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Research Article

Thematic analysis of studies on gifted students in the field of mathematics education[1]

Zeynep Çavuş-Erdem[2]

Harran University, Faculty of Education , Şanlıurfa, Türkiye

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Abstract

This study aimed to determine the study subjects and methodological tendencies of articles and theses written in Turkey between 2011 and 2023 on gifted students in the field of mathematics education. The Council of Higher Education (YÖK) National Thesis Center catalog and DergiPark and Google Scholar databases were used to collect the data for the study. As a result of the scanning, 71 theses and 60 articles on gifted students in mathematics education were reached. Among the theses and articles conducted on the same data, theses were selected due to their comprehensiveness, and a total of 120 studies, including 71 theses and 49 articles, were examined. Examination of the studies was carried out using the descriptive content analysis method. Six themes were determined, four of which covered the methodological dimension, and the studies were examined in terms of publication year, sample group, research method, and design, data collection method and techniques, study subject, data analysis method and technique. As a result of the examinations, it was concluded that studies on gifted students in mathematics education have increased over the years and that studies adopting qualitative methods have increased in recent years. It was determined that there were specific approaches in the studies regarding research models, data collection tools, and data analysis techniques and that the studies concentrated on specific methods and techniques in these themes. It was concluded that the studies were mainly conducted with secondary school students as the sample group, the number of studies conducted with teacher candidates and parents was quite limited, and no studies were conducted in mathematics education with the preschool student group. It has been determined that cognitive field studies come to the fore as study subjects and that there is an increase in the development, evaluation, and comparison studies of educational programs. Studies on the diagnosis of gifted students and studies on teachers, who have a critical role in the education of gifted students, are minimal. Almost no studies include technology, which is the critical reality of our age. In line with the research results, it can be said that mixed research methods are adopted, and increasing studies for teachers, parents, and preschool students, designing research that allows different analysis techniques and incorporating technology is essential in order to eliminate the deficiencies in the literature.

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Introduction

It is accepted that the individuals who shape history are different from other people and superior in some aspects. Today, these individuals, who differ from others with many characteristics, are considered gifted. Gifted/exceptionally talented individuals are academically successful and high-level individuals who learn faster than their peers. They are at the forefront with characteristics such as creativity and leadership and can understand abstract ideas (MEB, 2018). Gifted individuals are also expressed with the concepts of gifted and special talent. Although intelligence and talent have different meanings, the concepts of giftedness and exceptional talent are generally evaluated together in the

[1] This research was presented as an oral presentation at the 5th International Turkish Computer and Mathematics Education Symposium (TURCOMAT-5).
[2] Assist. Prof., Harran University, Education Faculty, Şanlıurfa, Türkiye E-mail: zcavuserdem@gmail.com ORCID: 0000-0002-7448-2722

literature. The characteristics of gifted students, such as above-average talent, outstanding creativity, and success that differentiates them from other students, are also the characteristics that define gifted students (Shavinina, 2013). For this reason, individuals with high academic potential and ability are considered gifted or gifted.

The learning of gifted students is different from that of other students. They can learn complex information much faster (Karaduman, 2010). However, this should not create the perception that gifted people can do everything themselves (Altıntaş, 2009). These individuals need education in line with their interests and abilities. Therefore, the education programs of gifted students should be differentiated by considering their abilities and learning speeds, and the education provided should aim to maximize the potential of this particular student group. Because it is known that gifted students can improve themselves under appropriate conditions, and only in this way can they serve their society at the highest level (Clark, 2002). For this reason, how education for gifted students should be has become an important research topic (Özyaprak, 2016), and in recent years, this issue has started to gain importance in the curriculum of countries.

It is stated that the practices for gifted students in our country have a very long history, and the first studies reached the Enderun schools that were active during the Ottoman period (Birgili & Çalık, 2013; Koç-Koca & Gürbüz, 2022). During the Republican period, training for gifted students remained in the background, and, except for a few practices, no significant steps were taken on this issue for a long time. In the 1990s, some developments began with the opening of private schools where only gifted students could receive education (Ataman, 2012). The number of institutions where gifted students receive education has increased, and science and art centers (SACs)[3] have begun to serve actively in many provinces and districts. SACs are official institutions belonging to the Ministry of National Education, which enable gifted students to receive an education in which they can develop their talents and provide this education at times outside the students' formal education period. Apart from this, gifted students can also receive education in institutions such as Turkish Education Foundation İnanç Türkeş Private High School (TEVİTOL) and Gifted Education Center (ÜYEP) (Sak et al., 2015; Koç Koca, 2022).

SACs institutions provide an excellent advantage for gifted students to receive education with their peers at their level and in line with their abilities. On the other hand, gifted students spend most of their educational lives with typically developing students (Özdemir, 2016). Although this situation is essential in preventing gifted students from being isolated from society, it also has some limitations. It is stated that these students learn faster than other students, causing them to get bored in class more quickly, and their capacities decrease (Gadanidis et al., 2011). In this sense, it is essential to create educational environments that will support students' potential in their regular education processes. Mathematics lessons require much more attention and importance (Özdemir, 2018). They are considering that the IQ score, which is generally an expression of intelligence level, and giftedness are considered equal (Sternberg & Davidson, 2005) and that the IQ score explains mathematics success (Konold & Canivez, 2010), the perception that gifted students are generally successful in mathematics emerges. The concept of giftedness in mathematics is used as a type of giftedness (Singer et al., 2016). Giftedness in mathematics is expressed as the ability to see the world through a mathematical lens (Krutetski, 1976). At the same time, students who are gifted in mathematics stand out as individuals who can solve problems in a different and fast way and associate mathematical structures with real life (Fıçıcı & Siegle, 2008). Therefore, mathematics is among the subjects gifted students can express themselves best in school courses. Because the learning opportunities in these courses play an essential role in developing students' superior abilities (Singer et al., 2016). For this reason, it is essential to research the mathematics education of gifted students.

International research on gifted students in mathematics education was limited in the 2000s, and most studies focused on gifted students in general terms without focusing on specific areas such as mathematics, art, music, or science education (Leikin, 2009). A similar situation exists in the national literature (Nacar, 2015); but today, this number is increasing daily. It is essential to examine the changes in the subject orientations and methodological tendencies of the studies conducted over the years to identify the literature gaps. When we look at the studies on gifted

[3] These institutions provide support education to gifted students in Turkey.

students, curriculum development and evaluation studies stand out (Ayvacı & Bebek, 2019). In addition, in the studies conducted, emphasis is placed on studies addressing the cognitive dimension (Kaya, 2021). In their study, Ayvacı and Bebek (2019) stated that the studies carried out with gifted people concentrated on specific subjects and that studies aimed at improving research-inquiry skills should be increased. Güçin (2014) states that quantitative methods are mainly adopted in the studies. İnan and Uyangör (2022) similarly stated that studies adopting quantitative research methods predominate, and many studies focus on specific patterns in research methods. Kirişçi (2023) examined the theses about gifted students in mathematics education and emphasized that very few studies deal with technology. Güçin and Oruç (2015) stated that academic studies on gifted students mainly consist of papers. It is possible to come across studies examining research on gifted students in mathematics education. In his study, Kaya (2021) limited the theses about gifted students in mathematics education conducted between 2002 and 2020, İnan and Uyangör (2022) limited the theses conducted between 2009 and 2020, and Demirci and Tertemiz (2022) limited the theses conducted between 2002 and 2020 in gifted education journals. It examined and limited mathematics education studies published between 2022 and 2022. In his master's thesis study, Nacar (2015) examined the studies on gifted students in mathematics education in our country and worldwide between 2005 and 2014.

Research Problem

In analyzing studies on gifted students in mathematics education, the focus is generally on one type of study, either articles or theses. For this reason, it is considered critical to present information about the current literature and draw a more general picture of the literature by considering studies conducted in different types of research together. Examining studies conducted in mathematics education can also enable researchers to handle gifted students more effectively and supportively and plan their studies by considering the literature gaps. For this purpose, the study aimed to examine the articles and theses about gifted students in mathematics education between 2011 and 2023, and the problem of the research was "What are the study subjects and methodological tendencies of the studies conducted between 2011 and 2023 about gifted students in mathematics education?" was determined as.

Method

Pattern of the Research

This research is a document review aiming to examine thematically and methodologically the articles and theses published until June 2023 regarding gifted students in mathematics education. Document review is a qualitative research method that involves examining written documents and documents systematically and in detail (Wach & Ward, 2013). This method has several analytical steps, which are based on examining or evaluating materials in both written and electronic media (Bowen, 2009). The main steps of the document review process are collecting documents within the limits appropriate to the research problem, reading the documents in detail by checking their originality, analyzing them according to the created themes and codes, and interpreting and reporting the results (Kıral, 2020). The procedures performed according to these steps will be explained in the research.

Collection of Data

Before determining the articles and theses to be examined in the research, the articles' characteristics were decided to limit the documents. Accordingly, the documents to be examined are;

- It is done only within the scope of mathematics education
- It is aimed at gifted people
- It has been decided that the articles must be published in journals included in the TR Index database and meet the criteria.

After the criteria were determined, a general literature review was conducted to determine the appropriate keywords for the search, and potentially related terms were identified. As a result of the determination, the keywords to be used in scanning,

- Gifted in mathematics education
- Special talented in mathematics education
- Gifted in mathematics education
- Highly talented
- Special talents
- Gifted
- Science and Art Centers
- It was decided to become a Gifted Education Program Model (ÜYEP)

The English equivalents of the keywords were also used in the search, thus aiming to reach more studies. "Dergipark" and "Google Scholar" databases were used to access articles, and the "National Thesis Center" data catalog was used for these. While scanning the studies, the keywords mentioned above were considered one by one every year. The bibliography of the studies included in the scope of the review was also examined, thus aiming to access all relevant studies. As a result of the literature review, 60 articles and 71 theses published between 2011-2023 were reached. In the examinations, it was determined that these were articles produced from theses, and it was decided to examine the thesis due to the comprehensiveness of both studies. In this context, 11 articles determined to be produced from theses were excluded from the review, and 49 articles were evaluated. The list of studies is presented in Appendix 1 and Appendix 2.Data

Analysis, Validity, and Reliability Studies

The descriptive content analysis method, one of the content analysis methods, was used to analyze the articles collected in the research. *Descriptive content analysis* is a systematic review that identifies and describes the trends of independent studies conducted in a particular field with different methods, such as quantitative and qualitative (Çalık & Sözbilir, 2014). The purpose of descriptive content analysis is to reveal the trend of science regarding the determined research topic and to present a general picture that will provide ideas to researchers who want to research this topic in the future (Cohen et al., 2017). Since this research aims to determine the topics and methodological tendencies of studies on gifted students in mathematics education and to reveal the deficiencies, gaps, and accumulations in the literature, descriptive content analysis was deemed appropriate. Since many studies are examined in descriptive content analysis, an in-depth examination is impossible in the studies discussed (Çalık & Sözbilir, 2014). In this research, six themes were determined to analyze the articles, 4 of which covered the methodological dimension. The determined themes are a) publication year, b) study group, c) research method and design, d) data collection method and techniques, e) study subject and f) data analysis method and technique. After the themes were determined, the analysis process began.

In the first stage of the analysis process, which took place in four stages, a study code was assigned to the studies, separate articles, and dissertations. Articles were assigned from 1 to 49 as Group A, and theses were assigned from 1 to 71 as Group B. The studies were handled according to the codes given throughout the analysis and in presenting the findings. The second phase is the preliminary analysis phase of the studies. At this stage, the Excel program was used to enter data for each theme, the articles examined were read in-depth, and article information was entered according to each theme. In the preliminary analysis stage, the primary purpose is to determine the sub-themes of the themes. In the third stage, subthemes for each theme were determined, and all studies were recoded according to the subthemes. At this stage, it was aimed to increase the validity and reliability of the research with in-depth re-readings. The last stage is the reporting part, which is the last step of the document review. At this stage, tables were first created by each theme, and the distributions of the studies placed in the table, together with their study codes, were presented to the reader with graphs, frequencies, and percentage values.

In this study, in which qualitative research methods were adopted, expert opinion and researcher triangulation, which are used in qualitative research, were used for validity and reliability (Cresswell, 2013; Yıldırım & Şimşek, 2013). In the third stage of the analysis, the list of themes and sub-themes determined was shown to a researcher who is an

expert in the field, and his opinion was taken. In the analysis part of the third stage, help was received from another expert researcher, and 20% of the articles (10 articles) were coded separately by both researchers. To calculate the compliance percentage of the codes, Miles and Huberman's (1994) coder reliability formula ([Compatible codes/ (Compatible codes + Incompatible codes)] x100) was applied, and the compliance percentage was determined as 90% (54 compatible codes - 60 total codes). Incompatible codes were evaluated, and consensus was reached. For example, studies examining the factors affecting academic success within the theme of the study were placed into different sub-themes, namely cognitive field studies and affective field studies, by two researchers. The disagreement arising from the fact that academic success is related to the cognitive domain, while the influencing factor is related to the affective domain, was resolved by consensus of the researchers, and it was decided to code the articles into the relevant sub-theme according to the type of factor whose effect on academic success was examined. After consensus was reached on the themes, the researcher continued the analysis process alone. Another way to increase validity and reliability in research is to explain in detail how the results were obtained, present the findings and evidence that reveal the results in a way that the reader can easily access, and convert the data into a numerical form (Cresswell, 2013). For this reason, the research presented the articles with their study codes and digitized them with frequency and percentage values.

Results

In the research where articles about gifted students in mathematics education were analyzed, the articles were discussed under six themes. The findings obtained in each theme will be presented respectively. The first of the themes discussed is the distribution of articles according to the years they were published. Graph 1 presents the distribution of studies according to publication years.

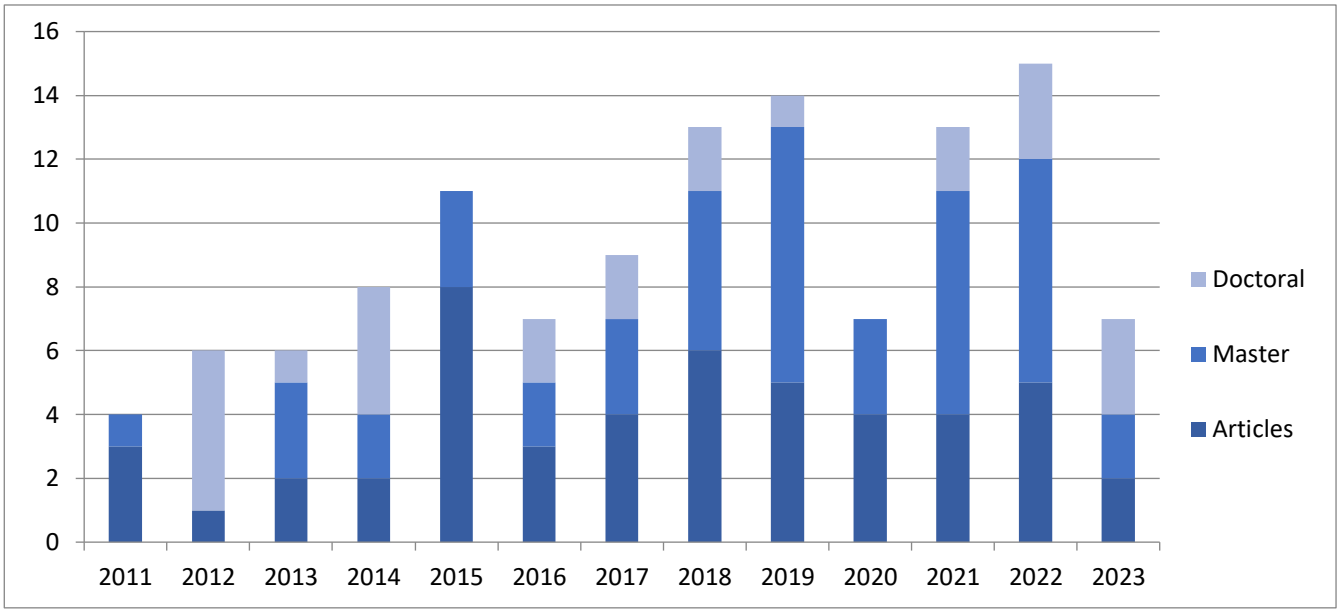

Chart 1. Distribution of studies according to the years they were published

In light of the information in the graph, the total number of studies has increased over the years. Of the total 120 studies, 41% consist of articles 49, 21% consist of a doctoral thesis with 25, and 38% consist of a master's thesis with 46 studies. When the study titles are considered separately, it is seen that there were few studies in the articles between 2011 and 2014, there was a significant increase in the studies conducted as of 2015, and the frequency of studies showed a proportional distribution in the following years. When looking at the thesis studies, it can be stated that doctoral theses were mostly done in 2012, master's theses were mostly done in 2019, doctoral theses showed a proportional distribution over the years, and there has been an increase in master's theses in recent years. The total number of studies generally increased from 2011 to 2019. Although there was a decline in 2020, these were the years when the most work was done, starting from 2019 and including the first half of 2023. The findings obtained from the graph show that studies on gifted students in mathematics education have gained momentum as of 2019, and this momentum continues in the following years.

The second theme addressed in the studies is the sample group. The sample group distribution of the studies is presented below (Table 1). Studies conducted with different sample groups were coded separately for each group.

Table 1. Sample profiles of the studies

				Registered in SACs		SACs unregistered	
	(f) (%)			(f)	Research Codes	(f)	Research Codes
Student	101 %85	36	Primary school -A	10	18*, 20*, 21*, 28, 33, 36*, 37*, 38*,42*, 46	4	10*, 20*, 21*, 36*
			Secondary school-A	27	2*, 3, 4, 7, 8, 11, 12, 17*, 18*, 19, 20*, 22, 23, 24, 25, 26, 29, 30, 37*, 38*, 39*, 41, 42*, 45, 47*, 48, 49*	6	2*, 10*, 17*, 20*, 39*,49*
			High school-A	5	5, 16*, 27, 40, 47*		
		65	Primary school -B	12	1*, 8*, 10, 19, 38, 45*, 47*, 51*, 56, 57*, 65*, 67*	1	47*
			Secondary school -B	49	1*, 3, 4*, 6, 7*, 8*, 12, 14, 15, 16, 17, 18, 20, 21*, 24*, 25, 26*, 27, 30, 31*, 32, 33*, 34, 36*, 37, 39, 40*, 42, 43*, 44, 46, 47*, 49*, 50*, 51*, 52*, 54*, 57*, 58*, 59*, 61*, 62, 63*, 65*, 66, 67*, 69, 70, 71*	16	4*, 7*, 11, 21*, 24*, 33*, 36*, 40*, 47*, 49*, 50*, 54*, 58*, 61*, 63*, 71*
			High school-B	10	2, 26* , 28, 31*, 35, 51*, 52*, 55, 60, 68		
			Unspecified	2	5, 48		
Prospective teacher	1 %1			1	1		
Teacher	15 %12	5	High school-A	3	15, 16*, 35	1	14*
			Secondary school-A			2	9*, 14*
			Primary school-A			1	9*
		10	High school-B	5	9, 13, 43*, 45*, 67*		
			Secondary school-B			5	29, 41, 49*, 58*, 64*
			Primary school-B				64*
Lecturer -B	1 %1					1	67*
Parents -B	1 %1				45*		
Total	119 %100						

** Articles with code A, theses with code B, and studies carried out with different working groups are shown with the symbol "*." Articles with study codes 6, 13, 31, 32, 34, 43, and 44 and theses with study codes 22, 23, and 53 were not included in the scope of the review.

A large portion of the studies on gifted students was conducted with students (85%), and most studies were conducted with secondary school students in the student group. Most sample groups consist of students studying at the science and arts center and working teachers. Studies conducted with teachers constitute 12% of the total studies. In the studies carried out with teachers who do not work in the science and art center, it is seen that the studies were carried out with teacher groups from all three levels. The studies of sample groups of teachers show a balanced distribution in this sense. Likewise, it was determined that studies were conducted with primary and secondary school students who were not diagnosed as gifted but not with high school students. Teacher candidates, faculty members, and parent groups were determined as the sample groups with the lowest percentage (1%). So much so that it was determined that only one article was conducted with teacher candidates and one thesis each conducted with instructors and parents; however, it was determined that no study was conducted with teacher candidates studying in the secondary school mathematics department.

When the studies were considered under subheadings, findings parallel to the general findings were obtained. Secondary school students were the most preferred sample group for both articles and theses. Almost half of all studies (57 studies - 48%) consist of studies conducted with two or more sample groups. While different sample groups are groups of students or teachers at different levels in some studies, some studies include students at the same level who are diagnosed as gifted and those who are not. Articles with study codes 32, 43, and 44, theses with codes 22 and 23 on instructional design and comparison, and 34 articles with code 34 on theoretically addressing giftedness in mathematics. Articles with codes 6, 13, and 31 and theses with code 53 based on the analysis of academic studies were included in the sample group. Accordingly, it was not considered within the scope of the analysis.

The third theme of the research consists of the articles' research methods and research designs. The distribution of articles according to research methods and designs is presented in Table 2.

Table 2. Distribution of studies according to research method and design

Method	(f)	(%)	Research Desing		(f)	Research Codes A	(f)	Research Codes B
Quantitative	46	38	Experimental design		4	7, 41, 48, 49	10	12, 20, 38, 55, 56, 57, 62, 66, 69, 70
			Survey	Descriptive	7	9, 11, 17, 23, 38, 40, 46	5	18, 34, 41, 63*, 65
				Relational	5	8, 24, 25, 26, 28,	9	11, 42, 47 48, 51, 59, 61, 63*, 71
				Causal	1	20	1	64
			Scale development		1	10		
			Meta analysis				1	22
			Unspecified		3	29, 42, 45		
Qualitative	60	50	Case Study		11	2, 3, 5, 12, 16, 21, 27, 30, 33, 35, 39	28	1, 3, 4, 6, 7, 8, 9, 14, 15, 16, 17, 19, 21, 23, 24, 27, 28, 32, 33, 35, 36, 39, 44, 46, 50, 54, 60, 68
			Phenomenology		4	14, 15, 37, 47	3	13, 25, 52
			Descriptive research		1	1	1	5
			Document review		6	6, 13, 31, 36, 43, 44	1	53
			Design based research				1	49
			Action aesearch				1	30
			Unspecified		2	18, 22	1	29
Mixed	12	10	Explanatory design		2	4, 19	3	2, 31, 58
			Parallel design				6	26, 37, 40, 43, 45, 67
			Unspecified					10
Total	118	100			49		71	

*Studies with 32, 34 study subjects were not included in the scope of the review

When the studies are examined in terms of research method, it is seen that 60 studies (50%) adopted the qualitative research method, and 46 studies (38%) adopted the quantitative research method. According to the research results, where quantitative and qualitative methods constitute a large percentage, articles designed in mixed research methods constitute 10 of all studies. When examined in terms of research design, it is seen that in quantitative research, the survey design was the most preferred, with 27 (23%) studies. Among the survey designs, descriptive (10%) and relational survey (12%) designs were preferred. In qualitative research methods, studies were mainly organized according to the case study design (33%). Experimental design (12%), scale development (1%), and meta-analysis study (1%) are other research designs considered in the quantitative method. Other preferred research designs in qualitative research methods were phenomenology (6%), document analysis (6%), descriptive research (2%), and action research (1%). There are studies in quantitative and qualitative research methods where the research design is not specified, and these studies are evaluated under a separate heading. In mixed methods, parallel (5%) and explanatory designs (4%) were the adopted research designs. When the study titles are considered separately, qualitative research designs come to

the fore in articles (49%) and theses (51%); mixed research method is rarely preferred in articles (4%). Case study design is prominent in these (39%). It came to the fore. Finally, 32 articles with study codes on instructional design and 34 articles with study codes on giftedness from a theoretical perspective were excluded from the review.

The distribution of articles according to data collection tools, the fourth theme of the research, is presented in Table 3.

Table 3. Data collection tools of the studies

	(f) (%)	Technic		(f)	Research Codes A	(f)	Research Codes B
Quantitative	133 %59	Test	Achievement	5	11*, 22*, 23*, 26*, 49*	13	4*, 12, 20*, 45*, 47, 48*, 55*, 58*, 60*, 62*, 66*, 69*, 70*
			İntelligence	3	10, 26*, 41	5	16*, 36*, 38*, 63*, 70*
			Problem solving	2	21, 36	10	1*, 3, 6*, 35*, 38*, 51*, 54 * , 56*, 57*, 60*
			Creativity	1	49*	8	11*, 56*, 58*, 59*, 62*, 66*, 69*, 70*
			Critical thinking			2	42*, 48*
			Spatial	1	7	3	48*, 66*, 69*
			Problem posing	1	46	2	21*, 30*
			Other	5	12*, 20, 47	4	11*, 14*, 34, 42*
		Scale	Reflective thinking skills	2	4*, 38		
			Anxiety	4	8*, 17, 24*, 28*	1	71*
			Self efficacy	4	8*, 11*, 24*, 25	6	5*, 26*, 37*, 41*, 57*, 59*
			Student characteristics assessment	1	9	1	64
			Attitude	2	19*, 42*	12	5*, 18*, 20*, 26*, 37*, 41*, 55*, 56*, 57*, 62*, 65*, 70*
			Learning styles	2	29*, 42*	1	61*
			Multiple intelligences	2	29*, 49*	3	7*, 58*, 61*
			Metacognition			3	51*,28*, 59*
			Academic self			2	57*, 62*
			Motivational strategies			2	16*, 63*
			Opinion	1	48	2	43*, 67*
			Self-regulation	1	40*	1	57*
			Other	1	28*	5	2*, 10, 31*, 40, 61*
		Form	Personal data form			8	2*, 18*, 26*, 31*, 38*, 42*, 51*, 65*
			Assessment	1	45	2	45*, 49*
		Survey		1	23*	2	52*, 67*
		Rubric				1	38
Qualitative	93 %41	İnterview	Semi structured	10	3, 4*, 5, 14, 15, 16*, 18, 19*, 30, 35*	24	1*, 2*, 6*, 9, 13, 15*, 17*, 21*, 25, 26*, 28*, 29, 30*, 32*, 36*, 37*, 43*, 46, 49*, 52*, 54*, 60*, 68*, 71*
			Structured	4	1, 22*, 27, 33	3	14*, 35*, 45*
			Unstructured			1	31*
			Focus group	1	37	1	8*
			Clinical interview	3	2*, 12*, 39	5	7*, 24*, 27, 33*, 50*
		Observation		2	4*, 35*	8	7*, 8*, 17*, 30*, 32*, 45*, 49*, 68*
		Document review		9	6, 13, 16*, 31, 32, 34, 35*, 43, 44	4	17*, 22, 23, 53
		Activity- Worksheet-Problem solving sessions		2	2*, 16*	13	4*, 6*, 8*, 15*, 19, 24*, 28*, 30*, 32*, 33*, 44, 50*, 68*
		Journaling				1	30*
		Field notes				2	8*, 24*
Total	226			71		155	

When the distribution of the conducted studies according to data collection tools was examined, it was determined that quantitative data collection tools were mainly used. Since more than one data collection tool was used in the studies, 59% of the 226 data collection tools used were quantitative data collection tools, and 41% were qualitative data collection tools. It was determined that 35% of the articles (17 articles) used more than one data collection tool, and in theses, this figure was 75% with 55 studies, and it was observed that three or more data collection tools were frequently used in theses. When data collection types are examined according to the number of uses, it is seen that tests (27%) and scales (26%) come to the fore among the quantitative data collection types. In contrast, success, problem-solving, intelligence, and creativity tests are more preferred in tests, and attitude and self-efficacy scales are more preferred in scales. Has been determined. Scales and tests used once in research are coded in the other category. The scales coded in the Other category are "Holistic and Analytical Thinking While Solving Problems," "Perfectionism," "Mathematical Modeling Competencies," "Self-Learning with Technology for Children," "Mathematical Thinking," "Number Sense," "Identification of Personality" scales. It is in the form. The research is not concentrated on one type of scale but has a wide range of scales. In the other test categories, there are "Mathematical Literacy," "Number Sense," "Argument Formation," "Mathematical Ability," "Proportional Reasoning Skill," "Proof Skill," and "Mathematical Productivity" tests. Forms, surveys, and rubrics were other types of quantitative data collection used in studies. In the qualitative data collection type, the most used type is interview (23%), and among the interview types, semi-structured interview (15%). Observation (4%) and document review (6%), keeping a diary (1%), and field notes (1%) are other types of qualitative data collection, and after the interview, activity and problem-solving sessions (7%) were mainly used.

The topics covered by the studies are the fifth theme examined. The topic distribution is presented in Table 4.

Table 4. Topics of the study

Study Topıcs			f	%	Research Codes A	Research Codes B
PROBLEM	Cognitive and motivational insights	1	31	18	27	
	Reflective thinking skills	2			4, 38	
	Problem solving strategies	8			21*, 36*, 39*	6*, 24*, 54*, 57*, 60
	Problem solving process	7			12, 19*	6*, 19*, 24*, 33, 35
	Problem solving skills	7				1*, 19*, 21*, 38, 51*, 56*, 57*
	Problem posing	6			30, 46	4, 21*, 30*, 31
COGNITIVE	Mathematical thinking processes	1	54	32	2*	
	Reasoning skills	3			3	3, 34
	The relationship between academic success and IQ	1			26	
	Variables affecting academic success	3			23	48*, 59*
	Computational thinking	1				37*
	Critical thinking skills	3				42, 48*, 51*
	Mathematical literacy skills	1			11*	
	Mathematical reasoning	1				15
	Effect of intervention on academic achievement	8				5*, 10*, 12, 20*, 22, 55, 58*, 66*
	Mathematical modeling competencies	2				2*, 8
	Proving processes-skills	3				1*, 14, 27
	Socio-mathematical norms	1				17
	Mathematical concept information	4			5, 33, 47	52
	Creating mathematical knowledge	2				16, 46
	Learning styles	2			29	61*
	Ability to ask questions	1				32
	Number sense	2			20*	40*
	Metacognitive knowledge-process	3				28, 51*, 59*
	Spatial ability	3			7	48*, 66*
	Creativity	9				11, 30*, 36*, 44, 50*, 56*, 58*, 59*, 66*
AFFECTIVE	Self-efficacy	9	32	19	8, 11*, 24, 25	5*, 26*, 41*, 57*, 59*
	Mathematics perceptions	2			18, 37	
	Teacher perceptions	1				25
	Academic self	1				57*
	Anxiety	3			17*, 28	71*
	Self-regulated learning and motivational belief	4			40	57*, 63, 68
	Attitude	10			19*, 42	18, 20*, 26*, 37*, 41*, 56*, 57*, 65
	Epistemological belief	1				9
	Views on the history of math	1			48	
Educational program development, evaluation or comparison			21	12	16, 22, 32, 35, 41, 43, 44, 45, 49*	13, 21*, 23, 39, 43, 45, 49, 58*, 62, 67, 69, 70
Identifying/identifying gifted people, their knowledge, perceptions and opinions			5	3	1, 9, 14, 34	64
Scale development			1	1	10	
Analysis of research conducted			4	2	6, 13, 31	53
Problems faced by mathematics teachers working at BİLSEM			2	1	15	29
Comparison of students diagnosed as gifted and other students			16	9	2*, 17*, 20*, 21*, 36*, 39*, 49*	7, 24*, 36*, 40*, 47, 50*, 54*, 58*, 71*
Technology interaction and digital software			5	3	16*	5*, 20*, 37*, 55*
Total			171	100		

When looking at the distribution of the research topics of the studies, it can be said that although some topics stand out, the study topics vary and have a wide spread. The studies mainly focus on subjects involving cognitive targets, and 50% of the total (85) consists of cognitive field studies on gifted people. Study titles such as problem-solving strategies, skills and processes, and problem-posing skills are the preferred topics in theses on gifted students, and problem-themed studies constituted 18% (31 studies) of all studies. Studies on creativity in cognitive field studies (8 studies) and studies examining the effect of intervention on academic achievement (8 studies) were other topics on which these focused. When we look at the adequate field studies, it was determined that 32 studies (19%) included targets for this field. Self-efficacy studies are discussed more in articles and theses than other subjects (9 studies), while studies on attitude come to the fore mostly in theses (8 studies). Developing, evaluating, or comparing curricula for gifted students is one of the prominent topics in both articles and theses, and 21 out of 166 studies (12%) dealt with this subject. Five of the studies (3%) examined the identification and identification of gifted students and the opinions or perceptions of pre-service teachers on this subject, and the other 3% included technology in their studies. Scale development, problems faced by students working in science and art centers, and analysis of the studies conducted were other study topics with a 2% and 1% rate. Finally, some studies compared students diagnosed as gifted with other students. In addition to the study topics specified in the table, these studies are also coded under the theme of comparison studies. 10% of the studies (16 studies) consist of studies comparing students who were diagnosed as gifted and those who were not.

The last theme addressed in the research was the data analysis method. The distribution of articles according to data analysis method and technique is presented in Table 5.

Table 5. Data analysis method and technique of the studies

Method	f	%	Analysis technique	f	Research Codes-A	Research Codes-B
QUANTATIVE	148	65	Descriptive	18	4*, 7*, 9*, 19*, 20*, 22, 23*, 38*, 40, 45*, 47	28*, 38*, 41*, 42*, 51*, 60*, 61*
			PREDİCTİVE T-test	29	7*, 11*, 17*, 19*, 20*, 26*, 41, 45*, 50*	10*, 11*, 12*, 20*, 26*, 31*, 34*, 40*, 41*, 42*, 43*, 51*, 55*, 56*, 58*, 59*, 63*, 65*, 67*, 71*
			Variance- (Anova-Manova)	20	11*, 17*, 19* 23*, 38*, 45*	11*, 26*, 31*, 34*, 41*, 42*, 43*, 47*, 51*, 59*, 63*, 64, 65*, 71*
			Covariance- (Ancova)	1		2*
			Mann whitney U	21	7*, 17*, 26*, 42*, 48*, 49*	2*, 18*, 37*, 40*, 45*, 55*, 56*, 58*, 62*, 63*, 65*, 66*, 67*, 69*, 70*
			Kruskal wallis	7	17*, 42*	18*, 40*, 63*, 67*, 71*
			Kolmogorov simirnov	6	19*, 38*	18*, 20*, 56*, 65*
			Wilcoxon	14	48*, 49*	2*, 20*, 37*, 38*, 45*, 56*, 57*, 58*, 62*, 66*, 69*, 70*
			Regresyon	7	8, 24, 25*, 28*	48*, 51*, 59*
			Shapiro Wilk			10*, 12*, 38*, 40*, 57*, 58*
			Pearson korelasyon	11	9*, 25*, 26*, 28*	11*, 26*, 31*, 42*, 47*, 51*, 63*
			Tukey	3		40*, 43*, 48*
			Diğer	7	9*, 10, 26*, 29	43*, 48*, 61*
			Rubric	4		5*, 6*, 8*, 30*
			Meta analysis	1		22
QUALITATIVE	78	35	Descriptive	27	2, 12*, 13, 18*, 30, 31, 43	1*, 6*, 7*, 8*, 10*, 14, 15, 16, 23, 24, 27, 31*, 39, 44, 46, 53, 58*, 60*, 67*, 71*
			Content analysis	39	1, 3, 4*, 5, 6, 12*, 14, 15, 16, 19*, 21, 33, 36, 37, 46	1*, 2*, 3, 4, 7*, 9, 19, 21, 25, 26*, 28*, 29, 30*, 32, 33, 36*, 37*, 43*, 45*, 50, 52, 54*, 67*, 68*
			Constantly comparative	7	18*, 27	6*, 17, 35, 49, 68*
			Discourse analysis	2		36*, 54*
			Phenomenological	1		13
			Unspecified	2	35, 39	
Total	226	100				

*Articles with study codes 32, 34, and 44 were not included in the review.

When we look at the distribution of articles and theses according to data analysis methods, it is seen that specific methods come to the fore among quantitative and qualitative methods. When we look at the quantitative data analysis methods, it is seen that 18 studies, articles, and theses use descriptive statistics techniques. Among the predictive statistical techniques, t-test (29 studies), Mann Whitney-u test (21 studies), and analysis of variance (20 studies) techniques come to the fore. There are four theses in which rubrics are used, which are among the quantitative analysis techniques, and one thesis in which meta-analysis is used. The techniques that came to the fore in qualitative data analysis were content analysis with 39 studies and descriptive analysis with 27 studies. The constant comparative analysis technique, grounded theory analysis, was another qualitative technique used in 7 studies. Phenomenological analysis and discourse analysis are other analysis methods used. When looked at, it constitutes 65% of the quantitative techniques used. Some of the studies dealt with quantitative and qualitative data analysis together. In the analyses made regarding this, 33 of 71 theses studies (46%) were qualitative, 26 studies (37%) were quantitative, and 12 studies (17%) dealt with quantitative and qualitative analysis techniques together. When the articles were examined, it was seen that 22 studies (48%) dealt with qualitative, 21 studies (46%) dealt with quantitative, and three studies (6%) dealt

with quantitative and qualitative analysis techniques together. Although the number of quantitative techniques is high, it has been determined that the studies are mainly carried out with qualitative methods. Of the 120 studies, 55 (46%) adopted qualitative methods, and 47 (39%) adopted quantitative methods. Finally, the articles with study codes 32 and 44 on instructional design and the article with code 34, which deals with giftedness in mathematics theoretically, were evaluated outside the scope of evaluation according to the data analysis method.

Conclusion and Discussion

This study examined the subject orientations and methodological tendencies of articles and postgraduate studies conducted in mathematics education between 2011 and 2023. When looking at the distribution of research types, it was determined that doctoral theses had the lowest percentage. Since master's education and thesis writing takes place in a shorter period of time compared to doctoral education, it is quite normal for the number to be in favor of master's degree. However, considering that doctoral theses contribute more to the world of science, the number of doctoral theses on mathematics education of gifted students can be increased. Ayvacı and Bebek (2019) and Kaya (2021) obtained similar results in their studies. When theses articles were compared, it was seen that most were related to the subject. Surprisingly, theses have a higher percentage than articles, even though they are more comprehensively conducted scientific research. When looking at the distribution of studies by years, it was determined that the articles have increased since 2015; the master's thesis was not done in 2012, and the doctoral thesis was not done in 2011, 2015, and 2020. It can be said that these do not have a balanced distribution over the years, but when we look at the studies in general, there is a regular increase over the years, except for 2020. The worldwide pandemic process in 2020 may have caused scientific studies to slow down in this sense. In general, it is possible to say that the limited number of studies on gifted students in mathematics education (Nacar, 2015) has increased over the years. However, focusing more on doctoral theses and articles is crucial to contribute more to the literature.

The second theme discussed in the study was the sample group. It was determined that in both articles and theses, most students were studied, and among the student groups, most were secondary school students. While some of the studies were conducted with teachers, parents, and instructors were the sample groups in which the least amount of research was conducted. Studies conducted with high school and primary school students constitute one-fifth of all studies in the student group. No studies conducted with preschool students were found.

Additionally, almost one-third of the studies involved students not diagnosed as gifted. İnan and Uyangör (2022), who obtained a similar result, emphasized the importance of equal distribution in sample groups. In general, studies conducted with gifted students, most studies were conducted with secondary school students (Ayvacı & Bebek, 2019; Güçin, 2014; Kirişçi, 2023). It is expected that studies on gifted students will be carried out with groups of students who are diagnosed and educated in science and art centers. Many research topics, such as gifted student characteristics and determining the effect of my education program, are student-centered. Likewise, the lack of studies conducted with preschool children may be because the diagnosis of gifted students is made in the primary school period. However, as stated in the study of Demiroğlu et al. (2013), it is essential to increase the studies carried out at an early age to identify gifted people.

Additionally, the development of gifted students should be considered more than just student-focused. The role of teachers is critical in recognizing and educating gifted students (Şahin & Kargın, 2013). For students to receive a complete education, teachers must be highly aware of giftedness and some competencies (Dağlıoğlu, 2010). In a lesson such as mathematics, where gifted students generally exhibit high performance, the teacher must organize his/her awareness and education according to gifted students (Kanlı, 2011) because one of the ways that these particular students make progress in mathematics is through teacher support (Lynn and Stanley, 1972 as cited in Kanlı, 2011). It is stated that if gifted individuals are not diagnosed in time, their abilities atrophy (Rohrer, 1995). Along with teachers, parents also play a significant role in recognizing gifted individuals' differences, development, and talents (Akar & Akar, 2012). For this reason, the work carried out with teachers, teacher candidates, and parents needs to be increased.

When the studies examined were considered according to research methods, it was determined that qualitative methods were used the most and mixed research methods were used the least. Similar results were obtained when theses and articles were considered separately, and qualitative studies were the most used method in both types of research. In their studies, Ayvacı and Bebek (2019), İnan and Uyangör (2022), Kaya (2021), and Kirişçi (2023) concluded that theses were mainly carried out with quantitative methods, and Demirci and Tertemiz (2022), in articles published in gifted education journals, examined quantitative and qualitative methods. He stated that the methods are used in a balanced manner and that there has been an increase in qualitative approaches in recent years. The same applies to studies conducted in mathematics education. With the increase in qualitative studies in recent years, the intensity of quantitative methods has decreased. However, the number of mixed methods is still not at the desired level. As an effective method to eliminate the deficiencies of quantitative and qualitative methods by handling them together, the mixed research method allows for a detailed and advanced analysis, thus increasing the reliability of the research (Rossman & Wilson, 1994; Tunalı et al., 2016). In this sense, increasing the number of mixed studies will effectively provide richer data to the scientific world. When the research designs adopted in the studies were examined, it was determined that specific designs were accumulated. Survey and experimental research have been the most adopted research designs in quantitative studies, and case studies have been the most adopted research designs in qualitative studies. Researchers may have frequently preferred the case study because it provides in-depth information about the research problem. In addition, ethnographic and theory-building research is less preferred because it requires more time and experience (Cresswell, 2013). Nevertheless, studies that use different research methods are essential in offering different perspectives to the literature. Likewise, it is thought that it is essential to focus on developmental studies to investigate the effect of a developed teaching model and descriptive studies such as survey design in quantitative methods.

Another theme discussed in the study was determined as data collection tools. Among the quantitative data collection tools, tests and scales were the studies' most commonly used data collection tools. While achievement, problem-solving, intelligence, and creativity tests came to the fore in the tests used, attitude and self-efficacy scales were mainly used in the scales. Among the qualitative data collection tools, the interview was used most, and the semi-structured interview method was used most among the interview types. Demirci and Tertemiz (2022) and Kaya (2021) obtained similar results in their studies examining theses. There is a similar accumulation of articles. The fact that gifted people come to the fore regarding academic success and creativity may have affected the data collection tools used to address the dimensions of success, intelligence, and creativity. The interview, a research technique that allows the collection of in-depth data in qualitative research (Yüksel, 2022), is the most used qualitative research technique (Karataş, 2015). In this sense, it can be said that researchers act with a similar idea. When we look at the data analysis methods used in the research, it was determined that quantitative analysis techniques were used more, and descriptive statistics, t-test, analysis of variance, and Mann-Whitney-U test techniques were used more. Content and descriptive analysis were the most used among the qualitative analysis techniques.

In contrast, the continuous comparative analysis technique, which is the analysis of theory development studies, discourse analysis, and phenomenological analysis, could have been used more. Although there are more qualitative studies in research methods, the predominance of quantitative techniques in analysis may be because mixed methods research wants to strengthen the study data with different quantitative data collection tools. Some of the studies used both quantitative and qualitative data collection tools. At the same time, applying more than one test to the same data group in quantitative analysis techniques may be another reason for the greater use of quantitative analysis techniques. Some methods and techniques come to the fore in both data collection tools and analysis techniques. As stated by Kaya (2021), who found similar results in his research, designing studies that allow different analysis techniques is essential to eliminate the literature's deficiencies.

When the studies examined were examined according to research topics, it was determined that cognitive field studies were predominant, while affective field studies covered approximately one-fifth of all studies. Studies on

identifying gifted students, problems encountered by teachers at SACs, and scale development studies were other topics covered in limited numbers. When we look at cognitive field studies, it is possible to say that there is a wide range of topics, but problem-solving and problem posing studies come to the fore. Since the research group is highly talented, it is standard for studies to focus on the cognitive field. Because gifted students exhibit advanced cognitive skills (Gagne, 2005), the predominance of problem posing studies may be due to the idea that giftedness is directly related to problem-solving performance (Maker, 1994). At the same time, one of the skills that students should acquire in mathematics teaching goals is problem-solving. Therefore, some of the research conducted in mathematics education is expected to include problem-solving studies. The fact that creativity is one of the essential characteristics of gifted students (Koçak & İçmenoğlu, 2012) and the direct relationship between problem-solving and creative thinking (Tok, 2008) may be another reason for focusing on problem-solving and problem posing studies. It can be seen that very few studies have been conducted on the creativity of gifted people. Although gifted people generally stand out with their cognitive characteristics, it would not be wrong to say that their affective characteristics affect their performance. Since the mental development of gifted students is more advanced than their emotional development, it is stated that individuals experience fear, anxiety, perfectionism, and some problems with adaptation to peers and school (Preuss & Dubow, 2004; Akarsu & Mutlu, 2017). It is known that students' affective characteristics are an essential factor affecting success, especially in mathematics education (Yenilmez, 2010). Therefore, it is essential to increase research focusing on the affective characteristics of gifted students and to conduct studies to determine the problems and difficulties experienced by these individuals. Studies on the diagnosis of gifted students are still limited in number, in line with the results found in the study of Ayvacı and Bebek (2019). There are almost no studies that include technology. Kirişçi (2023) stated that only two of the theses he examined dealt with technological software.

Similarly, only one study in the articles discussed technology. One of the immutable realities of our age is technology, and education policies and approaches are primarily based on technology (Cloete, 2017). It is a significant deficiency that studies on technology related to gifted people, who are the productive power of the future in the development of society, should be carried out. Technology in mathematics teaching is an effective tool in concretizing knowledge, making learning permanent, and increasing motivation (Bircan, 2023); increasing technology interactive studies is essential. Likewise, studies focusing on teachers are also limited in number. Teachers who teach gifted individuals must have different characteristics, and their competencies are critical (Feldhusen, 1997). For this reason, it is essential to increase studies on teachers working in science and art centers and teachers with gifted students in other formal institutions to identify the problems experienced and to carry out studies to increase the awareness and competence of teachers in order to fill a significant gap in the literature.

In summary, studies on gifted students in mathematics education are generally conducted with secondary school students, mostly on cognitive issues, and qualitative or quantitative methods are at the forefront. Specific approaches, such as case studies, survey studies, and content analysis, are preferred regarding research design and data analysis techniques. Conducting studies that use different research methods and data collection tools, especially those that include technology, for teachers, teacher candidates, parents, and preschool children can be presented within the scope of the research recommendations.

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Appendix 1. Codes of Articles (A)

	Articles
1.	Aytekin, C., Sarıca, R., & Aytekin, T., (2019). İlköğretim matematik öğretmen adaylarının gözünden üstün yetenekli/zekâlı öğrenciler(Opinions of elementary mathematics teacher candidates about gifted students). *Sakarya Üniversitesi Eğitim Fakültesi Dergisi*, *19*(2), 30-54.
2.	Güç, F. A., İsa, Y. A. & Orbay, K., & (2021). Üstün yetenekli tanısı konulmuş ve konulmamış öğrencilerin matematiksel düşünme süreçlerinin karşılaştırılması (Comparison of mathematical thinking processes of students who assigned as gifted and the students who are not assigned as gifted). *Milli Eğitim Dergisi*, *50*(229), 337-362.
3.	Tekerek, B. K., & Argün, Z. (2022). Üstün yetenekli öğrencilerin geometri öğrenme alanında akıl yürütme becerilerinin incelenmesi (Investigation of reasoning skills of gifted students in geometry). *Gazi Eğitim Bilimleri Dergisi*, *8*(2), 306-332.
4.	Kaplan, A., Doruk, M., & Öztürk, M. (2017). Üstün yetenekli öğrencilerin problem çözmeye yönelik yansıtıcı düşünme becerilerinin incelenmesi: Gümüşhane örneği (Examine of reflective thinking skill toward problem solving of talent students: a sample of gümüşhane). *Bayburt Eğitim Fakültesi Dergisi*, *12*(23), 415-435.
5.	Öztürk, M., Akkan, Y., & Kaplan, A. (2017). Üstün yetenekli lise öğrencilerinin ispatla ilgili kavramlara yönelik bilgi ve farkındalıklarının incelenmesi (Examination of gifted high school students' knowledge and awareness of concepts related to proof). *Journal of Gifted Education and Creativity*, *4*(2), 19-35.
6.	İnan, E., Mert Uyangör, S., (2022). Thematic Analysis of Theses Prepared on Mathematics Education with Gifted and Talented Students in Türkiye. *Participatory Educational Research*, *9*(6), 19-40.
7.	Alyeşil Kabakçı, D., & Demirkapı, A. (2016). İzmit bilim ve sanat merkezinde uygulanan "matematik ve sanat" dersi etkinlik uygulamalarının öğrencilerin uzamsal yetenekleri üzerine etkisi (The effect of "mathematics and art" course activity applications on students' spatial talents in izmit science and art center). *Hasan Ali Yücel Eğitim Fakültesi Dergisi*, 11-22.
8.	Yurt, E., & Kurnaz, A. (2015). Özel yetenekli öğrencilerin matematik öz-yeterlik kaynaklarının matematik kaygıları üzerindeki etkilerinin incelenmesi (An investigation of the effects of the mathematics sources of selfefficacy on talented students' mathematics anxiety). *Pegem Eğitim ve Öğretim Dergisi= Pegem Journal of Education and Instruction*, *5*(4), 347-360.
9.	Güçyeter, Ş. (2015). Ortaokul matematik öğretmenleri ve sınıf öğretmenlerinin matematikte üstün zekâlı öğrenci özelliklerine yönelik yargılarının incelenmesi (Investigating middle school math and primary teachers' judgments of the characteristics of mathematically gifted students). *Türk Üstün Zekâ ve Eğitim Dergisi*, *5*(1), 44-66.
10.	Özdemir, D., & IŞIKSAL, M. (2021). Adaptation study of mathematical ability test (tomags) to turkish. *Bartın University Journal of Faculty of Education*, *2021*(1), 200-217.
11.	Albayrak, H. B.,Tarım, K.., & Baypınar, K. (2023). Özel yetenekli öğrencilerin matematik okuryazarliği öz-yeterlik algilari ile matematik okuryazarliği başarilarinin incelenmesi (İnvestigation of mathematical literacy self-efficacy perceptions and mathematical literacy achievement of gifted students). *Trakya Eğitim Dergisi*, *13*(1), 115-127.
12.	Karaduman, B., Arslan, Ç., Broutin, M. S. T., & Ezentaş, R. (2023). Özel yetenekli öğrencilerin resim, müzik ve sayısal yeteneklerine göre matematiksel okuryazarlık problemlerini çözüm süreçlerinin irdelenmesi (Investigation of the mathematical literacy problems of special talented students according to the art, music and numerical talents). *Turkish Journal of Educational Studies*, *10*(2), 193-220.
13.	Demirci, N., & Tertemiz, N. I. (2022). Üstün zekâlılar eğitimi dergilerinde yayınlanan matematik eğitimi çalışmalarına yönelik bir tematik derleme çalışması (A thematic compilation study on mathematics education studies published in gifted education). Journals *Uluslararası Türk Eğitim Bilimleri Dergisi*, *2022*(19), 381-410.
14.	Kırmızı, M., & Tarım, K. (2018). Matematik öğretmenlerinin üstün zekâlılar hakkındaki görüşlerinin incelenmesi: bir metafor çalışması (Investigating mathematics teacher perceptions' of gifted students using metaphors). *Sakarya University Journal of Education*, *8*(4), 337-350.
15.	Çetin, A., & Doğan, A. (2018). Bilim ve sanat merkezlerinde görev yapan matematik öğretmenlerinin karşılaştıkları sorunlar (Problems that mathematics teachers encounter in science and art centers). *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Özel Eğitim Dergisi*, *19*(4), 615-641.
16.	Baltacı, S., Yıldız, A., Kıymaz, Y., & Aytekin, C. (2016). Üstün yetenekli öğrencilere yönelik geogebra destekli etkinlik hazırlamak için yürütülen tasarım tabanlı araştırma sürecinden yansımalar (Reflections from a design based research preparing geogebra supported activities towards gifted students). *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, *1*(39), 70-90.
17.	Gürel, R., & Yetkin-Özdemir, İ. E. (2020). Üstün yetenekli olan ve olmayan ortaokul öğrencilerinin matematik kaygı düzeylerinin incelenmesi (İnvestigation of gifted and non-gifted middle school students' mathematics anxiety levels). *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, (52), 261-286.
18.	Özdemir, D. (2018). Matematikte üstün yetenekli ilköğretim öğrencilerinin okullarındaki matematik derslerine ilişkin algıları(Perceptions of mathematically gifted students about math classes in their own schools). *Kastamonu Eğitim Dergisi*, *26*(1), 153-160.
19.	Çetin, A., & Doğan, A. (2018). Üstün yetenekli öğrencilerin matematik problemi çözme tutumuna ve süreçlerine yönelik algılarının incelenmesi (Investigation of the perceptions of gifted students on the problem solving attitudes and processes). *Cumhuriyet Uluslararası Eğitim Dergisi*, *7*(4), 510-533.
20.	Doğan, A., & Paydar, S., (2020). Üstün yetenekli öğrenciler ile akranlarının sayı hissi alt bileşenlerinin karşılaştırılması (Comparing gifted students and their peers' sub-components of number sense). *Kahramanmaraş Sütçü İmam Üniversitesi Sosyal Bilimler Dergisi*, *17*(1), 21-44.
21.	Koç-Koca, A., & Gürbüz, R. (2019). Üstün yetenekli ve diğer 4. sınıf öğrencilerinin matematik problemlerini çözme stratejileri üzerine bir araştırma (An investigation of the mathematics problem solving strategies developed by the 4th grade gifted and other students). *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*, *16*(1), 1638-1667.

22. İnan, E., (2019). Özel yetenekli öğrenciler için farklılaştırılmış matematik programı etkinlik örneği (An activity sample of differentiated maths programme for the gifted students). *Bilim Armonisi*, *2*(2), 15-23.
23. Mecek, S., & Taşlıdere, E. (2015). Üstün zekâlı/yetenekli öğrencilerin matematik ve fizik akademik başarılarının çeşitli değişkenler açısından incelenmesi (Investigation of gifted students mathematics and physics achievements in terms of different variables). *Pegem Eğitim ve Öğretim Dergisi*, *5*(5), 733-746.
24. Yurt, E., & Kurnaz, A. (2015). Özel yetenekli öğrencilerin matematik öz-yeterlik kaynaklarının matematik kaygıları üzerindeki etkilerinin incelenmesi (An investigation of the effects of the mathematics sources of selfefficacy on talented students' mathematics anxiety). *Pegem Egitim ve Ogretim Dergisi= Pegem Journal of Education and Instruction*, *5*(4), 347.
25. Akgül, S. (2019). Üstün yetenekli öğrencilerin matematik öz-yeterliklerinin matematik başarılarını yordama gücü (Predictive power of mathematical self-efficacy for gifted and talented students' mathematical achievement). *Ekev Akademi Dergisi*, *23*(78), 481-496.
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27. Yazgan-Sağ, G., (2016). Üstün yetenekli öğrencilerin matematiksel problem çözme durumlarındaki motivasyonel öngörüleri (The motivational forethoughts of gifted students in mathematical problem solving situations). *Kastamonu Üniversitesi Kastamonu Eğitim Dergisi*, *24*(3), 1165-1182.
28. Akgül, S., & Nuhoğlu, H. (2020). Üstün yetenekli öğrencilerin matematik kaygısı ve mükemmeliyetçilik düzeylerinin incelenmesi (Examining mathematics anxiety and the level of perfectionism of gifted and talented students). *Yaşadıkça Eğitim*, *34*(2), 299-312.
29. Aksoy, E., & Narlı, S. (2015). Matematik alanında üstün yetenekli öğrencilerin öğrenme stillerinin karar ağaçları kullanılarak incelenmesi (An examination of mathematically gifted students' learning styles by decision trees). *Türk Üstün Zeka ve Eğitim Dergisi*, *5*(2), 147-156.
30. Erdogan, F., & Gül, N. (2020). Özel yetenekli öğrencilerin matematiksel problem kurma becerilerinin incelenmesi (An investigation of mathematical problem posing skills of gifted students). *Pegem Journal of Education and Instruction*, *10*(3), 655-696.
31. Kaya, D. (2021). Türkiye'de matematik eğitimi alanında üstün zekalılar ve özel yetenekliler konusunda yürütülmüş tezlerin tematik ve yöntemsel eğilimleri (A thematic and methodological trends of postgraduate theses conducted on gifted and talented students in the field of mathematics education in turkey). *Uluslararası Bilim ve Eğitim Dergisi*, *4*(3), 157-178.
32. Özyaprak, M. (2016). Üstün zekâlı ve yetenekli öğrenciler için matematik müfredatının farklılaştırılması (Differentiation of math curriculum for gifted students). *Hasan Ali Yücel Eğitim Fakültesi Dergisi*, *13*(2), 115.
33. Kayabaşı, A., & Kayabaşı, N. (2022). Bilim ve sanat merkezleri destek grubu öğrencilerinin üç boyutlu kavram görüntüleri: cisim imgeleri (Three-dimensional concept images of science and art centers support group students: body images). *The Journal of Academic Social Science, 10*(129), 241-253.
34. Yazgan-Sağ, G., (2018). Matematikte üstün yetenekliliğe teorik bir bakış (A theoretical view to mathematical giftedness). *Milli Eğitim Dergisi*, *48*(221), 159-174.
35. Yıldız, A., & Baltacı, S. (2017). Bilim sanat merkezi matematik öğretmenlerinin kurdukları geometrik inşa problemlerine bilişsel seviye düzeyleri açısından ders imecesi çalışmalarının etkisi (The impact of lesson study practices on science art center mathematics teachers' cognitive levels in geometrical construction problems). *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*, *14*(1), 1481-1516.
36. Tertemiz, N. I., Doğan, A., & Karakaş, H. (2017). 4. sınıf üstün yetenekli öğrenciler ile başarılı akranlarının problem çözme stratejilerinin karşılaştırılması (A comparative study on problem solving strategies of gifted 4th grade students and their high-achieving counterparts). *Uluslararası Eğitim Programları ve Öğretim Çalışmaları Dergisi*, *7*(13), 161-188.
37. Öztürk, M., Akkan, Y., & Kaplan, A. (2014). Üstün yetenekli öğrencilerin matematik kavramına yönelik algılarının incelenmesi (Gifted students' perceptions towards the concept of mathematics review). *Journal for the Education of Gifted Young Scientists*, *2*(2), 49-57.
38. Saygılı, G., & Atahan, R. (2014). Üstün zekâlı çocukların problem çözmeye yönelik yansıtıcı düşünme becerilerinin çeşitli değişkenler bakımından incelenmesi (Analyzing reflective thinking skills towards problem solving of gifted children in terms of various variables). *Süleyman Demirel Üniversitesi Fen-Edebiyat Fakültesi Sosyal Bilimler Dergisi*, *2014*(31), 181-192.
39. Yıldız, A., Baltacı, S., Kurak, Y., & Güven, B. (2012). Üstün yetenekli ve üstün yetenekli olmayan 8. Sınıf öğrencilerinin problem çözme stratejilerini kullanma durumlarının incelenmesi (Examining the usage of problem-solving strategies by the eighth grade gifted and non-gifted students). *Uludağ Üniversitesi Eğitim Fakültesi Dergisi*, *25*(1), 123-143.
40. Akkuş-İspir, O., Sonay-Ay, Z., & Saygı, E. (2011). Üstün başarılı öğrencilerin öz-düzenleyici öğrenme stratejileri, matematiğe karşı motivasyonları ve düşünme stilleri (High achiever students' self regulated learning strategies, motivation towards mathematics, and their thinking styles). *Eğitim ve Bilim*, *36*(162), 235-246.
41. Sak, U. (2013). Üstün yetenekliler eğitim programları modeli (üyep) ve üstün yetenekli öğrencilerin matematiksel yaratıcılıkları üzerindeki etkisi (Education programs for talented students model (epts) and its effectiveness on gifted students' mathematical creativity). *Eğitim ve Bilim*, *38*(169), 51-61.
42. Kuloğlu, S., & Uzel, D., (2016). Üstün yetenekli öğrencilerin matematiksel tutumlarının farklı değişkenlere göre incelenmesi: Manisa bilim ve sanat merkezi örneği (The analysis of gifted students' mathematical attitudes according tdifferent variables: manisa science and art center example). *Üstün Yetenekliler Eğitimi ve Araştırmaları Dergisi (UYAD)*, *1*(2), Özel Sayı, 97-107.
43. Koca, A. K., & Gürbüz, R. (2022). Education of gifted and talented individuals in United States, Germany and Turkey: a comparison of education policies and its implementations. *Route Educational & Social Science Journal* , *9*(4), 591-614.
44. Kanlı, E. (2011). Üstün zekalı ve yeteneklilerin alan eğitiminde hızlandırma (Gıfted and talented people acceleratıon ın field educatıon). *HAYEF Journal of Education*, *8*(2), 95-104.
45. Sak, U. (2011). Üstün yetenekliler eğitim programları modeli (ÜYEP) ve sosyal geçerliği (An overview and social validity of the education programs for talented students model (EPTS)). *Eğitim ve Bilim*, *36*(161), 2013-229.
46. Erdoğan, F., & Erben, T. (2018). Özel yetenekli öğrencilerin doğal sayılarla dört işlem gerektiren problem kurma becerilerinin incelenmesi (Investigation of gifted students' problem posing abilities requiring arithmetical operations with natural numbers). *İnönü*

Üniversitesi Eğitim Fakültesi Dergisi, *19*(3), 531-546.

47. Arslan, M., & Nacaroğlu, O. (2020). Özel yetenekli öğrencilerin öklid'in 5. postulatı ile öklid dışı geometriler hakkındaki farkındalıklarının incelenmesi (Examination of awareness of gifted students on euclidean's 5th postulate and the non-euclidean geometries). *International Journal of Educational Studies in Mathematics*, *7*(1), 14-25.
48. Yıldız, A. (2021). Matematik tarihi etkinlikleri kullanımının özel yetenekli öğrencilerin matematik tarihine ilişkin görüşlerine etkisi (The effect of using mathematics history activities on the opinions of gifted students on history of mathematics). *Fen Matematik Girişimcilik ve Teknoloji Eğitimi Dergisi*, *4*(3), 189-202.
49. Altıntaş, E., & Özdemir, A. Ş. (2015). Geliştirilen farklılaştırma yaklaşımının öğrencilerin yaratıcı düşünme becerileri üzerindeki etkisi (The effect of the developed differentiated approach on creative thinking skills of the students). *Kastamonu Eğitim Dergisi*, *23*(2), 825-842.

Appendix 2. Codes of Theses (B)

		Author	Type	Date
1.	Özel Yetenekli Öğrencilerin Ve Matematikte Başarılı Akranlarının Problem Çözümlerini Dayandırdıkları Kanıt Şemaları: 4. Ve 5. Sınıf Öğrencileri Üzerinde Bir Durum Çalışması Proof Schemes On Which Gifted Students And Their Peers Who Are Successful In Mathematics Base Their Problem Solutions: A Case Study On 4th And 5th	Niymet Demirci	Doctoral	2023
2.	Matematiksel Modelleme Tabanlı Proje Üretimi Ve Yönetimi Programının Özel Yeteneklilerin Proje Üretimi Bağlamında Etkililiği The Effectiveness Of A Mathematical Modeling Based Project Production And Management Program Within The Context Of Project Production Of Gifted Students	Gülnur Özbek	Doctoral	2023
3.	Üstün Yetenekli Ortaokul Öğrencilerinin Geometri Problemleri Yoluyla Akıl Yürütme Becerilerinin İncelenmesi Investigation Of Reasoning Skills Of Gifted Primary Students Through Geometry Problems	Birnaz Tekerek	Doctoral	2023
4.	Üstün Yetenekli Olan Ve Olmayan Öğrencilerin Cebir Öğrenme Alanı Kazanım Edinimleri Ve Problem Kurma Becerileri: Müfredat Sıkıştırmanın Etkisi Gifted And Non-Gifted Students' Acquisition Of Learning Outcomes And Problem Posing Skills In Algebra: The Effect Of Curriculum Compacting	Hüseyin Tatlı	Master	2023
5.	Somut Nesneler Ve Dinamik Geometri Yazılımı Kullanımının Üstün Zekâlı Ve Yetenekli Öğrencilerin Geometri Performanslarına, Tutumlarına Ve Öz Yeterliğine Etkisi The Effect Of Concrete Objects And The Use Of Dynamic Geometry Software On Geometry Performance, Attitudes And Self-Efficiency Of Gifted And Talent Students	Fidan Çalışkan	Master	2023
6.	Özel Yetenekli Öğrencilerin Matematiksel Problem Çözme Süreçleri Ve Kullandıkları Stratejiler The Mathematical Problem Solving Processes Of Gifted Students And The Strategies They Used	Aygen Koç Koca	Doctoral	2022
7.	Üstün Yetenekli Tanısı Konulan Öğrenciler İle Tanı Konulmamış Öğrencilerin Üçlü Zekâ Kuramına Göre Matematiksel Yeteneklerinin İncelenmesi Investigation Of Mathematical Abilities Of Students Diagnosed As Gifted And Undiagnosed According To The Triarchic Intelligence Theory	Yasin Kurak	Doctoral	2022
8.	Üstün Yetenekli İlköğretim Öğrencilerinin Modelleme Yeterliliklerinin Mühendislik Temelli Model Oluşturma Etkinlikleri Yoluyla İncelenmesi An Investigation Of Elementary Gifted Students' Modeling Competencies Through Engineering-Based Model Eliciting Activities	Firdevs İclal Aydın Karataş	Doctoral	2022
9.	Bilsem Matematik Öğretmenlerinin Bilginin Gerekçelendirilmesine Yönelik Epistemolojik İnançları İle Teknoloji Kullanımlarının Değerlendirilmesi The Evaluation Of Bilsem Mathematics Teachers Epistemological Beliefs On The Justification Of Knowledge And Their Use Of Technology	Banu Şimşek	Master	2022
10.	Khan Academy İle 4. Sınıf Bilsem Öğrencilerinin Matematik Eğitimi Mathematics Education Of 4th Grade Bilsem Students With Khan Academy	İmren Çelik	Master	2022
11.	Ortaokul Öğrencilerinin Matematikte Özel Yetenekli Olma Durumları İle Yaratıcılıklarının Karşılaştırılması Comparison Of Mathematical Giftedness And Creavity Of Middle School Students	Berna Mercan	Master	2022
12.	Gerçekçi Matematik Eğitiminin Özel Yetenekli Öğrencilerin Matematik Başarılarına Etkisi The Effect Of Realistic Mathematics Education On Special Talent Students' Success In Mathematics	Zekai Çırak	Master	2022
13.	Bilim Sanat Merkezlerindeki Matematik Öğretmenlerinin Üstün Yetenekli Öğrencilerin Matematiksel Gelişimine Dönük Yaptıkları Uygulamalara İlişkin Deneyimleri Experiences Of Mathematics Teachers İn Science And Art Centers Regarding The Mathematical Development Of Gifted Students	Mustafa Çelik	Master	2022
14.	Üstün Yetenekli 8. Sınıf Öğrencilerinin İspat Yapma Süreçlerinin İncelenmesi Examination Of The Processes Of Processes Of Highly Talent 8th Grade Students	Betül Vatandaş	Master	2022
15.	Üstün Yetenekli Öğrencilerin Matematiksel Muhakeme Becerilerinin İncelenmesi E Investigation Of Mathematical Reasoning Skills Of Gifted Students	Tuğçe Çınargil	Master	2022
16.	Öğrenmede Farklı Güdüsel Stratejilere Sahip Üstün Yetenekli Öğrencilerin Matematiksel Soyutlama Süreçlerinin İncelenmesi The Investigation Of Mathematical Abstraction Processes Of Gifted Students Who Have Different Motivational Strategies For Learning	Mehmet Çağlar Çoşar	Doctoral	2021
17.	Üstün Yetenekli Öğrencilerin Matematik Sınıf Kültürlerinin Sosyo-Matematiksel Normlar Bağlamında İncelenmesi Examination Of Gifted Students' Mathematics Classroom Culture In The Context Of Sociomathematical Norms	Aslı Çakır	Doctoral	2021
18.	Bilsem Ortaokul Öğrencilerinin Matematiğe Yönelik Tutumlarının Çeşitli Değişkenler Açısından İncelenmesi Investigation Of Bilsem Secondary Students' Attitudes To Mathematics In Terms Of Various	Rıdvan Kartal	Master	2021

	Variables			
19.	Matematikte Özel Yetenekli Çocukların Problem Çözme Becerilerinin İncelenmesi A Determination Of Problem Solving Skills Of Mathematically Gifted Children	Sevinç Turkut	Master	2021
20.	Özel Yeteneklilerde Teknoloji Destekli Etkinliklerle Zenginleştirilmiş Matematik Öğretimi Mathematics Teaching Enriched With Technology Supported Activities For Gifted Students	Seçil Çırak	Master	2021
21.	Üstün Zekâlı Öğrencilerin Akranlarına Göre Problem Kurma Becerilerinin Problem Türlerine Göre Karşılaştırılması Problem For Gıfted Students Compared To Theır Peers Installatıon Skılls Accordıng To Problem Types Comparıson	Ahmet Burak Akdemir	Master	2021
22.	Üstün Zekâlı Öğrencilere Yönelik Farklılaştırılmış Matematik Öğretiminin Etkililiği: Bir Meta-Analiz Çalışması A Meta-Analysis On The Effects Of The Differentiated Mathematics Instruction For Gifted Students	Şerife Bilgiç	Master	2021
23.	İlkokul Dönemi Üstün/Özel Yetenekli Bireylere Yönelik Almanya Ve Türkiye'de Uygulanan Matematik-Fen Bilimleri Öğretim Programlarının Karşılaştırılması Comparisons Of Mathematics And Science Teaching Programs Of Gifted/Talented Individuals In Primary School Period In Turkey And Germany	Ulaş Özkahraman	Master	2021
24.	Matematikte Üstün Yetenekli Ve Üstün Yetenekli Olmayan Öğrencilerin Problem Çözme Süreçleri Problem-Solving Processes Of Mathematically Gifted And Non-Gifted Students	Yasemin Sipahi	Master	2021
25.	Matematikte Üstün Yetenekli Ortaokul Öğrencilerinin Matematik Öğretmenlerine İlişkin Algılarının İncelenmesi Investigation Of The Perceptions Of Mathematics Gifted Middle School Students About Mathematics Teachers	Yasemin Saka Kılıç	Master	2020
26.	Üstün Yetenekli Öğrencilerin Matematik Dersine Karşı Tutum Ve Öz-Yeterlilik Algılarının Bazı Değişkenler Açısından İncelenmesi An Investigation Of Attitudes And Self Efficiency Perceptions On Mathematics Course	Dilek Kocaoğlu	Master	2020
27.	Üstün Yetenekli Öğrencilerin Matematiksel İspat Yapma Süreçlerinin İncelenmesi The Investigation Of Mathematical Proving Processes Of Gifted Students	Duygu Dinamit	Master	2020
28.	Özel Yetenekli Öğrencilerin Karmaşık Sayılar Konulu Etkinlikler İle Üst-Bilişsel Bilgi Ve Becerilerinin İncelenmesi Examining Of Metacognitive Knowledge And Skills Of Gifted Students With Complex Numbers Activities	Gökhan Karaaslan	Doctoral	2019
29.	Matematik Öğretmenlerinin Özel Yetenekli Öğrencilerle İlgili Karşılaştıkları Sorunlar Ve Çözüm Yaklaşımları Problems And Solution Approaches Of Mathematics Teachers About Gifted Students	Şafak Can Öztürk	Master	2019
30.	Problem Kurma Temelli Etkinliklerle Özel Yetenekli Öğrencilerin Matematiksel Yaratıcılıklarının Geliştirilmesi Üzerine Bir Eylem Araştırması An Action Research On Developing Mathematical Creativity Of Gifted Students Through Problem Posing Activities	Ülkü Ayvaz	Master	2019
31.	Üstün Yetenekli Öğrencilerin Matematiksel Düşünme Becerilerine Göre Problem Kurma Süreçlerinin İncelenmesi Examination Of Problem-Posing Processes By Considering Mathematical Thinking Skills Of The Gifted Students	Kamil Yılmaz	Master	2019
32.	Felsefi Sorgulama İle Birleştirilmiş Matematik Etkinliklerinin Üstün Yetenekli Öğrencilerin Soru Sorma Becerilerine Etkisi The Effect Of Mathematics Activities Combine With Philosophical Inquiry On The Skills Of Asking Questions Of The Gifted Students	Gülünay Ergut	Master	2019
33.	Üstün Yetenekli Tanısı Konulmuş Ve Tanı Konulmamış Öğrencilerin Farklı Ortamlarda Matematiksel Düşünme Süreçlerinin İncelenmesi He Examination Of Mathematical Thinking Processes Of Students Diagnosed As Gifted And Undiagnosed In Different Environments	Yavuz İsa Aygün	Master	2019
34.	Üstün Yetenekli Öğrencilerin Orantısal Akıl Yürütme Becerilerinin İncelenmesi Examining Of Highly Gifted Student's Proportional Reasoning Skills	Şeyma Nemutlu İnanır	Master	2019
35.	Matematikte Üstün Yetenekli Türk Öğrencilerin Rutin Olmayan Problem Çözme Süreçleri Non-Routine Problem Solving Processes Of Turkish Mathematically Gifted Students	Damla Öztelli Ünal	Master	2019
36.	Üstün Zekâlı Ve Normal Zekâlı Ortaokul Öğrencilerinin Uzamsal Düşünme Yeteneklerinin Karşılaştırmalı Olarak İncelenmesi Investıgatıon Of Spatıal Thınkıng Skılls As A Comparıson Of Gıfted And Non-Gıfted Students'	Dinçkan Harput	Master	2019
37.	Farklılaştırılmış Bilgisayar Destekli Matematik Etkinliklerinin Üstün Yeteneklilerin Bilgi İşlemsel Düşünme Öz-Yeterlikleri Ve Matematiğe Yönelik Tutumlara Etkisi The Effect Of Differentiated Computer Supported Mathematical Activities On Gifted Sudents''	Nurullah Taş	Doctoral	2018

	Computational Thinking Self-Efficacy And Attitudes Towards Mathematics			
38.	İlkokula Devam Eden Üstün Yetenekli Çocukların Problem Çözme Becerilerine Eğitimin Etkisinin İncelenmesi To Examine Effect Of Problem Solving Skills Study On Gifted Children Who Continue Prep Class	Rıdvan Karabulut	Doctoral	2018
39.	Üstün Yetenekli Öğrencilerin Eğitiminde Kullanılabilecek Matematik Temelli Stem Etkinliklerinin Geliştirilmesi The Development Of Mathematics Based Stem Activities To Be Used In The Education Of Gifted Students	Mustafa Akay	Master	2018
40.	Özel Yetenekli Öğrencilerin Sayı Duyusu Düzeylerinin Belirlenmesi The Determination Of Gifted Students' Level Of Number Sense	Ceren Tunalı	Master	2018
41.	Matematik Öğretmenlerinin Üstün Yetenekliler Eğitimine İlişkin Tutum Ve Öz Yeterliklerinin İncelenmesi Examining Of Mathematic Teachers' Attitudes And SelfEfficacy About Gifted Educaton	Yelda Şişman	Master	2018
42.	Üstün Yetenekli Öğrencilerin Matematiksel Üretkenlik Düzeyleri İle Eleştirel Düşünme Becerileri Arasındaki İlişkinin İncelenmesi The Analysis Of The Relationship Between The Level Of Mathematical Productivity And Critical Thinking Ability Of Gifted Students	Fatma Yavuz Açıl	Master	2018
43.	Ortaokul Matematik Dersi Öğretim Programının Üstün Yetenekli Öğrencilerin Eğitimi Açısından Öğretmen Ve Öğrenci Görüşlerine Göre Değerlendirilmesi The evaluation of secondary school mathematics course curriculum according to teachers' and students' views in terms of gifted students' education	Tuğba Türk	Master	2018
44.	Üstün Yetenekli Öğrencilerin Matematiksel Yaratıcılıklarının Matematiksel Modelleme Etkinlikleri Sürecinde İncelenmesi Examining Mathematically Gifted Students' Mathematical Creativity Through The Process Of Model Eliciting Activities	Şeyma Şengil Akar	Doktora	2017
45.	Üstün Yetenekli Öğrencilere Yönelik Geliştirilen Farklılaştırılmış Matematik Dersi Öğretim Programının Etkililiği Efficiency Of Differentiated Mathematics Curriculum Designed For Gifted And Talented Students	Tünay Özçelik	Doctoral	2017
46.	Özel Yetenekli Çocuklarda Matematiksel Soyutlama Mathematical Abstraction With Gifted Children	Zeynephan Şimşekler	Master	2017
47.	Üstün Yetenekli Ve Normal Öğrencilerin Matematiksel Örüntü Başarılarının İncelenmesi The Examination Of Gifted And Normal Students' Mathematical Pattern Achievements	Şükran Dayan	Master	2017
48.	Üstün/Özel Yetenekli Öğrencilerin Geometri Düzeylerinin Bazı Değişkenler Açısından İncelenmesi Determination On Gifted/Special Talented Students' Geometry Levels In Terms Of Some Variables	Tuğçe Merve Gürlevik	Master	2017
49.	Beşinci Ve Altıncı Sınıf Matematikte Üstün Yetenekli Öğrencilere Yönelik Farklılaştırılmış Etkinliklerin Tasarlanması Ve Geliştirilmesi Design And Development Of Differentiated Tasks For 5th And 6th Grade Mathematically Gifted Students	Duygu Özdemir	Doctoral	2016
50.	Üstün Yetenekli Tanısı Konulmuş Ve Konulmamış Öğrencilerin Matematikte Yaratıcılıklarının İncelenmesi: Bir Özel Durum Çalışması An Analysis Of The Creativity Of The Students Who Assigned As Gifted And The Students Who Are Not Assigned As Gifted In Mathematics: A Case Study	Duygu Taşkın	Doctoral	2016
51.	Üstün Zekâlı Ve Yetenekli Öğrencilerin Algılanan Problem Çözme Becerilerinin Üstbilişsel Farkındalıkları Ve Eleştirel Düşünme Eğilimleri Açısından İncelenmesi The investigation of the perceived problem solving skills of the gifted and talented students in terms of their metacognitive awareness and critical thinking disposition	Murat Boran	Master	2016
52.	Üstün Yetenekli Öğrencilerin Bilsem Ve Matematik Kavramına Ait Metaforik Algılarının İncelenmesi The Research Of Gifted Students' Metophorical Perception Of Bilsem And Mathematics Concept	İsmail Satmaz	Master	2016
53.	2005-2014 Yılları Arasında Üstün Yeteneklilerin Matematik Eğitimi Üzerine Yapılan Çalışmalar On The Studies Related To The Mathematics Education Of The Gifted Between 2005-2014	Sema Nacar	Master	2015
54.	Üstün Zekâlı Ve Normal Zekâlı Ortaokul Öğrencilerinin Problem Çözme Yaklaşımlarının Karşılaştırmalı Olarak İncelenmesi A Comperative Investigation Of Problem Solving Approaches Of Gifted And Non-Gifted Middle School	Nihat Koçyiğit	Master	2015
55.	Matematiği Geogebra İle Öğretmenin Limit Ve Süreklilik Konularının Kavramsal Anlaşılmasına Olan Etkisi: Üstün Zekâlı Ve Yetenekli Türk Öğrencileri Örneği The Impact Of Teaching Mathematics With Geogebra On The Conceptual Understanding Of Limits And Continuity: The Case Of Turkish Gifted And Talented Students	Mustafa Aydos	Master	2015
56.	Farklılaştırılmış Problem Çözme Öğretiminin Üstün Zekâlı Ve Yetenekli Öğrencilerin Matematik Problemlerini Çözmelerine, Tutumlarına Ve Yaratıcı Düşünmelerine Etkileri The Effects Of Differentiated Problem Solving Instruction On Mathematical Problem Solving, Attitudes And Creative Thinking Of Gifted And Talented Learners	Eşref Akkaş	Doctoral	2014

57.	Üstün Yetenekli İlköğretim Öğrencilerinin Problem Çözme Stratejilerini Öğrenme Düzeyleri The Learning Levels Of The Gifted Elementary Students' Of The Problem Solving Strategies	Burcu Durmaz	Doctoral	2014
58.	Üstün Zekalı Öğrenciler İçin Yeni Bir Farklılaştırma Yaklaşımının Geliştirilmesi Ve Matematik Öğretiminde Uygulanması Development Of A New Dıfferentıatıon Approach For Gıfted Students And Applıcatıon In Mathematıcs Teachıng	Esra Altıntaş	Doctoral	2014
59.	Üstün Yetenekli Öğrencilerin Matematik Yaratıcılıklarını Açıklamaya Yönelik Bir Model Geliştirilmesi A Model Study To Examine Gifted And Talented Students' Mathematical Creativity	Savaş Akgül	Doctoral	2014
60.	9. Sınıf Üstün Zekâlı Öğrencilerin Geometri Problem Çözme Stratejileri Ve Van Hiele Geometri Düşünme Düzeyleri İle İlişkilendirilmesi 9th Grade Gifted Students' Geometry Problem-Solving Strategies And Associated With Van Hiele Geometric Thinking Levels	Mustafa Zeki Aydoğdu	Master	2014
61.	Matematik Alanında Üstün Yetenekli Ve Zekâlı Öğrencilerin Bazı Değişkenler Açısından Veri Madenciliği İle Belirlenmesi Determination Of The Mathematically Gifted And Talented Students Using Data Mining In Terms Of Some Variables	Esra Aksoy	Master	2014
62.	Farklılaştırılmış Matematik Öğretiminin Üstün Zekâlı Ve Yetenekli Öğrencilerde Erişiye, Yaratıcılığa, Tutuma Ve Akademik Benliğe Etkisi The Effect Of Differentiatedmathematics Teaching On Achievement, Creativity, Attitude And Academic Self-Concept Concerning Gifted And Talented Students	Yasemin Deringöl Karataş	Doctoral	2013
63.	Üstün Ve Normal Zekâ Düzeyindeki Öğrencilerin Matematikte Öz-Düzenleyici Öğrenmeleri Ve Motivasyonel İnançları Self-Regulated Learning And Motivational Beliefs Of Gifted And Normal Intelligence Level Students On Mathematics	Nilgün Kirişçi	Master	2013
64.	Sınıf Öğretmenlerinin Ve İlköğretim Matematik Öğretmenlerinin Matematikte Üstün Zekâlı Öğrencilere Yönelik Algıları Elementary Teachers' And Elementary Mathematics Teachers' Perceptions Of Mathematically Gifted Students	Sümeyra Tütüncü	Master	2013
65.	Üstün Zekalı Ve Yetenekli Çocukların Matematik Tutumlarının Çeşitli Değişkenler Açısından İncelenmesi Gıfted And Talented Chıldren Variety Of Mathematıcs Attıtudes Examining İt İn Terms Of Variables	Emine Hızlı	Master	2013
66.	Üstün Zekâlı Ve Yetenekli Öğrencilerde Farklılaştırılmış Geometri Öğretiminin Yaratıcılığa, Uzamsal Yeteneğe Ve Başarıya Etkisi The Effect Of Differentiated Geometry Teaching On Gifted And Talented Students In View Of Creativity, Spatial Ability And Success	Başak Kök	Doctoral	2012
67.	İlköğretim 4. Ve 5. Sınıf Fen Ve Teknoloji Dersi İle Matematik Dersinde Üstün Zekâlı Öğrencilere Yönelik Uygulamaların Değerlendirilmesi Evaluation Of The Practices For Gifted Students In Maths And Science And Technology Classes Of The 4th And The 5th Grades	Ezlam Susam	Doctoral	2012
68.	Üstün Yetenekli Ortaöğretim Öğrencilerinin Matematiksel Problem Çözme Durumlarındaki Öz Düzenleme Davranışları Self-Regulated Learning Behaviors Of Secondary Gifted Students In Mathematical Problem Solving Situations	Gönül Yazgan Sağ	Doctoral	2012
69.	İlköğretim 5. Sınıf Üstün Yetenekli Öğrenciler İçin Farklılaştırılmış Geometri Öğretiminin Yaratıcı Düşünme, Uzamsal Yetenek Düzeyi Ve Erişiye Etkisi The Effect Of Differentiated Geometry Teaching On Creative Thinking, Spatial Ability Level And Achievement For 5th Grade Primary School Gifted Students	Gülşah Battal Karaduman	Doctoral	2012
70.	Üstün Zekâlı Ve Yetenekli Öğrencilere Yönelik Farklılaştırılmış Matematik Öğretiminin Erişi, Tutum Ve Yaratıcılığa Etkisi The Effect Of Dıfferentıated Mathematıcs Teachıng For Gıfted And Talented Students On Reach, Attıtude And Creatıvıty	Melodi Özyaprak	Doctoral	2012
71.	İlköğretim İkinci Kademede Okuyan Üstün Yetenekli Olan Ve Olmayan Öğrencilerin Matematik Kaygı Düzeyleri Ve Bunların Kaynakları Gifted And Non-Gifted Students' Mathematics Anxiety Levels And Sources Of Their Math Anxiety İn Second Level Of Elementary Education	Ramazan Gürel	Master	2011