasında anlamlı düzeyde farklılıklar olduğu görülmüştür. Ayrıca bazı öğrenme stilleri ile cinsiyet, sınıf düzeyi ve anne öğrenim durumu değişkenleri arasında farklılıklar olduğu ve bazı zeka alanları ile öğrenme stilleri arasında negatif yönlü, zayıf ilişkiler bulunmuştur.
Anahtar kelimeler: Özel yetenekli öğrenciler, Çoklu zekâ kuramı, Öğrenme stilleri.

Introduction

In recent years, parallel to the knowledge of humanity, the rapid development in science and technology has affected all areas of life to a great extent. As a matter of fact, societies that are not indifferent to these developments and can adapt to the era are always at the forefront of the world they live in. Especially in the field of education, societies that develop and renew themselves and adopt contemporary applications change their perspectives on knowledge, science, and technology. These changes also play an important role in the emergence of new educational understandings. With the emergence of new educational understandings, the purpose of education is; it has been updated in the context of raising individuals who can take responsibility in the learning process, think critically, creatively, and reflectively, control the cognition structure, plan the learning process, can self-regulate and are entrepreneurial.

In societies with a traditional understanding of education, one of the biggest reasons why the desire for success in education cannot be achieved is that certain domains come to mind when intelligence is mentioned. It is seen that every individual described as intelligent in Turkey is generally better in the logical or mathematical domain (Çalık & Birgili, 2013). Contrary to the traditional understanding of intelligence, Howard Gardner reveals that intelligence is not one-dimensional, but multi-dimensional. In "Multiple Intelligence Theory" he argues that intelligence is in eight dimensions: verbal/linguistic, logical/mathematical, visual/spatial, bodily/kinesthetic, musical/rhythmic, social/interpersonal, intrapersonal/self-directed, and nature/naturalistic. He also states that one or more of these areas of intelligence can be dominant in each person compared to others (Gardner, 2017).

Every person is unique therefore it has a unique structure. Just as individuals have different domains of intelligence, they also have the most appropriate, easiest ways of obtaining information, that is, different learning styles (Ekici, 2003). Students need to know their learning styles to overcome learning difficulties. A student who knows his learning style gains knowledge more easily in the shortest way; increased self-confidence; develops positive feelings towards lessons and school (Bayırlı, Orkun & Bayırlı, 2019).

Social development is possible with the qualified development of individuals who have different domains of intelligence in society. Qualified human beings are talented and open to development in line with their abilities and trained in accordance with the requirement of their age. In order to increase the number of qualified individuals, it is necessary to direct the individuals who are known as gifted or highly intelligent individuals in society, to learn faster than their peers, perform at a high level, and ensure that they receive a good education. As a matter of fact, gifted individuals will take their place among qualified people who produce and develop knowledge together with the changing world in this age when it is increasingly difficult to keep up with the speed of knowledge. In this context, it is understood that it is of great importance to discover gifted individuals within the social structure and to bring them into society as a value (Duymaz, 2019).

The issue of the education of gifted individuals has strategic importance. The United States ranks first in the discovery, education, and employment of these individuals. It is seen that countries gain strength and develop in different fields thanks to the education of gifted individuals who shape the world and reveal developments. Thus, it is obvious how important the education of gifted individuals is (Bilgili, 2000). In Turkey, on the other hand, there has been a late awareness of the education of gifted individuals compared to developed countries. Several studies have been carried out for the education of these individuals, but these studies cannot be said to be sufficient. For Turkey to be an advanced country in science and technology in the 21st century, to develop and reach the level of developed countries, it needs to offer a good educational environment and resources to

its gifted individuals. In cases where a good educational environment cannot be provided and the necessary opportunities are not provided, the individuals in question may turn into a threat by using their existing potential negatively (Altıntaş, 2014).

For gifted individuals to be active and entrepreneurial individuals, they must first learn to learn. Learning to learn also includes learning styles and plays an important role in learning. Learning experiences organized based on learning styles will guide the learner and the instructor, thus increasing success (Utanır, 2008). Learning to learn primarily requires the student to know his/her own learning style. The student who knows his/her learning style carries out the learning processes accordingly. Knowing the learning styles by the instructors enables the learning elements to be shaped. In addition, it will ensure that the student's individual learning is regulated and that the students achieve multifaceted efficiency through the learnings shaped accordingly, enabling them to achieve success and increase vital satisfaction (Bagav, 2015).

Although the domains of intelligence and learning styles are separate concepts in the learning-teaching process, it is thought that the inclusion of these two concepts in the learning and teaching environment by considering them together will contribute to the development of the students by recognizing their strengths. In addition, the experiences organized according to the intelligence domains and learning styles of the students in the learning-teaching process will help both students and instructors create a more productive educational environment. Considering the fact that intelligence and learning styles are multidimensional concepts, it is considered that determining the domains of intelligence and learning styles of individuals and organizing their learning lives according to the data obtained is important as a requirement of the development and academic success of the individual.

In the literature, it is seen that there are studies to examine the relationship between multiple intelligence areas and the learning styles of different groups, but there is no remarkable research on gifted students related to this subject. For this reason, it is thought that the results of this study will make an important contribution to the literature. In this context, the study aims to examine the intelligence domains and learning styles of gifted students studying in the 5^{th}, $6^{th,}$ and 7^{th} grades of the Science and Arts Center and reveal the difference between them according to soma variables and describe the relationship between intelligence domains and learning styles. For this purpose, the following sub-problems were determined:

Research Questions

1. What level of multiple intelligence domains of gifted students?
2. Is there a significant difference between the intelligence domains of the students and their gender?
3. Is there a significant difference between the intelligence domains of the students and their grade levels?
4. Is there a significant difference between intelligence domains and their maternal educational status?
5. Is there a significant difference between intelligence domains and their paternal educational status?
6. What are the learning styles of gifted students?
7. Is there a significant difference between the learning styles of the students and their gender?
8. Is there a significant difference between the learning styles of the students and their grade level?
9. Is there a significant difference between the learning styles of the students and their maternal educational status?

10. Is there a significant difference between the learning styles of the students and their paternal educational status?
11. Is there a significant relationship between students' multiple intelligence domains and learning styles?

Method

In this research, a relational scanning model from scanning models was used. The relational scanning model is used in studies to determine the relationships between two or more variables (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2008). The relational scanning model is a research model that aims to determine the existence and/or degree of covariance between two or more variables (Karasar, 2019).

Study Group

Study group; In the context of the purposeful sampling method, the 2020-2021 academic year Spring semester consists of 250 gifted students who are studying in the 5th, 6th and 7th grades at Antalya/Turkey Science and Arts Center and performing at a high level compared to their peers in the fields of "General Mental Ability", "Visual Arts" and "Music".

Table 1.
Study group

	5th grade	**6th grade**	**7th grade**	**Total**
Female	61	44	24	129
Male	51	38	32	121
Total	112	82	56	*250*

According to Table 1, research; A total of 129 females and 121 males was conducted with 250 students, including 61 females and 51 males total of 112 fifths (5th) grades, 44 females 38 males total of 82 sixths (6th) grades, 24 females and 32 males total 56 sevenths (7th) grades.

Data Collection Tools

Personal Information Form

The "Personal Information Form" created by the researchers was used to determine the demographic characteristics of the study group such as gender, class level, maternal and paternal educational status.

Multiple Intelligence Domains Assessment Scale

In the study, the "Multiple Intelligence Domains Assessment Scale" developed by Gülşen (2015) to determine the domains of intelligence of secondary school students was used. The scale has been developed in the type of likert as "Not Suitable for Me" (1), "Very Little Suitable for Me" (2), "Partially Suitable for Me" (3), "Quite Suitable for Me" (4), "Completely Suitable for Me" (5). Intelligence domains can be assessed as "Unimproved" for 10-17 points, "Slightly Improved" for 18-25 points, "Moderately Advanced" for 26-33 points, "Advanced" for 34-41 points, and "Very Advanced" for 42-50 points. It consists of 80 items and eight subdivisions: "verbal/linguistic", "logical/mathematical", "visual/spatial", "musical/rhythmic", "bodily/kinesthetic",

"interpersonal/social", "intrapersonal/self-oriented" and "nature/naturalist" Cronbach's Alpha value of the scale was calculated as "0.965" (Gülşen, 2015).

Reliability is that a measurement tool is free from random errors. If a measurement tool is reliable, it measures the features it wants to measure consistently and always gives close or identical results (Balcı, 2015). For this research, for the reliability of the scale, a reliability study was conducted with a total of 131 students, 70 females, and 61 males, studying at the 5th, 6th, and 7th grades in the Uşak Province Science and Art Center, and the Cronbach's alpha value of the scale was calculated as "0.968". Also, confirmatory factor analysis (CFA) of the "Multiple Intelligence Domains Assessment Scale" was conducted for this study. As a result of CFA, it is considered sufficient to report the non-normed fit index (NNFI), comparative fit index (CFI), root mean square error of approximation, (RMSEA) and standardized root mean square resudual (SRMR) (İlhan & Çetin, 2014). The fit indexes of the study were determined as (x^2=6246.61/sd=3052)=2.0 (p=0.00), NNFI=0.92, CFI=0.92, RMSEA=0.06, SRMR=0.10. Among the determined fit indexes, CFI and NNFI values are between 0.90 and 0.95, indicating that the model has acceptable fit criteria (Kline, 2011; Marsh, Hau, Artelt, Baumert & Peschar, 2006). A value of χ2/sd between 2 and 3 indicates an acceptable level of fit. The acceptable range of fit for RMSEA is 0.05 to 0.08 (Kline, 2011). The range of perfect fit for SRMR is between 0.00 and 0.05, and the acceptable range of fit is between 0.05 and 0.10 (Browne & Cudeck, 1993). Based on this information, it is seen that the RMSEA and SRMR fit indexes of the model are also at an acceptable level.

Learning Styles Scale

The "Learning Styles Scale" developed by Gökdağ (2004) was used to determine the students' learning styles in the research. The scale was prepared in a five-point Likert type as "strongly agree", "agree", "undecided", "disagree", and "strongly disagree". The Cronbach Alpha reliability coefficient of the scale, which consists of three sub-dimensions as "Visual", "Auditory" and "Kinesthetic", was calculated as 0.74 (Gökdağ, 2004). For this research, a reliability study was conducted with a total of 131 students, 70 females and 61 males, studying in the 5th, 6th, and 7th grades at the Science and Art Center of Uşak, and Cronbach's alpha value of the scale was calculated as 0.838. Confirmatory factor analysis (CFA) of the scale was also performed. When the CFA results were analyzed, it was determined that the fit indexes of the model were (x^2=1157.61/sd=323)=3.5 (p=0.00), NNFI=0.93, CFI=0.93, RMSEA= 0.11 and RMR=0.08. The fact that the NNFI and CFI values of the determined fit indexes are greater than 0.90 indicates that the model has acceptable fit criteria (Marsh, Hau, Artelt, Baumert & Peschar, 2006). However, the RMSEA value was found to be greater than the maximum acceptable value of 0.10 (Hair, Black, Babin, Anderson, 2010; cited by Dağyar & Şahin, 2020). For this reason, the modification indexes of the model were examined. Since item 5 (I take notes while listening to the lecture) and item 6 (I would like to add information to my lecture notes) contain statements that are close to each other in meaning, the modification was deemed necessary. Similarly, since the 13th item (I re-create my lecture notes with graphs, diagrams, and pictures while I work) and 21st item (I prefer schematizing or graphing my lecture notes) because they contain expressions that are close to each other in meaning, the modification was found to be necessary and the confirmatory factor analysis was performed again and the fit indexes of the model are as follows determined: (x^2=1203.77/sd=345)=3.4 (p=0.00), NNFI=0.93, CFI=0.93, RMSEA=0.10 ve RMR=0.08. The fit indexes of the scale reveal that it has an acceptable fit (Kline, 2011; Marsh, et al., 2006).

Data Collection Process

The data collection process was carried out by the researchers. First of all, ethics committee approval was obtained by Akdeniz University Social and Human Sciences Scientific Research and Publication Ethics Committee on 10 January 2021 with document number 5236. Afterward,

necessary permissions were obtained from the Republic of Turkey Antalya Governorate Provincial Directorate of National Education. The school administration of the Science and Art Center was contacted and appropriate periods were determined for the implementation of the scales. For students who continue their education remotely due to Covid-19, an online questionnaire was created via "Google Forms" and sent to parents by the administrators. For the students who participated in the face-to-face education, the scales were applied during the lesson hours that the teachers deemed appropriate. Before the scales were distributed to the students, it was stated that the research was based on confidentiality and voluntariness, and the purpose of the research was briefly mentioned.

Data Analysis

The data collected in the research were primarily transferred to the computer. SPSS 22.0 (Statistical Package for Social Sciences) package program was used in the analysis of the data. Frequency (n), percentage (%), arithmetic mean ($\bar{x}$), t-test for independent groups, one-way analysis of variance (one-way ANOVA), Pearson product-moment correlation coefficient (r), and Tukey-HSD were used in the study.

Findings

In this section, the findings obtained as a result of the analysis of the data are given.

Findings Related to First Sub-Problem

Table 2.

Arithmetic Mean and Standard Deviation Distributions of Gifted Students by Multiple Intelligence Domains

Intelligence Domains	***n***	$\bar{X}$	***SD***
Verbal/Linguistic	250	38.07	7.21
Logical/Mathematical	250	37.81	7.30
Visual/Spatial	250	38.81	6.74
Musical/Rhythmic	250	35.80	8.96
Bodily/Kinesthetic	250	35.54	9.31
Interpersonal/Social	250	38.72	7.50
Intrapersonal/Self-oriented	250	38.34	7.85
Nature/Naturalist	250	35.66	6.53

According to Table 2, the arithmetic means of the intelligence domains of the gifted students participating in the research were found as follows: Verbal/linguistic intelligence 38.07; logical/mathematical intelligence 37.81; visual/spatial intelligence 38.81; musical/rhythmic intelligence 35.80; bodily/kinesthetic intelligence 35.54; interpersonal/social intelligence 38.72; intrapersonal/self-directed intelligence 38.34; nature/naturalistic intelligence was calculated as 35.66. Intelligence domains can be assessed as "Unimproved" for 10-17 points, "Slightly Improved" for 18-25 points, "Moderately Advanced" for 26-33 points, "Advanced" for 34-41 points, and "Very Advanced" for 42-50 points (Gülşen, 2015). In the context of the findings, it is understood that all of the gifted students participating in the research have multiple intelligences at the "advanced" level.

Findings Related to Second Sub-Problem

Table 3.
T-Test Results of Multiple Intelligence Domains of Gifted Students by Gender

Intelligence Domains	**Gender**	***n***	***X̄***	***SD***	***t***	***p***
Verbal/Linguistic	Female	129	38.44	8.08	.854	.394
	Male	121	37.66	6.16		
Logical/Mathematical	Female	129	37.95	7.82	.315	.753
	Male	121	37.66	6.75		
Visual/Spatial	Female	129	39.99	6.32	2.898	*.004*
	Male	121	37.55	6.98		
Musical/Rhythmic	Female	129	37.65	8.12	3.445	*.001*
	Male	121	33.82	9.41		
Bodily/Kinesthetic	Female	129	35.74	9.23	.350	.726
	Male	121	35.33	9.42		
Interpersonal/Social	Female	129	39.92	7.30	2.640	*.009*
	Male	121	37,44	7.52		
Intrapersonal/Self-oriented	Female	129	38.15	7.49	-.392	.695
	Male	121	38.54	8.25		
Nature/Naturalist	Female	129	36.13	5.99	1.169	.243
	Male	121	35.16	7.06		

*p<0.05

In Table 3, it is seen that the highest average of female students is in visual/spatial intelligence ($\bar{x}$ = 39.99), while the lowest average is in bodily/kinesthetic intelligence ($\bar{x}$ = 35.74). While the highest averages of male students were found in the inner/self-directed intelligence ($\bar{x}$ = 38.54), the lowest average was found in the musical/rhythmic intelligence ($\bar{x}$ = 33.82).

When Table 3 was examined, a significant difference was found in the comparison of the averages of visual/spatial, musical/rhythmic, and interpersonal/social intelligence domains by gender (p<0.05). In other words, visual/spatial intelligence, musical/rhythmic intelligence, interpersonal/social intelligence averages of female students are significantly higher than male students.

Findings Related to Third Sub-Problem

Table 4**.**
One-Way Analysis of Variance (ANOVA) Results of Gifted Students' Multiple Intelligence Domains According to Grade Levels

Intelligence Domains	**Grade Level**	***n***	***X̄***	***SD***	***F***	***p***	**Tukey**
Verbal/Linguistic	5 (a)	112	38.41	8.44	.228	.797	-
	6 (b)	82	37.74	6.19			
	7 (c)	56	37.87	5.92			
Logical/Mathematical	5 (a)	112	38.20	8.57	.629	.534	-
	6 (b)	82	37.91	6.16			
	7 (c)	56	36.87	6.01			
Visual/Spatial	5 (a)	112	39.81	6.60	4.636	*.011*	

	6 (b)	82	39.01	6.36			c<a
	7 (c)	56	36.51	7.14			c<b
Musical/Rhythmic	5 (a)	112	36.66	9.16	3.934	*.021*	
	6 (b)	82	36.62	8.36			c<a
	7 (c)	56	32.87	8.93			c<b
Bodily/Kinesthetic	5 (a)	112	37.18	9.71	19.806	*.000*	
	6 (b)	82	37.68	8.00			c<a
	7 (c)	56	29.12	7.31			c<b
Interpersonal/Social	5 (a)	112	38.25	8.35	1.579	.208	-
	6 (b)	82	39.91	7.33			
	7 (c)	56	37.92	5.61			
Intrapersonal/Self-oriented	5 (a)	112	39.08	8.28	5.790	*.003*	
	6 (b)	82	39.42	8.03			c<a
	7 (c)	56	35.26	5.77			c<b
Nature/Naturalist	5 (a)	112	35.85	6.95	.50	.473	-
	6 (b)	82	36.03	6.34			
	7 (c)	56	34.73	5.92			

*p<0.05

When Table 4 is examined, there is no significant difference between the verbal/linguistic, logical/mathematical, interpersonal/social, nature/naturalist intelligence domains and grade levels of the gifted students (p>0.05). On the other hand, there is a significant difference between students' visual/spatial, musical/rhythmic, bodily/kinesthetic, intrapersonal/self-oriented intelligence areas, and grade levels (p<0.05). Table 5 shows which intelligence domains are more dominant or developed in favor of which grade level variable.

Table 5.
Tukey HSD Results of Multiple Intelligence Domains of Gifted Students by Grade Levels

Intelligence Domains	**Grade Level (I)**	**Grade Level (J)**	**Average Difference**	**Standard Error**	***p***
Visual/Spatial	5	7	3.29	1.08	*.008*
Musical/Rhythmic	5	7	3.78	1.44	*.026*
	6	7	3.74	1.53	*.041*
Bodily/Kinesthetic	5	7	8.06	1.42	*.000*
	6	7	8.55	1.50	*.000*
Intrapersonal/Self-oriented	5	7	3.82	1.26	*.008*
	6	7	4.15	1.33	*.006*

*p<0.05

According to the Post Hoc Tukey test, which was conducted to determine between which groups the differentiation occurred, the visual/spatial intelligence domain averages of the 5th-graders were found to be significantly higher than the 7th grade students with an average difference of 3.29. In the musical/rhythmic intelligence domain averages of the 5th-grade students was found to be higher with an average difference of 1.44 compared to the 7th-grade students, while the average difference between the 6th and 7th grade students was calculated as 3.74 and was found to be significantly higher in favor of the 6th graders. In the domain of bodily/kinesthetic intelligence, the average of the 5th-grade students was found to be significantly higher with an average difference of 8.06 compared to the 7th-grade students, while it was seen that it was significantly higher between the 6th and 7th grades, with an average difference of 8.55 in favor of the 6th graders. When the average differences in intrapersonal/self-oriented intelligence were examined, it is understood that it is significantly higher between the 5th and 7th grades with an average difference of 3.82 in favor of

the 5th grades and between the 6th and 7th grades in favor of the 6th grades with an average difference of 4.15.

Findings Related to Fourth Sub-Problem

Table 6.
One-Way Analysis of Variance (ANOVA) Results of the Multiple Intelligence Domains of Gifted Students by Maternal Educational Status

Intelligence Domains	**Maternal Educational Status**	***n***	$\bar{X}$	***SD***	***F***	***p***	**Tukey**
Verbal/Linguistic	Secondary School and below (a)	31	38.77	4.24	.366	.694	-
	High School (b)	67	37.50	6.40			
	University (c)	152	38.17	8.00			
Logical/Mathematical	Secondary School and below (a)	31	37.03	5.41	.238	.788	-
	High School (b)	67	37.71	6.32			
	University (c)	152	38.01	8.03			
Visual/Spatial	Secondary School and below (a)	31	39.45	5.65	.246	.782	-
	High School (b)	67	38.43	7.06			
	University (c)	152	38.84	6.83			
Musical/Rhythmic	Secondary School and below (a)	31	35.35	9.40	5.472	*.005*	c>b
	High School (b)	67	32.91	9.91			
	University (c)	152	37.16	8.14			
Bodily/Kinesthetic	Secondary School and below (a)	31	35.22	9.71	.457	.634	-
	High School (b)	67	34.70	9.27			
	University (c)	152	35.98	9.28			
Interpersonal/Social	Secondary School and below (a)	31	36.22	5.82	2.015	.135	-
	High School (b)	67	39.28	7.01			
	University (c)	152	38.98	7.93			
Intrapersonal/Self-oriented	Secondary School and below (a)	31	40.06	8.61	1.125	.326	-
	High School (b)	67	37.50	7.27			
	University (c)	152	38.36	7.93			
Nature/Naturalist	Secondary School and below (a)	31	36.19	4.98	1.406	.247	-
	High School (b)	67	34.52	6.91			
	University (c)	152	36.05	6.61			

*p<0.05

As seen in Table 6, there is no significant difference between students' verbal/linguistic, logical/mathematical, visual/spatial, bodily/kinesthetic, interpersonal/social, intrapersonal/self-directed, naturalist/naturalist intelligence domains and their maternal educational status (p>0.05). On the other hand, there is a significant difference between the musical/rhythmic intelligence domains of the students and their maternal educational status (p<0.05).

Table 7.
Tukey HSD Results of Multiple Intelligence Domains of Gifted Students by Mother's Education Status

Intelligence Domains	**Maternal Educational Status (I)**	**Maternal Educational Status (J)**	**Average Difference**	**Standard Error**	***P***
Musical/Rhythmic	University	High School	4.25	1.29	*.003*

*p<0.05

According to the Tukey HSD test results presented in Table 7, the musical/rhythmic intelligence domain average of the students whose mothers are university graduates is significantly higher than the students whose mothers are high school graduates, with an average difference of 4.25 (p<0.05).

Findings Related to Fifth Sub-Problem

Table 8**.**
One-Way Analysis of Variance (ANOVA) Results of Multiple Intelligence Domains of Gifted Students by Paternal Educational Status

Intelligence Domains	**Paternal Educational Status**	***n***	$\bar{X}$	***SD***	***F***	***p***	**Tukey**
Verbal/Linguistic	Secondary School and below (a)	16	36.56	4.30	.659	.518	-
	High School (b)	59	37.55	5.57			
	University	175	38.38	7.88			
Logical/Mathematical	Secondary School and below (a)	16	36.25	5.93	.503	.606	-
	High School (b)	59	37.52	6.00			
	University (c)	175	38.05	7.81			
Visual/Spatial	Secondary School and below (a)	16	38.37	6.56	.509	.602	-
	High School (b)	59	38.10	6.21			
	University (c)	175	39.09	6.94			
Musical/Rhythmic	Secondary School and below (a)	16	36.50	7.34	.963	.383	-
	High School (b)	59	34.38	9.51			
	University (c)	175	36.21	8.90			
Bodily/Kinesthetic	Secondary School and below (a)	16	36.18	7.16	.169	.844	-
	High School (b)	59	34.96	9.32			
	University (c)	175	35.68	9.51			
Interpersonal/Social	Secondary School and below (a)	16	37.00	6.94	.475	.622	-
	High School (b)	59	39.03	7.51			
	University (c)	175	38.77	7.56			
Intrapersonal/Self-oriented	Secondary School and below (a)	16	38.25	5.85	.303	.739	-
	High School (b)	59	37.66	7.51			
	University (c)	175	38.58	8.14			
Nature/Naturalist	Secondary School and below (a)	16	34.87	5.72	.134	.874	-
	High School (b)	59	35.61	6.46			
	University (c)	175	35.75	6.65			

*p<0.05

From Table 8, it is understood that there is no statistically significant difference between the multiple intelligence domains of the students and the educational status of their fathers (p>0.05), in other words, the averages of the multiple intelligence domains scores of the gifted students whose fathers have different educational status are at a similar level.

Findings Related to Sixth Sub-Problem

Table 9.
Arithmetic Mean and Standard Deviation Distributions of Learning Styles of Gifted Students

Learning Styles	***n***	$\bar{X}$	***SD***
Visual	250	37.07	11.02
Auditory	250	14.08	4.80
Kinesthetic	250	27.56	9.57

When Table 9 is examined, the visual learning style average of the gifted students participating in the research is 38.07; the auditory learning style average is 14.08; the kinesthetic learning style average was calculated as 27.56. Based on this finding, it can be said that the students preferred the visual learning style most, then the kinesthetic learning style, and the least auditory learning style.

Findings Related to Seventh Sub-Problem

Table 10.
T-Test Results of Learning Styles of Gifted Students by Gender

Learning Styles	**Gender**	***n***	$\bar{X}$	***SD***	***t***	***p***
Visual	Female	129	35.80	11.25	-1.890	.060
	Male	121	38.42	10.65		
Auditory	Female	129	13.41	5.00	2.266	*.024*
	Male	121	14.78	4.49		
Kinesthetic	Female	129	26.79	9.97	1.321	.188
	Male	121	28.38	9.08		

*p<0.05

As seen in Table 10, the visual learning style average of female students was found to be 35.80, while the visual learning style average of male students was found to be 38.42. In the auditory learning style sub-dimension, it is seen that the average of female students is 13.41, while male students have an average of 14.78. When the kinesthetic learning style is examined, it is understood that female students have an average of 26.79 and male students 28.38. In this case, it can be said that female students mostly adopt the visual learning style, while male students adopt the kinesthetic learning style. It is understood that there is no significant difference between the visual and kinesthetic learning styles averages of gifted students and their genders (p>0.05). However, there is a significant difference between auditory learning style and gender (p<0.05). In other words, male students' auditory learning style averages are significantly higher than female students' auditory learning style averages.

Findings Related to Eight Sub-Problem

Table 11.
One-Way Analysis of Variance (ANOVA) Results of Learning Styles of Gifted Students by Grade Levels

Learning Styles	Grade Level	*n*	$\bar{X}$	*SD*	*F*	*p*	Tukey
Visual	5 (a)	112	32.66	9.76	26.178	*.000*	a<b
	6 (b)	82	38.08	11.86			a<c
	7 (c)	56	44.42	7.38			b<c
Auditory	5 (a)	112	12.17	4.13	23.027	*.000*	a<b
	6 (b)	82	14.70	5.35			a<c
	7 (c)	56	16.96	3.35			b<c
Kinesthetic	5 (a)	112	24.10	8.21	17.215	*.000*	a<b
	6 (b)	82	29.02	10.60			a<c
	7 (c)	56	32.33	7.87			

*p<0.05

According to the findings given in Table 11, it is understood that as the grade levels of the gifted students participating in the research increase, the learning style averages also increase and there is a significant difference between the learning styles of the gifted students and their grade levels (p<0.05).

Table 12.
Tukey HSD Test Results of Learning Styles of Gifted Students by Grade Levels

Learning Styles	Grade Level (I)	Grade Level (J)	Average Difference	Standard Error	*p*
Visual	6	5	5.42	1.46	*.001*
	7	5	11.76	1.64	*.000*
	7	6	6.34	1.74	*.001*
Auditory	6	5	2.52	0.64	*.000*
	7	5	4.78	0.72	*.000*
	7	6	2.52	0.76	*.010*
Kinesthetic	6	5	4.91	1.30	*.001*
	7	5	8.23	1.47	*.000*

*p<0.05

When the visual learning style averages of the students participating in the research are examined in Table 12, there were significant differences between the 5th and 6th grades in favor of the 6th grade with an average difference of 5.42, between the 5th and 7th grades in favor of the 7th grade with an average difference of 11.76, and between the 6th and 7th grades in favor of 7th grade with an average difference of 6.34 (p<0.05). When the averages in the auditory learning style sub-dimension are examined, it is seen that the 6th graders have a higher score than the 5th graders with an average difference of 2.52. In addition, it is understood that the 7th-grade students have a higher score with an average difference of 4.78 compared to the 5th graders, and the 7th graders have a significantly higher score with a 2.52 average difference compared to the 6th graders (p<0.05). When the average differences in kinesthetic learning styles are examined, there is a significant difference between the 5th and 6th grades in favor of the 6th grades with a mean difference of 4.91, while there

is a significant difference between the 5th and 7th grades in favor of the 7th with an average difference of 8.23 (p<0.05).

Findings Related to Ninth Sub-Problem

Table 13.
One-Way Analysis of Variance (ANOVA) Results of Learning Styles of Gifted Students by Maternal Educational Status

Learning Styles	Maternal Educational Status	*n*	$\bar{X}$	*SD*	*F*	*p*	Tukey
Visual	Secondary School and below (a)	31	38.45	11.40	4.648	*.010*	c<b
	High School (b)	67	40.14	10.97			
	University(c)	152	35.44	10.71			
Auditory	Secondary School and below (a)	31	14.35	3.96	1.434	.240	-
	High School (b)	67	14.85	4.98			
	University (c)	152	13.68	4.86			
Kinesthetic	Secondary School and below (a)	31	30.83	8.68	5.509	*.005*	c<a
	High School (b)	67	29.58	9.15			
	University (c)	152	26.00	9.64			c<b

*p<0.05

According to the findings given in Table 13, there is no significant difference between the auditory learning style of gifted students and their mother's education level (p>0.05). On the other hand, there is a significant difference between the visual and kinesthetic learning styles of gifted students and their maternal educational status (p<0.05).

Table 14.
Tukey HSD Results of Gifted Students' Learning Styles by Maternal Educational Status

Learning Styles	Maternal Educational Status (I)	Maternal Educational Status (J)	Average Difference	Standard Error	*p*
Visual	High School	University	4.70	1.59	*.010*
Kinesthetic	Secondary School and below	University	4.83	1.85	*.026*
	High School	University	3.57	1.37	*.027*

*p<0.05

According to the Tukey HSD test results given in Table 14, the visual learning style averages of the students whose mothers are high school graduates are significantly higher than the students whose mothers are university graduates, with an average difference of 4.70 (p<0.05). On the other hand, in the kinesthetic learning style sub-dimension, the average of the students whose mother's educational status is a secondary school and below is significantly higher than the average of the students whose mother's education level is a university, with an average difference of 4.83. In addition, the average of the students whose mother's educational status is high school is significantly higher than the average of the students whose mother's education status is a university, with an average difference of 3.57 (p<0.05).

Findings Related to Tenth Sub-Problem

Table 15.
One-Way Analysis of Variance (ANOVA) Results of Gifted Students' Learning Styles According to Paternal Educational Status

Learning Styles	Paternal Educational Status	*N*	$\bar{X}$	*SD*	*F*	*p*	Tukey
Visual	Secondary School and below (a)	16	34.62	9.81	1.409	.246	-
	High School (b)	59	38.98	10.43			
	University (c)	175	36.65	11.28			
Auditory	Secondary School and below (a)	16	13.68	4.28	.057	.944	-
	High School (b)	59	14.08	4.74			
	University (c)	175	14.11	4.88			
Kinesthetic	Secondary School and below (a)	16	26.37	7.44	1.865	.157	-
	High School (b)	59	29.64	9.47			
	University (c)	175	26.97	9.71			

*p<0.05

As can be understood from the findings given in Table 15, it is understood that there is no significant difference between the visual, auditory, and kinesthetic learning styles of the gifted students and the educational status of the fathers (p>0.05). In other words, it is understood that the learning styles averages of the students whose fathers have different educational backgrounds are at a similar level (p<0.05).

Findings Related to Eleventh Sub-Problem

Table 16.
Pearson Correlation Results of Multiple Intelligence Domains and Learning Styles of Gifted Students

Learning Styles / Intelligence Domains	Visual	Auditory	Kinesthetic
Verbal/Linguistic	-.077	-.011	.065
Logical/Mathematical	-.107	-.035	.037
Visual/Spatial	-.058	-.101	.030
Musical/Rhythmic	*-.159**	-.060	-.042
Bodily/Kinesthetic	*-.235***	*-.137**	*-.148**
Interpersonal/Social	-.122	-.086	-.058
Intrapersonal/Self-oriented	*-.157**	-.124	-.069
Nature/Naturalist	-.095	-.060	.006

*p<0.05, **p<0.01

In Table 16, correlation coefficients are given to describe the relationship between the multiple intelligence domains of gifted students and their learning styles. A correlation coefficient of 1.00 indicates a perfect positive relationship, while a -1.00 indicates a perfect negative relationship. A correlation coefficient between 0.70 and 1.00 indicates a high level of relationship, between 0.70 and

0.30 indicates a medium level of relationship, and between 0.30 and 0.00 indicates a low level of relationship (Büyüköztürk, 2019).

When Table 16 is examined, there is a negative, significant and weak relationship between students' musical/rhythmic intelligence areas and visual learning styles ($r=-.159$ $p<0.05$). In this case, it can be said that students with a dominant musical/rhythmic intelligence domain do not prefer a visual learning style. It is seen that there is a negative, significant and weak relationship between the bodily/kinesthetic intelligence domain of gifted students and their visual, auditory, and kinesthetic learning styles ($r=-.235$, $r=-.137$, $r=-.148$, $p<0.05$). In addition, there is a negative statistically significant, and weak relationship between students' internal/self-oriented intelligence domain and visual learning styles ($r=-.157$ $p<0.05$). On the other hand, it is understood that there is no statistically significant relationship between the other dimensions of the multiple intelligence domains of gifted students and their learning styles.

Discussion, Conclusion, and Recommendations

According to the results obtained from the Multiple Intelligence Domains Assessment Scale, it is seen that all intelligence domains of the gifted students participating in the research are at an advanced level. This case supports the fact that there is more than one intelligence domain in individuals and that all intelligence domains can be developed. Similar to the findings obtained from the study, İpekli (2013) concluded in the study she conducted with 10th-grade students that all intelligence domains of the students participating in the research were at an advanced level. Aygül (2015) found that the verbal/linguistic, logical/mathematical, visual/spatial, musical/rhythmic, bodily/kinesthetic, intrapersonal/self-oriented, and nature/naturalist intelligence levels of the students were advanced, while she found that the averages of interpersonal/social intelligence levels of students were moderately advanced. Nergiz (2018) concluded that secondary school students' intelligence areas are at an advanced level. It can be thought that the education and training they receive in the Science and Art Center within the scope of the support education service contributes to the improvement of all intelligence domains of the gifted students. In addition, it can be thought that the education and various applications provided in the adaptation, support, awareness of individual talents, progress of special talents, and project production programs of the Science and Art Center offer rich learning experiences to students and contribute to the improvement of students' intelligence domains.

The fact that the visual/spatial intelligence domain scores of the gifted female students are higher than the male students may be since female students deal more with visual intelligence enhancing skills such as handicrafts and knitting than male students (Aygül, 2015). In addition, it can be thought that female students' giving more importance to visual elements and activities such as design and collage contributes to the improvement of visual/spatial intelligence domains. It can be said that the significant difference in musical/rhythmic intelligence domain scores of female students compared to male students is because female students participate more in activities such as listening to music, singing, memorizing song lyrics, and accompanying songs compared to male students. The fact that the interpersonal/social intelligence domain scores are in favor of female students can be thought to be since female students can easily communicate with the individuals around them, can easily be included in a group of friends, and approach friendship relations more sensitively and emotionally than male students.

When the comparison of the multiple intelligence areas of the gifted students according to the grade level variable is examined, it is understood that the visual/spatial, musical/rhythmic, bodily/kinesthetic, and intrapersonal/self-oriented intelligence averages of the 7^{th} grade students are

significantly lower than the 5th and 6th grade students. In the literature, different studies examine multiple intelligence domains according to the grade variable. In his study with 6th, 7th, and 8th grade students, Yıldız (2010) concluded that the averages of 6th-grade students in verbal/linguistic, logical/mathematical, visual/spatial, and musical/rhythmic intelligence domains were significantly higher than the averages of 8th-grade students. In his study, İlter (2019) examined the multiple intelligence domains of secondary school students doing athletics and concluded that the logical/mathematical, visual/spatial, and musical/rhythmic intelligence domain scores of 6th-grade students were higher than 8th-grade students. The studies conducted are similar to the findings obtained from this study. Öztürkmen (2006), on the other hand, in the study he conducted with high school students, found that contrary to this research, the multiple intelligence domains of the students did not differ according to their grade levels.

Students studying at the Science and Art Center are included in the adaptation and support training program, which includes various courses, the program to realize individual talents where they focus on discovering their intelligence domains and abilities, the special talent development program where they have the opportunity to improve their talents, and the project production and management program (Ministry of Education, 2019). It can be said that different education programs applied at different grades make a difference between the intelligence domains of gifted students and their grade levels.

When the multiple intelligence domains of the gifted students participating in the study were examined according to their maternal educational status, it was found that the musical/rhythmic intelligence domain averages of the gifted students whose mothers were university graduates were significantly higher than the musical/rhythmic intelligence domains of the students whose mothers were high school graduates ($p<0.05$). As a result of different researches in the literature, similar and different findings have been reached with the findings obtained from this research. İpekli (2013) found in the study conducted with 10th-grade students that the musical/rhythmic intelligence domain averages of the students whose mothers were university graduates were higher than the averages of the students whose mothers were primary and secondary school graduates. Avcı (2018) concluded that there is a significant difference between the students' logical/mathematical, musical/rhythmic, and nature/naturalist intelligence domains and their mother's education levels, as a result of her study to examine the intelligence domains of the Faculty of Sports Sciences and other faculty students. However, it was determined that the musical/rhythmic intelligence domain averages of the students whose mothers were high school graduates were higher than those whose mothers were illiterate and primary school graduates. While the findings obtained from the research contradict the findings obtained from this research in terms of logical/mathematical, and nature/naturalist intelligence domains, they are similar in terms of musical/rhythmic intelligence. Demir (2010), on the other hand, found that the musical/rhythmic intelligence domain scores of the students whose mother's educational status is university are significantly higher than the students whose mother's educational status is high school and below. This finding supports the finding obtained from the research.

Findings from the fourth sub-problem of the study support the fact that intelligence is affected by environmental factors. A high level of maternal education can help students develop their intelligence areas. In addition, it can be thought that the mother's being conscious about intelligence, knowing that intelligence does not consist of only one domain but includes more than one domain, and giving importance to other intelligence domains such as logical/mathematical or verbal/linguistic intelligence, can enable her children to realize their abilities easily. In this way, it can be thought that it contributes to directing children in line with their abilities and dominant intelligence domains.

When the findings regarding the comparison of the multiple intelligence areas of the gifted students according to the educational status of the fathers were examined, it was concluded that there was no statistically significant difference between the intelligence domains of the students and the educational status of the fathers ($p>0.05$). There are different findings in the literature that contradict this finding. İpekli (2013) concluded that as the educational status of the father increases, the musical/rhythmic intelligence field averages of the students increase. Avcı (2018), on the other hand, determined that the logical/mathematical and nature/naturalistic intelligence areas of students whose fathers are literate, and musical/rhythmic intelligence areas of students whose fathers are university graduates are developed.

It can be thought that the father's educational status does not cause any difference in the intelligence domains of the students, since the children of the fathers remain in the background compared to their mothers in the education-teaching process. It is understood from the different findings obtained from various studies that intelligence is a multifaceted concept. Many factors, such as cultural, historical, geographical, and familial can have an impact on the improvement of intelligence. This situation shows that researchers who focus on intelligence in their research should consider intelligence from a multidimensional perspective.

When the findings regarding the learning styles of the gifted students participating in the research are examined, it can be concluded that the students mostly use the visual learning style, then the kinesthetic learning style, and least the auditory learning style. In the literature, many data collection tools have been developed to determine the learning styles of students and learning styles have been discussed in different dimensions. Bagav (2015) concluded that gifted students mostly use tactile learning styles in his study using the "Marmara Learning Styles Scale". Serin (2019), in his study to determine the learning styles of students studying in secondary education institutions, concluded that students have good learning perceptions in all visual, auditory, and kinesthetic learning styles. Çetin (2015) found in her study with 6th-grade students that students mostly use visual, then kinesthetic, and auditory learning styles. Eskici (2008) found that in the study aimed at determining the learning styles of 6th, 7th, and 8th-grade students, the students used the most visual learning styles and then used the audio learning style at least. The findings obtained from various studies and this research confirm the fact that students can adopt one learning style as well as use more than one learning style.

When the results of the comparison of the learning styles of gifted students according to the gender variable were examined, it was concluded that auditory learning styles showed a statistically significant difference in favor of male students ($p<0.05$). When the studies in the literature are examined, different results have been reached regarding whether there is a significant difference between learning styles and gender. Serin (2019) determined that the visual and kinesthetic learning styles average of female students studying in secondary education were statistically significantly higher than male students, while there was no significant difference in auditory learning style. Shaw and Marlow (1999), Loo (2004), Güven (2004), Bagav (2015), Aygül (2015), and Çokbilir (2019) concluded that gender did not affect the determination of students' learning styles. Findings from research and this research show that gender has different effects on learning styles. Based on this situation, it is thought that detailed and multidimensional studies should be included in the determination of learning styles.

It was determined that as the grade levels of the gifted students participating in the research increased, the visual, auditory, and kinesthetic learning styles averages increased significantly ($p<0.05$). When the studies involving the examination of learning styles according to the grade variable are examined, it is understood that different results have been reached. Serin (2019) concluded that there is a significant difference between the learning styles of secondary school

students and their grade levels. He concluded that the visual learning styles of 11th and 12th-grade students have a higher average than 9th-grade students. In the study conducted by Bagav (2015), the visual learning style averages of the 12th-grade students were found to be significantly higher than the 9th and 10th-grade students, and the visual learning style averages of the 11th-grade students were found to be significantly higher than the preparatory students. Çiloğulları (2019) found a significant difference in favor of 8th-grade students in visual and auditory learning styles in her study examining the learning styles of 5th and 8th-grade students. These results support the findings of this study.

Learning styles require the individual to acquire knowledge most shortly and easily and learn to learn. It is thought that as the grade level increases, the knowledge and awareness of the individual about herself/himself and her/his learning increase. An individual with increased awareness can know the easiest and fastest ways to obtain information for herself/himself and can benefit from these ways during learning. In addition, it can be thought that the changes made in the field of measurement and evaluation together with the changing education-teaching approach may have caused the students to adopt different learning styles.

When the learning styles of the students participating in the research are examined according to their mother's education status, it is seen that the visual learning style scores of the gifted students whose maternal educational status is high school or secondary school and below are higher than the visual learning style scores of the students whose mother education status is university. In addition, it is understood that the kinesthetic learning style averages of the students whose mothers are high school graduates are higher than those of the students whose mothers are university graduates. In the studies, different findings were found that both overlapped and contradicted this finding. Bagav (2015) found that the visual learning style averages of students whose mothers were university graduates were statistically significantly higher than the averages of students whose mothers were postgraduate students. On the other hand, Çokbilir (2019) and Serin (2019) concluded that there is no significant difference between students' learning styles and their mother's educational status.

Learning styles are related to the individual's learning world. The fact that students whose mother's education level is high school or secondary school and below have higher averages in the visual and kinesthetic sub-dimension compared to students whose maternal educational status is university may be since these individuals give more importance to visual and kinesthetic elements and can keep visual elements in their memories more easily. In addition, it can be thought that the contribution of their mothers to the learning process of these individuals by doing and experiencing and the use of visual elements in the learning process contribute to the learning experiences of the individuals.

When the learning styles of gifted students are compared according to their paternal educational status, it is understood that the learning styles averages of the students whose fathers have different educational statuses are at a similar level. Serin (2019) and Demir (2010) concluded that there is no significant difference between the learning styles of the students and the educational status of their fathers. Çokbilir (2019) found a significant difference between pre-service teachers' visual and kinesthetic learning styles and fathers' educational status, while there was no significant difference between auditory learning styles and fathers' education status. It was concluded that the difference was in favor of the secondary school group between the primary and secondary school groups, in favor of the high school group between the primary and high school groups, and in favor of the high school group between the high school and university groups. A similar result to this result was obtained from the research conducted by Bagav (2015). He found that the auditory learning styles of gifted students differ in favor of students whose fathers are university graduates and

postgraduates. The studies conducted contradicted the findings obtained from this study. A similar finding in the study was obtained when comparing the intelligence domains of the students with the educational status of the fathers. The fact that the father's education level does not cause any difference in the learning styles of the students can be thought to be since the fathers of the students are in the background in the learning process.

When the multiple intelligence domains and learning styles of the gifted students participating in the study were compared, no strong relationship was found between the two variables. Although there are not many studies on multiple intelligence domains and learning styles, Aygül (2015), who examined the multiple intelligence domains and learning styles of Vocational High School students, found that there was a low positive correlation between the students' intelligence domains and learning styles. Demir (2010) concluded that there is a moderate positive linear relationship between 9th-grade students' visual learning style and visual/spatial intelligence, auditory learning style and verbal/linguistic intelligence, and kinesthetic learning style and bodily/kinesthetic intelligence. Şener and Çokçalışkan (2018) found a positive, moderate, and low-level relationship between students' multiple intelligence domains and learning styles in their study with 5th, 6th, 7th, and 8th-grade students. In the study conducted by Zorlu and Zorlu (2019), it is seen that science teacher candidates' multiple intelligence domains and learning styles are related to each other.

Armstrong (1994), Campell (1997), Göztütok (2001), and Bacanlı (2006), who researched multiple intelligence domains and learning styles, suggest that there are strong and close relationships between multiple intelligences and learning styles (Cited by Demir, 2010). Gardner (2017) states that learning styles and intelligence areas may show similarities, but these similarities may be in medium or low-level relationships. Klein (2003) argues that learning styles and multiple intelligences contain different cognitive abilities, so the two concepts should not be confused with each other. Açıkgöz (2007) argued that learning styles are innate, characteristic, and difficult to change. On the other hand, she states that the domains of multiple intelligences can be developed and changed over time through culture, family, geography, and many factors, and she argues that multiple intelligences and learning styles are two separate concepts.

As a result, while Multiple Intelligence Theory is concerned with what an individual can learn, learning styles are concerned with how an individual can learn. Therefore, while multiple intelligences are product-oriented, learning styles are process-oriented. Findings from the study show that multiple intelligence domains and learning styles are different concepts and there may be low-level relationships between them. It is thought that the level and direction of the relationship between them may vary depending on the study group and the demographic characteristics of the study group. When multiple intelligence domains and learning styles are analyzed according to gender, grade level, and educational status of parents, it is seen that different results are revealed. Considering the limitations of the study, the study group of the research can be expanded or a similar study can be done with secondary school students. Intelligence and learning styles are multifaceted concepts. For this reason, the variables such as maternal and paternal educational statuses used in the research can be diversified and studies can be made in terms of different variables such as the socio-economic status of the family and the profession of the mother and father. In addition to the data collection tools used in the research, interviews with students and teachers can be made using qualitative research methods.

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