Journal for the Education of Gifted Young Scientists, 11(3), 439-465, Sept 2023
e-ISSN: 2149- 360X
jegys.org
dergipark.org.tr/jegys

youngwisepub.com
gencbilgeyayincilik.com

Research Article

Giftedness and mathematics education: a bibliometric analysis

Ayşe Arzu Arı [1], Barış Demir [2] and Ebru Çakır [3],

Mathematics and Science Education Department, Education Faculty, Kocaeli University, Kocaeli, Turkiye

Article Info

Received: 15 August 2023
Accepted: 28 September 2023
Available online: 30 Sept 2023

Keywords
Bibliometric analysis
Giftedness
Mathematics education

Abstract

The aim of this study is to conduct a bibliometric analysis of the articles written in the field of mathematics related to gifted students. Bibliometric analysis is the numerical examination of publications produced in a specific field and in a limited period and the relationships between these publications. The analysis included 104 research articles published in Turkish journals between 2010 and 2023 and accessed by searching Google Scholar, Dergipark and ULAKBIM databases. It is seen that the majority of the articles were written in 2020 (f: 18) and in Turkish (74%). A total of 52 articles by authors from 52 different institutions were found, and most of these articles belonged to MoNE teachers (f: 59, 27%). It was also found that the articles in this field were published in 69 different journals and the journals that published the most articles were "Turkish Journal of Gifted Intelligence" (5%) and "Journal of Gifted Education and Creavity" (5%). A total of 165 authors' publications on giftedness and mathematics were found and the authors who published the most were Avni Yıldız (f: 5) and Serdal Baltacı (f: 5). A total of 1244 words were used in the titles of the published articles and the words "gifted" (f: 57), "gifted" (f: 52), "students" (f: 41), "mathematics" (f: 37), "problem" (f: 31) were prominent. In the articles, 240 different keywords were used; "gifted students" (f: 18), "gifted students" (f: 16), "gifted students" (f: 12) and "problem solving" (f: 10) were the most preferred keywords. In 67% of the studies, fewer than 100 people were studied and the sample of students (f: 81, 78%) was preferred more. When the articles in the field of giftedness and mathematics were analyzed in terms of their purposes, "problem solving" (f: 24) and "STEM" (f: 13) came to the fore. In addition, 51 different scales were used in the analyzed articles and the most preferred scales were "Problem Solving Inventory (Heppner & Petersen, 1982)" (f: 4, 8%) and "Learning Styles Inventory (Kolb, 1984)" (f: 3, 6%). A total of 3364 different sources were cited in 104 articles; the most cited source in the field of giftedness was "Education of the Gifted and Talented (Davis G. A. & Rimm S.B., 1998)" (f: 16).

To cite this article:

Arı, A. A., Demir, B. & Çakır, E. (2023). Giftedness and mathematics education: a bibliometric analysis. *Journal for the Education of Gifted Young Scientists*, *11*(3), 439-465. DOI: http://dx.doi.org/10.17478/jegys.1356545

Introduction

Despite all these and other definitions, mathematics, which is defined as a system consisting of structures and relations reached as a result of successive abstractions and generalizations that help us understand and perceive the world by developing logical thinking (Baykul, 2014), is not just a pile of formulas and rules, as it includes counting, calculating, measuring and drawing operations used to solve problems in daily life. Therefore, learning mathematics does not only involve memorizing formulas and rules (Olkun & Toluk Uçar, 2006). Mathematics is a tool that individuals need to

[1] Corresponding Author: Dr., Mathematics and Science Education Department, Education Faculty, Kocaeli University, Kocaeli, Türkiye. E-mail: abural@kocaeli.edu.tr. ORCID: 0000-0002-0907-2663
[2] Dr., Mathematics and Science Education Department, Education Faculty, Kocaeli University, Kocaeli, Türkiye. E-mail: baris.demir@kocaeli.edu.tr. ORCID: 0000-0001-6997-6413
[3] MEB, İstanbul, Turkiye. E-mail: eramis0401@gmail.com. ORCID: 0000-0002-2335-8393

discover their abilities and direct them correctly, to follow a logical path in their thought system and in many activities (Bulut, 1988).

The concept of talent is defined as a person's ability to understand or do certain things, ability, innate quality, capacity (TDK, 2020). Giftedness, on the other hand, is defined as an individual who differs from his/her peers, constantly asks questions and inquires. Although there is no common definition of giftedness, there have been various definitions of this concept (Erdoğan, 2014). Gifted individuals have skills such as thinking, questioning, and inferring, as well as the ability to conduct scientific research (by gaining skills such as hypothesizing, determining variables, changing variables, designing experiments, and creating models) (Tortop, 2016). According to the Three Rings Theory developed by Renzulli (1986), giftedness is defined as the intersection of above-average general or special ability, motivation and creativity. In studies on giftedness, the concept of genius was first emphasized and the concepts of intelligence and genius were discussed on the basis of social sciences. Later, the concept of general intelligence as an individual's intelligence capacity (potential) came to the fore. When the studies on the concept of giftedness are examined in the historical process of a century, it is seen that especially in the recent period, the concept of domain-specific talent has been focused on (Şengil Akar, 2017). Tannenbaum (2003) defined the concept of giftedness as a state of performance and productivity that emerges depending on the abilities that individuals possess

According to the American National Association for Gifted Children (2006), gifted and talented individuals are defined as individuals who have special intellectual and general talents in the academic sense, have the potential to perform at a high level in areas such as leadership, creativity and visual art applications, and exhibit this potential to contribute positively to their countries. MoNE (2016) defines giftedness as an individual who performs at a higher level than their peers in intelligence, creativity, art, sports, leadership capacity or special academic fields. In the Science and Art Center regulation, giftedness is defined as a higher level of performance in intelligence, leadership, art, creativity capacity or special academic areas compared to peers (MoNE, 2016). Renzulli (1977), on the other hand, defines a gifted student as an individual who is willing to take responsibility, has high-level thinking skills, performs better than his/her peers in characteristics that require instant thinking, and has high productive power.

Mathematics is perhaps one of the most popular subjects among gifted students. The concept of giftedness in mathematics, like the concept of giftedness, is explained in different ways. This is due to the fact that students can exhibit behaviors indicative of mathematical giftedness in different ways (Gavin et al., 2013; Tsui, 2017). Sriraman (2005) defined individuals who have the cognitive ability to work expertly in mathematics as mathematically gifted individuals. Although experts have made different definitions about what giftedness in mathematics is, there are two main approaches in the literature. In the first approach, the performance of individuals in mathematics tests is accepted as an indicator of giftedness, while in the second approach, attention is drawn to the different cognitive performances of gifted individuals and cognitive processes that indicate mathematical creativity such as understanding mathematical structures, bringing different solutions to mathematical problems, and establishing relationships between mathematical structures are emphasized (Şengil Akar, 2017). According to Miller (1990), giftedness in mathematics is defined as unusual curiosity about mathematical and numerical knowledge, unusual quickness in learning, comprehending and applying mathematical ideas, abstract thinking, ability to see mathematical relationships, ability to make analogies, ability to think and solve mathematical problems in a flexible and creative way different from learned prototypes, and ability to transfer mathematical knowledge to a new and unlearned situation. Wagner and Zimmermann (1986) defined mathematical giftedness as a measurable set of abilities such as organizing materials, being aware of rules or patterns, changing the representation of the problem and seeing mathematical relationships in the new form, comprehending very complex structures and working within these structures, reversing the process, and finding (constructing) related problems. If an individual has high achievement in almost all of these abilities, he/she is likely to produce successful creative work in mathematics or other mathematics-related fields. Uzun (2004) stated that children who are gifted in mathematics have mental agility, original interpretation ability, superior generalization ability, comprehension ability above their peers, unusual mathematical processing ability, can solve difficult problems that their peers cannot solve, can associate mathematics with other categories, can solve problems in a very short time, focus on different solution methods and

application, analysis, synthesis and evaluation steps in solutions, and ask unusual problems that are difficult to solve and require effort.

The findings obtained as a result of bibliometric studies also provide the opportunity to determine how the related discipline has developed, to reveal problems or deficiencies, and to discuss the corrections or suggestions to be made in this context (Üstdiken & Pasadeos, 1993; Şakar & Cerit, 2013; Ulu & Akdağ, 2015). When the mathematics literature is examined, it is seen that bibliometric analysis studies both in Turkey and abroad have increased in recent years. Özkaya, mathematics education (2018) and STEM education (2019); Hwang and Tu (2021), artificial intelligence in mathematics education; Aydın (2021), mathematics and creativity; Aydemir (2021), geometry learning domain; Muhammad, Darmayanti, and Arif (2023), learning through discovery in mathematics learning; Phan et al. (2022) and Bayrak (2022), realistic mathematics education; Dede and Özdemir (2022), noticing skills in mathematics education; Kurtuluş and Yılmaz (2022), STEM education; Poçan (2023), digital game-based learning in mathematics education. Çelik, Kaymakçı, and Can (2023) conducted a different study by analyzing the studies on the career development of gifted students through bibliometric analysis. Bıçakçı and Baloğlu (2021), who conducted a bibliometric analysis on another topic related to gifted students, examined research on personality traits.

There are thematic analyses on gifted students in various fields. For example, Kadıoğlu Ateş and Mazı (2017) examined graduate theses on gifted students between 2010 and 2016 without making disciplinary restrictions. Kırnık and Susam (2018), Kara and Nuhoğlu (2022), Ayvacı and Bebek (2019), Özenç and Gül Özenç (2013) also analyzed theses on the same topic, but they differed in the time periods investigated. Bulgurcu (2021) contributed to the literature by analyzing international doctoral dissertations written in English in the field of giftedness. Dönmez and İdin (2017) analyzed the studies on gifted students specifically in the field of science education from various aspects. In the mathematics literature on gifted students, there have also been authors who have applied thematic analysis. Among them, Nacar (2017) examined theses and articles on this subject in Turkey and abroad; Kaya (2021) analyzed the thematic and methodological trends of graduate theses; İnan and Mert Uyangör (2022) analyzed master's and doctoral studies in the database of the National Thesis Center of the Council of Higher Education; Demirci and Işık Tertemiz (2022) analyzed publications in national and international journals publishing in the field of giftedness between 2000 and 2022.

In the aforementioned studies, the analysis of the mathematics literature on gifted students was routinely limited to the topics, year of publication, type of publication, etc. In this study, on the other hand, the keywords used, words used in titles, authors, journals, institutions and most importantly, bibliographies were examined in detail as required by bibliometric analysis.

Research problem

- What is the distribution of the studies in the mathematics literature on gifted/talented students according to the years and the language in which the studies were written?
- What is the distribution of the keywords used in the mathematics literature on gifted students?
- Which words are mostly used in the titles of the researches in the mathematics literature on gifted students?
- What is the distribution of the samples selected in the mathematics literature on gifted students?
- What are the aims of the studies conducted in the mathematics literature on gifted students and the characteristics examined for this purpose?
- What are the most commonly used scales in the mathematics literature on gifted students?
- Who are the researchers who have contributed the most to the mathematics literature on gifted students?
- Which institutions have contributed the most to the mathematics literature on gifted students?
- What are the journals that contribute the most to the mathematics literature on gifted students?
- What are the most common sources of research in the mathematics literature on gifted/talented students?

Method

Descriptive research model was used in this study. Descriptive research can be defined as explaining a particular event, phenomenon or situation with its existing characteristics (Büyüköztürk et al., 2017). In the study, bibliometric analysis technique was used because it was desired to examine the articles published in the field of mathematics education related to gifted students in terms of bibliometric parameters and to reveal the current situation. Bibliometric studies enable the evaluation of scientific studies in terms of both quantity and quality by determining the contributions of scientists working in that field to the relevant discipline, determining the quality of academic journals or determining their relationship with other disciplines (Al et al. 2010; Al & Soydal, 2012; Zupic & Čater 2015; Huang et al. 2006; Üstdiken & Pasadeos, 1992; Yozgat & Kartaltepe, 2009).

Data Collection

For the purpose of the study, the publications in Google Scholar, Dergipark and ULAKBIM databases were scanned starting from 2010 in order to access research on gifted students. The reason for not using SCOPUS and WoS databases, which are frequently used for bibliometric analysis, is that this study aims to analyze publications originating from Turkey. In addition, the review of the relevant literature was conducted in June 2023; therefore, publications after this date were excluded from the analysis. It was ensured that the studies to be analyzed were research articles in mathematics, geometry or STEM fields with "gifted/special talent", "gifted/special intelligence" in the keywords, abstract or title, and graduate theses, papers or review articles on the subject were excluded from the study.

Data Analysis

We reached 104 research articles that were decided to be included in the study. These articles were started to be examined by creating an evaluation table according to the criteria determined by using MS EXCEL (year and language of publication, keywords used, words in the titles of the studies, samples selected in the studies, purposes of the studies and the characteristics examined in line with this purpose, scales used in the studies, researchers, institutions and journals contributing to the literature, sources that the studies were fed). This evaluation form was filled in separately by the researchers. In order to ensure that the study yielded valid and reliable results, the researchers first created the evaluation table independently of each other and then compared the tables to measure consistency. Miles and Huberman (1994) found that the reliability formula was used in the study, a reliability of 95% was calculated. When the agreement between the researchers is 70% and above, it shows that the research data is reliable and can be used (Miles & Huberman, 1994). The most important point to be considered while examining the studies is to take the studies exactly as they are written without changing any words since the studies are examined word-based in bibliometric analysis. In addition, Turkish or English words were taken in the language in which they were written without translation and included in the analysis.

Findings

Distribution of research by years and languages

Between 2010 and 2023, research articles in the mathematics literature on gifted students were analyzed in terms of year and language distribution. The findings are shown in Figure 1 and Figure 2.

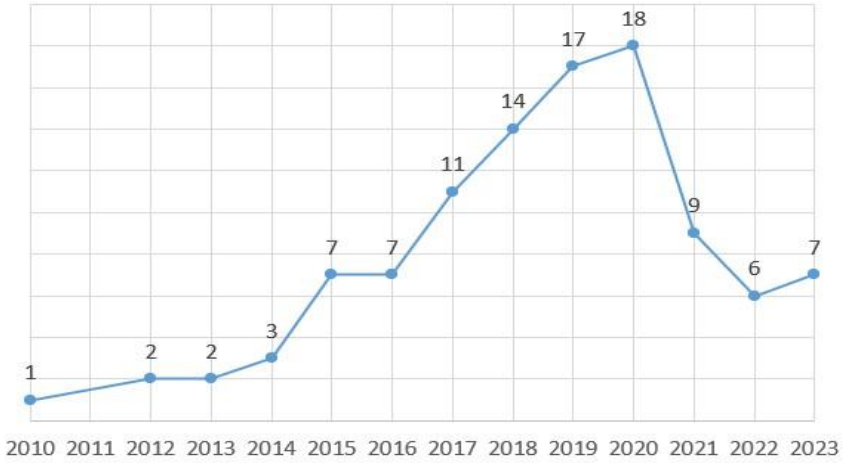

Figure 1. Distribution of the research on gifted students in the mathematics literature according to years

According to Figure 1, a total of 104 studies were conducted between 2010 and 2023. These studies are distributed as 1 study in 2010, 2 studies in 2012 and 2013, 3 studies in 2014, 7 studies in 2015 and 2016, 11 studies in 2017, 14 studies in 2018, 17 studies in 2019, 18 studies in 2020, 9 studies in 2021, 6 studies in 2022 and 7 studies in 2023. In 2011, no study was found.

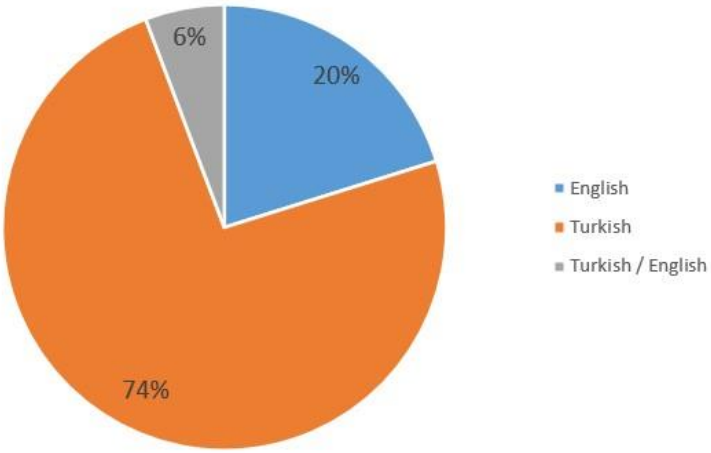

Figure 2. Distribution of research on gifted students in the mathematics literature according to languages

Figure 2 shows that 74% of the studies in this field were written in Turkish, 20% in English and 6% in both Turkish and English.

Distribution of keywords used in the studies

A total of 240 different keywords were found in 104 research articles analyzed in the mathematics literature on gifted students. The distribution of these keywords is shown in Figure 3.

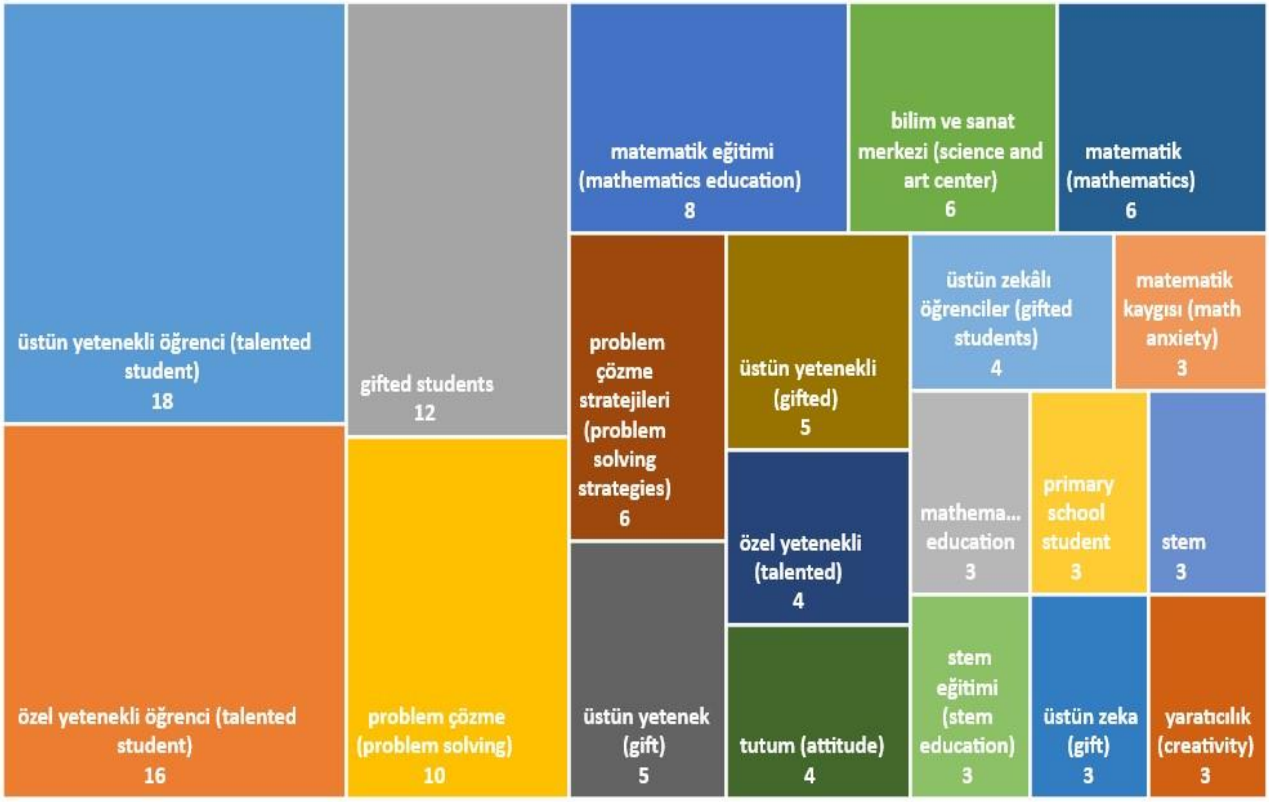

Figure 3. Distribution of the keywords of the studies in the mathematics literature on gifted students

As shown in Figure 3, the most frequently used keywords were "gifted student" in 18 studies and "gifted student" in 16 studies. Following these; "gifted students" used 12 times, "problem solving" used 10 times, "mathematics education" used 8 times, "science and art center", "mathematics", "problem solving strategies" used 6 times each, "gifted" and "gifted" used 5 times each, The keywords "gifted students", "gifted", "attitude", "mathematics anxiety", "stem", "primary school student", "mathematics education", "stem education", "giftedness", "creativity" were used 4 times each, and 3 times each. The usage of other keywords varies between 1 and 2.

The most common words in the titles of the studies

There are a total of 1243 words in the titles of 104 research articles examined in the mathematics literature on gifted students. The visualization of the frequency of use of these words is shown in Figure 4 and their ranking is shown in Table 1.

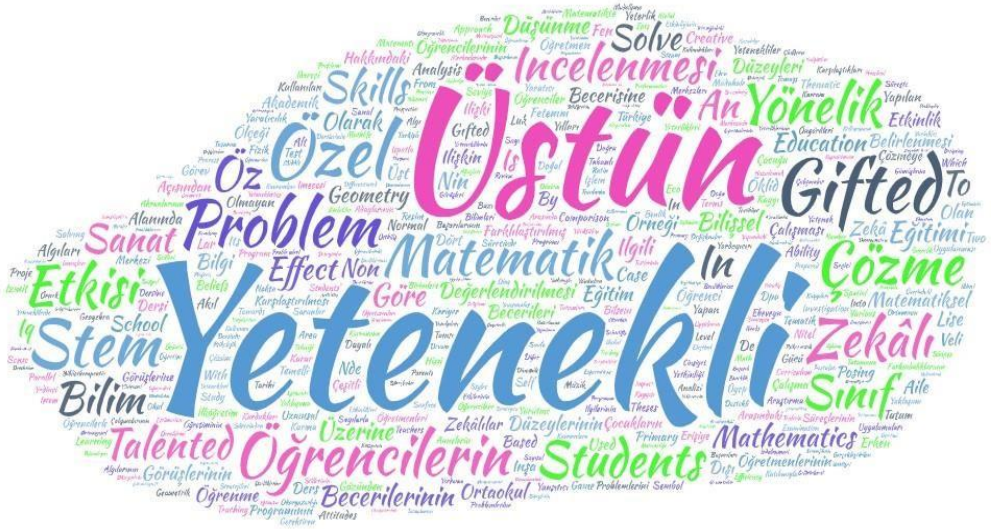

Figure 4. Weighted representation of the words in the titles of the studies in the mathematics literature on gifted students

Table 1. Frequency table of the words in the titles of the studies in the mathematics literature on gifted students

Words	f
Talented	57
Superior	52
Student	41
Mathematics	37
Problem	31
Review	25
Gifted	24
Special	23
Students	20
Directional	20
Solving	18
STEM	16
Intelligent	12
Mathematics	9
Talented	8

According to Table 1, the words "gifted" used 57 times and "superior" used 52 times were the most preferred words in the titles of the analyzed studies. The following words were used: "students" 41 times, "mathematics" 37 times, "problem" 31 times, "examine" 25 times, "gifted" 24 times, "special" 23 times, "students" and "directed" 20 times, "solving" 18 times, "stem" 16 times, "intelligent" 12 times, "mathematics" 9 times and "talented" 8 times.

Preferred samples in research

When the 104 research articles examined in the mathematics literature on gifted students were classified in terms of their samples, Table 2 was formed.

Table 2. Graph of the samples of the studies conducted in the mathematics literature on gifted students

Sample Group	%	Sample	f
Teacher	9%	SAC math teacher	3
		SAC teacher	2
		SAC teacher and psychological counselor	1
		Math teacher	1
		Math and primary school teacher	1
		Pre-school and primary school teacher	1
Student	77%	Talented and normal primary school students	2
		Talented and normal middle school students	8
		Talented primary and middle school students	3
		Talented and normal primary school and middle school students	2
		Talented primary school students	4
		Talented high school students	7
		Talented pre-school students	2
		Talented middle school students	53
Parents	2%	Parents of gifted and normal students	1
		Parents	1
Publications	5%	Thesis	2
		Articles	2
		Thesis and articles	1
Prospective teachers	3%	Pre-Service Teachers of Math	2
		Pre-Service Teachers of Gifted Students	1

Mixed groups	4%	SAC math teacher and Talented middle school students	1
		SAC math teacher and manager and parents and gifted students	1
		Talented middle school students and parents	1
		Talented middle school students and math teachers	1

As can be seen in Table 2, the most preferred sample is student groups (77%). Other samples were teachers (9%), publications (5%), prospective teachers (3%), mixed groups (teacher and student, student and parent) (4%) and parents (2%). Among the student groups, the most preferred group was gifted middle school students with 65%. In the studies conducted with teachers, BİLSEM teachers (56%) and specifically BİLSEM mathematics teachers (22%) were mostly involved. Likewise, in the studies conducted with pre-service teachers, pre-service mathematics teachers (67%) constitute the most preferred group. In the studies examining publications on gifted students, articles and theses were examined equally (40%). In addition, 67% of the 104 articles analyzed in this study had a sample size of less than 100 people.

Characteristics and research objectives

The classification of the most examined characteristics in 104 research articles analyzed in the mathematics literature on gifted students is shown in Table 3.

Table 3. Characteristics examined in the mathematics literature on gifted students

Area Under Review	**f**
Problem solving	24
Stem	13
Tendency	10
Skill	7
Perception (Opinion)	6
Differentiated program	6
Material development	7

When Table 3 is examined, it is seen that most of the studies were conducted under the title of "problem solving" with 24 out of 104 studies. The aims of the studies under this heading are shown in Table 4.

Table 4. Objectives of the studies in the mathematics literature on gifted students under the title of "Problem Solving"

Category	**Purpose of the research**	No
Impact of a method	Investigation of the effect of bibliotherapy method on problem solving skills of gifted students	A21
	Investigation of the effect of early intervention program on problem solving skills of gifted preschool students	A85
Comparison	Determination of problem-solving strategies of gifted and non-gifted students	A89
	Investigating the success of gifted and non-gifted students in solving non-routine problems	A103
	Comparison of selective problem-solving technique satisfaction levels of students with and without a diagnosis of giftedness	A102
	Comparison of the strategies used by gifted and other students in solving mathematical problems	A98
	Comparison of non-routine problem-solving strategies of gifted primary school 4th grade students and successful primary school 4th grade students not diagnosed as gifted	A1
Process review	Investigating the mathematical literacy problem solving processes of gifted students	A55
	Investigating gifted students' perceptions of mathematics problem solving attitudes and processes	A93
	Determination of gifted students' performance in solving mathematical problems and the strategies they use while solving problems	A56
	Determination of metacognitive skills of gifted students during problem solving	A2
	Determination of metacognition levels of gifted students towards problem solving skills	A78
	Analyzing creative problem-solving styles of gifted students	A12
	Determination of problem-solving strategies of gifted students	A84
	Examining reflective thinking skills for problem solving	A96
	Determination of creative problem-solving skills of gifted students	A9
	Determination of gifted students' self-concept in problem solving skills	A19
Relationship with variables	Determination of problem-solving skills of gifted students according to their gender and grade level	A35
	The relationship between problem solving strategies and Van Hiele geometric thinking levels of gifted students	A3
	Determining the relationship between problem solving competencies and career development of gifted students	A77
	Investigating the relationship between problem solving perceptions and cognitive flexibility levels of gifted education candidates	A82
	Investigation of reflective problem-solving skill levels of gifted students according to age, gender, parental education level, playing computer games and playing sports	A101
	Examining the relationship between parental competence levels and problem-solving skills of mothers of gifted students according to gender, number of children, marital union status, education level of their husbands and themselves, and perceived economic income	A79
	Determination of the relationship between intelligence and problem-solving skills of gifted students	A27

According to Table 4, the subcategories of the studies in which the problem solving skills of gifted students were examined were: investigating the effect of a method (f: 2), comparing the problem solving skills of gifted and nongifted students (f: 5), examining the problem solving process (f: 10) and investigating the relationship between problem solving skills and various variables (f: 7). Bibliotherapy method and early intervention program were the methods investigated for their effectiveness on problem solving skills of gifted students. In the studies examining the relationship between

problem solving skills and various variables, these variables include gender, grade level, parental education level, intelligence levels, etc.

Table 5 below shows the aims of 13 studies on "STEM" conducted with gifted students.

Table 5. Aims of the studies on "STEM" in the mathematics literature on gifted students

Category.	**Purpose of the research**	**No**
Evaluation (Opinion taking)	Taking the opinions of BİLSEM teachers on STEM education approach	A16
	Gifted students' strategies and experiences in the process of designing STEM-oriented environmentally friendly projects	A30
	Determining the perspectives of teachers, administrators, parents and gifted students on FETEMM approach	A44
	Determination of student views on GeoGebra within the framework of STEM education	A61
	Investigation of gifted students' interest in STEM professions according to gender, program of study and parental education status	A58
	Determination of STEM attitude levels of gifted students and their interest in STEM career occupations	A59
	Determination of STEM attitude, epistemological beliefs and STEM attitude epistemological beliefs of gifted students	A13
	Determining the STEM practices of gifted students and participants' views on Algodoo as a STEM material	A86
Impact review	Examining the effect of STEAM education process on teachers' critical thinking	A48
	Effectiveness of STEM education nature and science camp	A20
	Evaluation of the gains achieved by students with STEM education	A87
	The effect of STEM activities for gifted students	A50
	Examining the effect of STEM on problem-posing skills of gifted students	A62

According to Table 5, the subcategories of STEM studies conducted with gifted students were identified as STEM-related evaluation (opinion taking) (f: 8) and studies examining the effects of STEM programs on students' learning (f:5). It is noteworthy that the studies in which the opinions on STEM were evaluated had teacher (f: 1), student (f: 6) and mixed (students, parents, teachers and administrators) samples (f: 1). The following Table 6 shows the aims of the 10 studies on "disposition" conducted with gifted students.

Table 6. Aims of the studies under the title of "disposition" in the mathematics literature on gifted students

Category.	Purpose of the research	No
Self-efficacy and attitude	Examining the attitudes and self-efficacy of prospective elementary mathematics teachers towards gifted education according to gender, grade level, type of high school they graduated from, whether they have participated in a course or activity related to gifted education before, whether they are willing to work in the Science and Art Center after graduation, and whether they have a gifted individual in their environment	A23
	Investigation of gifted students' attitudes towards mathematics course, academic self-efficacy and self-perception levels according to gender, grade level and learning styles	A54
	Investigation of gifted students' mathematics literacy achievement and mathematics literacy self-efficacy perceptions in terms of school type, grade level, parental education level and occupation	A53
	Investigating the predictive power of gifted students' mathematics self-efficacy on their mathematics achievement by gender	A92
Math anxiety	Comparison of mathematics anxiety levels of students with and without a diagnosis of giftedness	A88
	Investigating the effects of gifted students' mathematics selfefficacy resources on their mathematics anxiety	A51
	The power of gifted students' perfectionism levels to predict math anxiety	A91
Other	Determination of gifted students' motivational insights about math problems	A94
	Determination of gifted students' cognitive predictions about mathematical problems	A90
	Determining the relationship between self-regulated learning and motivational beliefs of gifted students in mathematics	A69

According to Table 6, the subcategories of the dispositional studies conducted with gifted students are selfefficacy and attitude (f: 4), mathematics anxiety (f: 3) and other (f: 3). In the studies named as "other" category, motivational and cognitive predictions about mathematics problems were examined, and the relationships between self-regulated learning in mathematics and motivational beliefs were also examined.

Table 7 shows the aims of 7 studies on "skills" conducted with gifted students.

Table 7. Objectives of the studies under the title of "skills" in the mathematics literature on gifted students

Purpose of the research	No
Determination of gifted students' reasoning skills in geometry learning domain	A73
Investigating the effect of mathematics and art activities on the spatial abilities of gifted students	A31
Investigating the abstraction process of gifted students	A100
Determination of repeated pattern skills of gifted students	A60
Comparison of mathematical thinking process skills of gifted and non-gifted students	A97
Gifted education program model (GEP) and its effect on gifted students' mathematical creativity	A99
Metacognitive knowledge and skills of gifted students about complex numbers	A52

According to Table 7, studies examining the skills of gifted students were grouped under a single category. Among the skills examined were gifted students' reasoning skills, spatial abilities, pattern skills, mathematical thinking process skills, etc.

Table 8 shows the aims of 6 studies on "perception (opinion)" conducted with gifted students.

Table 8. Aims of the studies under the title of "perception (opinion)" in the mathematics literature on gifted students

Category.	Purpose of the research	No
Mathematics	Investigation of gifted students' mental images of mathematics concept	A74
	Determining the effect of history of mathematics activities on gifted students' perceptions of history of mathematics	A36
	Investigating the perceptions of gifted elementary school students about mathematics courses in their schools	A41
Gifted student	Investigation of mathematics teachers' judgments about the characteristics of gifted students in mathematics	A47
	Determination of mathematics teachers' views on giftedness	A38
Math teacher	Determination of gifted students' perceptions of mathematics teachers	A42

According to Table 8, the subcategories in the studies conducted with gifted students to determine perceptions (opinions) were perceptions towards mathematics (f: 3), perceptions towards gifted students (f: 2) and perceptions towards mathematics teachers (f: 1). While the studies conducted to determine the perceptions towards gifted students were conducted with the sample of mathematics teachers, the other studies were conducted with the sample of gifted students.

Table 9 shows the objectives of 6 "differentiated curriculum studies" for gifted students.

Table 9. Aims of the studies on "differentiated curriculum" in the mathematics literature on gifted students

Category.	Purpose of the research	No
Geometry	Determining the effects of differentiated geometry instruction (Polygons and Geometric Objects) on the spatial ability of gifted students	A63
	Investigating the effect of a differentiated geometry program (Geometry, Measurement and Numbers units) on creativity, spatial ability and achievement levels of gifted students	A25
	The effect of a differentiated mathematics program (Geometric Bodies subject) on retention and easy learning	A46
Mathematics	Determining the effect of a differentiated mathematics curriculum (Fractions subject) on the academic self-concept of gifted students	A26
	Determining the effect of differentiated problem solving instruction on gifted and talented students' success in solving mathematical problems and creative thinking	A28
STEM	Investigating the effect of differentiated STEM applications on creativity and attitude	A83

According to Table 9, differentiated curricula were developed for gifted students mostly in geometry (f: 3), while differentiated curricula were also developed in mathematics (f: 2) and STEM (f: 1). In these studies, a differentiated curriculum was developed in a selected subject (geometric objects, fractions, problem solving) and the effects of this curriculum on various variables (academic self-concept, creative thinking, retention and easy learning, spatial ability) were examined.

Table 10 shows the aims of 7 studies on "material development" conducted with gifted students.

Table 10. Objectives of the studies on "material development" in the mathematics literature on gifted students

Category.	Purpose of the research	No
Scale	Development of "STEM Self-Efficacy Scale" for gifted education	A45
	Development of "Mathematical Modeling Competencies" scale for gifted students	A40
	Adaptation of the TOMAGS scale into Turkish	A8
	Developing a scale to measure gifted students' perceptions of problem solving skills	A68
Event / Program	To develop and implement a mathematics program suitable for distance education for gifted students and to test the effectiveness of the program	A34
	Developing a FETEMM activity that can be implemented with the participation of families of gifted students in Science and Art Centers	A17
	Evaluation of the program developed for teaching problem solving skills of gifted students	A95

According to Table 10, while scale studies (f: 4) were prominent in material development studies conducted for gifted students, activity/program development studies (f: 3) were also conducted. Within the scope of scale studies, scale development was conducted in 3 studies (A45, A40, A68) and the existing scale was adapted into Turkish in the other study (A8).

Scales used in research

In 104 research articles analyzed in the mathematics literature on gifted students, 51 different scales were used. The most commonly used scales are shown in Table 11.

Table 11. Table of scales used in the mathematics literature on gifted students

Scale name	Scale imprint	f	%	Research no.
Problem Solving Inventory	Heppner and Petersen (1982)	4	8%	A76, A79, A77, A82
Learning Style Inventory	Kolb (1984)	3	6%	A54, A37, A76
Problem Solving Inventory for Children	Serin, Bulut, Serin and Saygılı (2010)	2	4%	A35, A19
Mathematics Anxiety Scale	Bindak (2005)	2	4%	A51, A91
Reflective Thinking Skill Scale for Problem Solving	Kızılkaya and Aşkar (2009)	2	4%	A96, A101
STEM Attitude Scale	Friday Institute for Innovative Practices in Education (2012)	2	4%	A59, A13

According to Table 11, Heppner and Peterson's (1982) "Problem Solving Inventory" (f: 4, 8%) was used the most in mathematics studies on gifted students. Kolb's (1984) "Learning Style Inventory" (f: 3, 6%) came second, followed by Serin, Bulut, Serin, and Saygılı's (2010) "Problem Solving Inventory for Children", Bindak's (2005) "Mathematics

Anxiety Scale", Kızılkaya and Aşkar's (2009) "Reflective Thinking Skills Scale for Problem Solving" and Friday Institute for Innovative Practices in Education's (2012) "STEM Attitude Scale" (f: 2, 4%). The scales used in other studies are different from each other.

The researchers who have done the most work in this field

A total of 165 authors took part in 104 research articles analyzed in the mathematics literature on gifted students. The number of publications of these authors in the field and the 14 authors with the highest contribution rates to publications are shown in Table 12. The contribution rates given here are obtained by dividing the articles by the number of authors; therefore, the contribution rates of articles written with co-authors decrease.

Table 12. Table of the authors with the most publications in the mathematics literature on gifted students

Author	Number of publications	Total contribution rate
Avni YILDIZ	5	1,66
Serdal BALTACI	5	1,66
Fatma ERDOĞAN	4	2,00
Adem DOĞAN	4	1,83
Abdullah KAPLAN	4	1,33
Mesut ÖZTÜRK	4	1,33
Duygu ÖZDEMİR	3	2,50
Erhan ŞAHİN	3	2,50
Ramazan GÜRBÜZ	3	1,50
Ümit DAVASLIGIL	3	1,50
Ziya ARGÜN	3	1,50
Aygen KOÇ KOCA	3	1,50
Yasar AKKAN	3	1,00
Cahit AYTEKİN	3	0,92

According to Table 12, Avni YILDIZ and Serdal BALTACI (f: 5, contribution rate: 1,66) contributed the most to mathematics studies on gifted students. Other researchers who contributed to the field were Fatma ERDOĞAN (f: 4, contribution rate: 2), Adem DOĞAN (f: 4, contribution rate: 1,83), Abdullah KAPLAN (f: 4, contribution rate: 1,33), Mesut ÖZTÜRK (f: 4, contribution rate: 1,33).

Institutions with the most publications

It was found that 165 authors of the 104 research articles examined in the mathematics literature on gifted students belonged to 52 different institutions. The 9 most frequently mentioned institutions are shown in Figure 5.

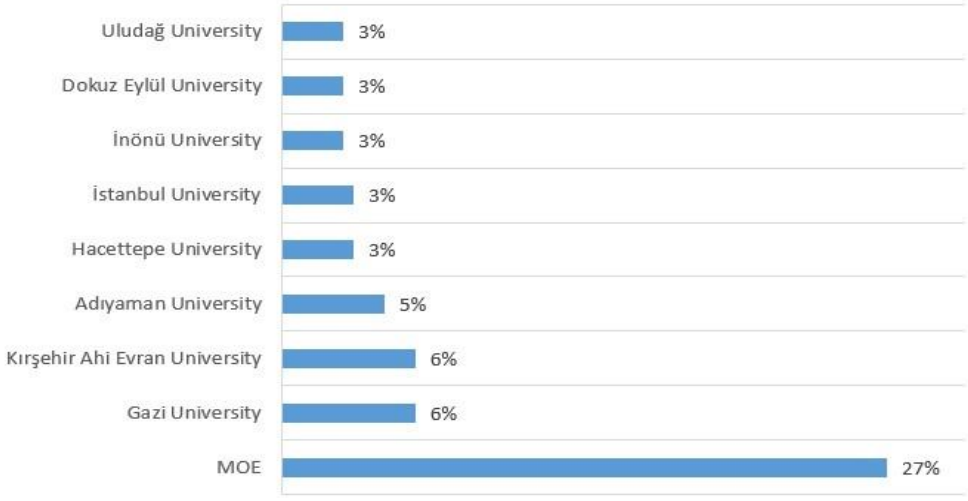

Figure 5. Graph of the institutions with the highest number of publications in the mathematics literature on gifted students

As can be seen in Figure 5, authors affiliated to the Ministry of National Education published the most publications (27%). Gazi University and Kırşehir Ahi Evran University (6%) ranked second, followed by Adıyaman University (5%). Hacettepe University, Istanbul University, İnönü University, Dokuz Eylül University and Uludağ University are also on the list of institutions with the highest number of publications in the mathematics literature in the field of gifted students with a rate of 3%. The number of publications of other institutions varies between 1 and 2.

Top published journals

It was found that 104 research articles analyzed in the mathematics literature on gifted students were published in 69 different journals. The 7 journals with the highest number of publications in this field are shown in Figure 6.

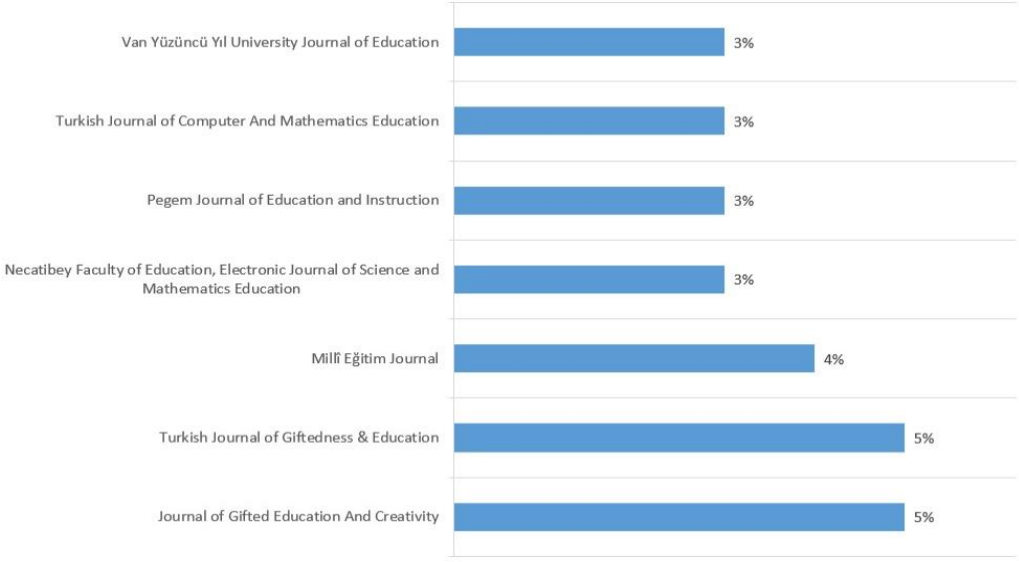

Figure 6. Graph of the journals with the highest number of publications in the mathematics literature on gifted students

According to Figure 6, the journals with the highest number of publications in the mathematics literature on gifted students are Turkish Journal of Gifted Education and Training and Journal of Gifted Education and Creativity (5%). The Journal of National Education (4%) and Necatibey Education Faculty Electronic Journal of Science and Mathematics Education, Pegem Education and Training Journal, Turkish Journal of Computer And Mathematics Education and Van Yüzüncü Yıl University Faculty of Education Journal (3%) are also among the journals that have made a name for themselves in the field. The number of publications in other journals varies between 1 and 2.

The most popular sources for publications

t is seen that a total of 3364 different publications/books/articles were included in the bibliography of 104 research articles examined in the mathematics literature on gifted students. Table 13 shows the table of the 15 most utilized sources.

Table 13. Table of the most frequently used sources in the mathematics literature on gifted students

Author	Publication name	Number of citations
MEB	Mathematics Curriculum (Grades 1, 2, 3, 4, 5, 6, 7 and 8)	33
MEB	Science and Art Center Directive	28
Yıldırım A. and Şimşek H.	Qualitative Research Methods in Social Sciences	28
Orton A. and Wain G.	Problems, Investigations and An Investigative Approach. In, A. Orton & G. Wain (Eds.). Issues In Teaching Mathematics	24
Davis G. A. and Rimm S.B.	Education of the Gifted and Talented	16
Karasar, N.	Scientific Research Method	16
Büyüköztürk Ş., Çakmak E. K., Akgün Ö. E., Karadeniz Ş. and Demirel F.	Scientific Research Methods	15
Krutetski V. A.	The Psychology of Mathematical Abilities In School Children	14
Miles B. M. and Huberman A. M.	Qualitative Data Analysis	14
Miller R. C.	Discovering Mathematical Talent. (Eric Digest No. E482)	14
NTCM	Principles and Standards of School Mathematics	14
Sak U.	Gifted Children: Characteristics, Identification and Education	14
Altun M.	Mathematics Teaching in Primary Secondary Education	13
Clark B.	Growing Up Gifted. Developing Children's Potential at Home and School	13
Renzulli J. S.	What Makes Giftedness? Reexamining A Definition	12

According to Table 13, MEB resources (f: 33 and f: 28) were mostly used in the articles examined in the mathematics literature on gifted students. The most frequently cited authors in the gifted literature were Davis G. A. and Rimm S. B. (f: 16), Miller R. C. (f: 14), Sak U. (f: 14), Clark B. (f: 13) and Renzullı J. S. (f: 12). The authors who received the most citations in research methods explanations were Yıldırım A. and Şimşek H. (f: 28), Karasar, N. (f: 16), Büyüköztürk Ş., Çakmak E. K., Akgün Ö. E., Karadeniz Ş. and Demirel F. (f: 15) and Miles B. M. and Huberman A. M. (f: 14).

Conclusion, Discussion and Recommendations

In this study, 104 research articles in the field of mathematics related to gifted students published in journals in Turkey between 2010 and 2023 were analyzed by bibliometric analysis method. The importance of bibliometric analysis can be expressed in terms of visually presenting the research in the giftedness and mathematics literature in our country, as well as revealing the gaps in the literature and guiding researchers (Çelik, Kaymakçı, & Can, 2023). The criteria for analyzing the studies were determined as the year and language of publication, the keywords used, the words used in the titles of the studies, the samples selected in the studies, the purposes of the studies and the characteristics examined in line with this purpose, the scales used in the studies, the researchers, institutions and journals that contributed to the literature, and the sources from which the studies were fed.

It was determined that mathematics research on gifted students in journals published in our country has been increasing since 2010 and reached the highest point in 2020. As in every field, with the transformation of gifted education into an international competition, there has been an increase in the studies published in this field (Bolat & Tekin, 2017; Demirci & Işık Tertemiz, 2022; Sak, 2020). However, it is also noticeable that the number of studies published in this field has declined after 2020; this is thought to be due to the difficulty in reaching students due to the COVID-19 pandemic (Kara & Nuhoğlu, 2022). In this direction, it is recommended that the necessary importance should be given to the studies in the field and even the interest in the studies conducted with gifted students should be increased since students can be reached as easily as before.

When analyzed in terms of the language in which the studies were published, it was found that the language used was mostly Turkish as a natural consequence of the fact that the studies included in this study were limited to journals published in Turkey. Although Ayvacı and Bebek (2019) commented that "research in the field of giftedness in our country is not at a level to contribute to international knowledge" for the scarcity of doctoral dissertations, the same comment can be made about the scarcity of studies in English. In today's world where the scientific language is English, it may be suggested that publications should be published both in our mother tongue and in English, which is how 6% of the studies analyzed in this study were published.

When the keywords used in the studies included in the study were analyzed, a total of 240 different keywords were found. Considering that most of the studies were published in Turkish, it can be assumed that the keywords used were mostly Turkish. Among these keywords, "gifted student" and "gifted student" stand out. The fact that "gifted students" and "gifted intelligence" were used in fewer studies draws attention to the use of the words "intelligence and talent". Dönmez and İdin (2017), who thematically analyzed science education studies conducted with gifted students, drew attention to the different definitions of the same concept. According to Sezgin (2020), Gardner prioritized talent rather than intelligence in his theory, but for social acceptance, he published his book under the title "Frames of Mind: The Theory of Multiple Intelligences" rather than "Seven Talents". As it is understood, even the author of the theory is in a state of indecision about which word to choose when writing his book and presenting his theory. Sak (2020), another researcher who emphasized this situation, stated that there is no universal consensus on the definition of giftedness in terms of the words used and the meaning intended. However, the fact that the word "ability" is used more frequently in the keywords of the studies analyzed in this study is thought to be an important evidence for this conflict.

When we look at the keyword analysis in the mathematics literature, it is seen that the results vary according to the subject of bibliometric analysis. Bayrak (2022), who conducted a bibliometric analysis on realistic mathematics education, found that the keywords "realistic mathematics education", "students", "mathematics" were used more frequently. Similarly, Özkaya (2018), who conducted a bibliometric analysis of mathematics education studies, showed that "mathematics", "education", "student" were frequently used as keywords. Köse (2021), who analyzed publications on pedagogical content knowledge, found that the preferred keywords were "teaching", "pedagogical content knowledge", "student" and "education". As can be seen in these examples, the results are English words. The reason for this is that WoS or SCOPUS, which contain mostly English articles, was chosen as the database. In this study, the fact that Turkish keywords are in the majority and do not match with these results is due to the use of ULAKBIM and Dergipark as databases where Turkish publications are in the majority.

The most frequently used words in the titles of the studies analyzed in this study also have findings that are in parallel with the keywords mentioned above. The words "talented" and "gifted" were the most preferred words in the titles of the studies, while "intelligent" was used less frequently. The fact that the word "problem", which is one of the following words, was used in the titles of 31 different studies sheds light on the fact that most of the studies analyzed in this field were conducted on problem solving.

The most preferred sample in research is student groups. This seems quite logical considering that the research topic is "gifted students". The fact that there are more gifted middle school students among the student groups is similar to the results of other thematic studies on gifted students (Kaya, 2021; Nacar, 2017; Kara & Nuhoğlu, 2022; Ayvacı & Bebek, 2019). The handicap of this result is that the necessary importance is not given to studies conducted with teachers (Kadıoğlu Ateş & Mazı, 2017), who are primarily responsible for identifying and educating gifted students and even integrating them into society.

When the studies with gifted high school students as the sample were examined, two of them (A3, A68) were conducted with science high school students, while in the others, high school students attending BİLSEM were preferred. Regarding science high school students as gifted, Türk (2018) stated that "Science high schools are the most successful institutions in our education system in terms of the program implemented, student quality and academic achievement. However, it cannot be said that all students of these schools, where students with the highest academic

potential study, are gifted." The mere success of these students in high school entrance exams does not mean that they are gifted.

Another point that draws attention on the basis of the samples of the studies is that 67% of the sample size is less than 100. Although it is thought that this is due to the difficulty in reaching gifted students and even because working with these students requires extra attention, it may pose a problem in terms of reflecting the generality of the research and creating a holistic perspective (İnan & Mert Uyangör, 2022; Özenç & Özenç, 2013). At this point, it may be recommended to conduct studies with a larger number of students and to increase the number of researchers involved in the studies in the same direction.

It was determined that 104 mathematics studies conducted with gifted students in this study were mostly under the title of "problem solving". While the importance given to problem solving skills is also observed in other thematic studies (Demirci & Işık Tertemiz, 2022; İnan & Mert Uyangör, 2022), this can be explained by the fact that problem solving skills and giftedness are thought to be directly proportional (Sak & Maker, 2004). On the other hand, in the thematic analysis conducted by Kaya (2021), it was revealed that more research was conducted on algebra with gifted students. According to Nacar's (2017) findings, it was seen that the focus was generally on mathematics education.

STEM ranks second in terms of the topics related to the studies. On the other hand, Dönmez and İdin (2017), who examined masters and doctoral theses in the field of science, stated that they did not come across a study on STEM related to gifted students. At this point, it is seen that STEM studies in the field are limited to research articles, and it is recommended that STEM studies on gifted students should be encouraged in masters and doctoral theses, which are thought to contribute more to the literature.

The results support Kaya's (2021) finding that theses conducted with gifted students mostly examine the cognitive aspects of students. However, in this study, it was found that there are also studies that examine the affective tendencies of students. In these studies, gifted students' self-efficacy in mathematics, attitudes, anxiety, motivational and cognitive predictions about mathematical problems were examined, and the relationships between self-regulated learning and motivational beliefs in mathematics were also examined.

The title of "differentiated curriculum", which is another area of interest in the reviewed studies, is very important for gifted students. Kaya et al. (2022), who examined differentiated programs in the education of gifted students, emphasized that different applications are needed for these students whose cognitive levels are ahead of their peers. In addition, the findings of the researchers who emphasized that differentiated programs were developed mostly in mathematics, geometry and science courses support this study. In the studies analyzed, it was found that differentiated programs were developed in geometric objects, fractions, problem solving subjects and STEM applications. More curriculum differentiation studies can be conducted to fill the gaps of these students in other mathematics subjects, such as inequality and equation, exponential and radical expressions, etc.

When we look at the findings regarding the distribution of the scales used, which is another research problem of the study, it is seen that 51 different scales were used in 104 research articles analyzed. It is also stated in other thematic analyses that surveys, tests, observation and interview forms are also used as data collection tools in the studies, but scales are mostly preferred (Ayvacı & Bebek, 2019; Dönmez & İdin, 2017; Kara & Nuhoğlu, 2022). When the frequency of the scales used was examined, it was found that problem solving inventories (Heppner & Petersen; Serin, Bulut, Serin, & Saygılı; Kızılkaya & Aşkar) were mostly applied in direct proportion to the fields of interest of the studies.

In this study, it was found that 104 mathematics studies on gifted students, which were bibliometrically analyzed, were published in 69 different journals by 165 authors affiliated to 52 different institutions. Among the institutions to which the authors are affiliated, MoNE is the leading institution, while Gazi University and Kırşehir Ahi Evran University are among the institutions with the highest number of publications. Kırnık and Susam (2018), who examined the postgraduate theses on gifted students in all fields, also found that most theses were conducted at Gazi University. Dönmez and İdin (2017), who specifically investigated the theses on gifted students in science education, stated that Istanbul University and Gazi University came to the forefront. In the light of these findings, it is seen that the mentioned institutions are always the same and there are very few publications on this subject from other institutions. It is very

important that all institutions pay maximum attention to the studies on gifted students, who are thought to play an important role in the future of our country.

When the researchers who published the most on the subject were analyzed, the names Avni YILDIZ and Serdal BALTACI were encountered. Fatma ERDOĞAN, Adem DOĞAN, Abdullah KAPLAN and Mesut ÖZTÜRK are also among the authors whose contribution to the field is quite high. The contribution rates of the authors were calculated according to the number of authors in an article.

Turkish Journal of Gifted Education and Training and Journal of Gifted Education and Creativity stand out among the 69 journals publishing in the mathematics literature on gifted students. It was also noteworthy that the publications of these journals were only on gifted students. The Journal of National Education, Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education, Pegem Journal of Education and Training, Turkish Journal of Computer and Mathematics Education and Van Yüzüncü Yıl University Faculty of Education

Journal are among the journals that have made a name for themselves in the field. According to the findings of Demirci and Işık Tertemiz, who examined mathematics research in national and international gifted journals, TÜZED (TJGE) and JEGYS stand out in the national arena with the articles they publish.

Another important research problem of this study is the sources from which the analyzed studies are mostly fed. It should be kept in mind that citation analyses will change according to the topics that bibliometric analyses focus on and different results will be obtained in each analysis. In this study, it was found that 3364 different publications were cited in the bibliographies of 104 mathematics studies conducted with gifted students. The majority of these references were to MONE publications (Mathematics Course Curriculum Curriculum and Science and Art Center Directive). The authors preferred to present data on gifted students by utilizing official sources. The authors referred to when explaining the characteristics of gifted students in the studies were Davis G. A. and Rimm S.B., Miller R. C., Sak U., Clark B. and Renzullı J. S. This result shows that researchers who intend to conduct a study on this subject should examine the sources of these authors and master the field.

References

Aydemir, G. (2021). *Bibliometric analysis of articles published on geometry education based on WoS Database* (Master's thesis). Amasya University, Amasya.

Aydın, Ş. (2021). Bibliometric Analysis of Academic Publications on Mathematics and Creativity with VOSviewer. In Akkaya, G. (Ed.), *International Congress on Gifted and Talented Education (Full Text Paper)*, 227-229, Ankara. E-ISBN: 978-605-7853-76-9.

Ayvacı, H.Ş. and Bebek, G. (2019). A study on the thematic analysis of theses on gifted and talented in Turkey. *Journal of Pamukkale University Faculty of Education, 45*, 267-292.

Baykul, Y. (2014). Mathematics Teaching in Primary Education 6th-8th. For Grades. Ankara: Pegem.

Bayrak, A. (2022). *A bibliometric study on realistic mathematics education* (Master's thesis). Alanya Alaaddin Keykubat

Bıçakçı, M., & Baloğlu, M. (2021). Bibliometric analysis of research on personality traits of gifted students (1957-2020). *Journal of Uludağ University Faculty of Education, 34(Special Issue),* 125-157. https://doi.org/10.19171/uefad.845218

Bolat, Y., & Tekin, M. (2017). Trends in gifted education research: a methodological analysis. *International Journal of Eurasia Social Sciences, 8(27)*, 609-629.

Bulgurcu, S. (2021). Analysis of international doctoral dissertations in the field of giftedness (2010-2020). *Journal of University Research, 4(2),* 137-153.

Bulut, N. (1988). Human and Mathematics, Izmir: Delta Bilim Publications.

Çelik, C., Kaymakçı, G., & Can, Ş, (2023). Bibliometric analysis of research on career development of gifted students, *E-International Journal of Educational Research, 14 (2)*, 68-82. DOI: https://doi.org/10.19160/e-ijer.1206389

Dede, E. & Özdemir, E. (2022). Bibliometric Analysis of Research on Noticing Skill in Mathematics Education. *Bayburt Education Faculty Journal, 17 (36),* 1547-1571. DOI: 10.35675/befdergi.1145811

Demirci, N., & Işık Tertemiz, N. (2022). A thematic review study on mathematics education studies published in gifted education journals. *International Turkish Journal of Educational Sciences, 10 (19),* 381-410.

Dönmez, İ. & İdin, Ş. (2017). An Investigation of Research on the Education of Gifted Students in the Field of Science Education in Turkey. *Journal of Gifted Education and Creativity, 4 (2)*, 57-74.

Erdoğan, S. C. (2014). The effect of differentiated science and technology teaching based on scientific creativity on achievement, attitude and creativity of gifted and talented students. Unpublished doctoral dissertation. Istanbul University, Institute of Educational Sciences, Istanbul.).

Gavin, M. K., Casa, T. M., Firmender, J. M., & Carroll, S. R. (2013). The impact of advanced geometry and measurement curriculum units on the mathematics achievement of first-grade students. Gifted Child Quarterly, 57(2), 71-84.

Gifted and Talented Students in Turkey. *Participatory Educational Research, 9 (6)*, 19-40. DOI: 10.17275/per.22.127.9.6

Hwang, G.-J., & Tu, Y.-F. (2021). Roles and Research Trends of Artificial Intelligence in Mathematics Education: A Bibliometric Mapping Analysis and Systematic Review. *Mathematics, 9(6),* 584. Retrieved from http://dx.doi.org/10.3390/math9060584

Inan, E. & Mert Uyangör, S. (2022). A Thematic Analysis of Theses Prepared on Mathematics Education with

Journal of Graduate School of Educational Sciences, 4 (8), 48-65. DOI: 10.29129/inujgse.370573

Kadıoğlu Ateş, H. & Mazı, M. G. (2017). An Overview of Graduate Theses on Gifted Education in Turkey. *Journal of Gifted Education and Creativity, 4 (3),* 33-57.

Kaya, D. (2021). Thematic and Methodological Trends of Theses on Gifted and Talented in Mathematics Education in Turkey. *International Journal of Science and Education, 4 (3)*, 157-178. DOI: 10.47477/ubed.917732

Kaya, N. G., Mertol, H., Turhan, G., Araz, D. & Uçar, H. (2022). Investigation of Graduate Theses on Differentiation and Enrichment Practices in the Education of Gifted Students. *Journal of Dicle University Ziya Gökalp Faculty of Education, 0 (41)*, 102-114.

Kırnık, D., & Susam, E. (2018). Analysis of Theses on Gifted Students. *In* Akkaya, G. and Ertekin, P. (Ed.), *International Congress on Gifted and Talented Education (Full Text Paper)*, 99-108, Malatya. ISBN-978-975-8573-83-7.

Krutetskii, V. A. (1976). The psychology of mathematical abilities in school children. Chicago: University of Chicago Press.

Kurtuluş, M. A. & Yılmaz, S. (2022). A Different Perspective on STEM Education Studies: Bibliometric Mapping. *Journal of Science Teaching, 10 (2),* 386-405. DOI: 10.56423/fbod.1172514

Miles, M. B. & Huberman, A.M. (1994). *Qualitative data analysis: an expanded sourcebook. (2nd Edition).* California: SAGE Publications.

Miller, R. C. (1990). Discovering mathematical talent. Reston, VA: Eric Clearinghouse on Handicapped and Gifted Children.

MONE. (2016). Ministry of National Education, Science and Art Centers Directive. Ankara: MoNE Publications.

Muhammad, I., Darmayanti, R., & Arif, V. R. (2023). Discovery Learning Research in Mathematics Learning: A Bibliometric Review. *Delta-Phi: Jurnal Pendidikan Matematika, 1(1),* 72-84.

Nacar, S. (2017). Studies on Mathematics Education of Gifted Students Between 2005-2014. *İnönü University*

National Association of Gifted Children (2006). What is Gifted? http://www.nagc.org/index.aspx?id=574

Nuhoğlu, H. & Kara, F. (2022). An Investigation of Graduate Education Theses in the Field of Special Ability in Turkey (2015-2020). *21st Century Education and Society, 11 (32),* 341-362.

Olkun, S. & Toluk Uçar, Z. (2006). Basic Mathematics II realistic and conceptual approach for prospective classroom teachers. Ankara: Tek Ağaç Eylül.

Özenç, E. G. & Özenç, M. (2013). A Multidimensional Investigation of Graduate Education Theses on Gifted Students in Turkey. *Turkish Journal of Social Research, 171 (171),* 13-28.

Özkaya, A. (2018). Bibliometric Analysis of the Studies in the Field of Mathematics Education. *Educational Research and Reviews, 13(22),* 723-734.

Özkaya, A. (2019). Bibliometric Analysis of Publications in the Field of STEM Education. *Bartın University Journal of Faculty of Education, 8 (2),* 590-628. DOI: 10.14686/buefad.450825

Phan, T. T., Do, T. T., Trinh, T. H., Tran, T., Duong, H. T., Trinh, T. P. T., Do, B. C., & Nguyen, T. T. (2022). A bibliometric review on realistic mathematics education in Scopus database between 1972-2019. *European Journal of Educational Research, 11(2),* 1133-1149. https://doi.org/10.12973/eu-jer.11.2.1133

Poçan, S. (2023). Bibliometric Analysis on Digital Game-Based Learning in Mathematics Education. *Journal of Inonu University Faculty of Education, 24 (1)*, 648-669. DOI: 10.17679/inuefd.1215903

Renzulli, J. S. (1985). Are teacher of gifted specialist? A land mark desicion on employment practices in special education for gifted. Gifted Child Quarterly, 29, 24-29.)

Renzulli, J. S. (1986). The three ring conception of giftedness: A developmental model of creative productivity. In Sternberg, R. J. & Davidson, J. E. (Eds.), Conceptions of Giftedness (pp. 53-92). New York, Cambridge University Press.

Sak, U. (2020). *Gifted children*. Ankara: Vize Academic Publications

Sak, U. (2020). *Models and strategies in gifted education*. Ankara: Pegem Akademi

Sak, U. and Maker, C. J. (2004). Discover assessment and curriculum model: The application of theories of multiple intelligences and successful intelligence in the education of gifted students. *Eurasian Journal of Educational Research, 5 (15),* 1-15.

Şengil Akar, Ş. (2017). *Investigation of gifted students' mathematical creativity in the process of mathematical modeling activities*. Unpublished Doctoral Dissertation, Hacettepe University Institute of Educational Sciences, Ankara.

Sezgin, O. (2020). Concepts in Psychology and Psycho-philosophical Perspective on the Concept of Superior/Special (Intelligence, Potential, Ability). *Çocuk ve Medeniyet, 5 (10)*, 319-335.

Sriraman, B. (2005). Are giftedness and creativity synonyms in mathematics? Journal of Secondary Gifted Education, 17 (1), 20-36.

Sternberg, R. J., & Zhang, L. F. (1995). What do we mean by giftedness? A pentagonal implicit theory. Gifted Child Quarterly, 39(2), pp. 88-94.

Tannenbaum, A. J. (2003). Nature and Nurture of Giftedness. (Ed. Colangelo, N. and G. Davis, G.) Handbook of Gifted Education. Boston: Allyn and Bacon.

Tortop, H. S. (2016). Why thought experiments should be used as an educational tool to develop creativity and problem solving skills of gifted students? *Journal of Gifted Education and Creativity*, 3 (2), 35-48.

Tsui, B. P. H. (2017). How to address the needs of mathematically gifted students? (Unpublished doctoral dissertation). Ontario Institute for Studies in Education of the University of Toronto, Toronto.

Türk, E. (2018). Are Science High School Students Gifted? The Importance of Science High Schools in Gifted Education. *Milli Eğitim, 47(1),* 437 - 443.

University, Antalya

Uzun, M. (2004*). Handbook of gifted children.* Istanbul: Child Foundation.

Wagner, H. and Zimmermann, B. (1986). Identification and fostering of mathematically gifted students. *Educational Studies in Mathematics, 17*(3), 243-259.

Welch, J. (1987). The individual needs of gifted children. *Support for Learning, 2(4),* 19-26.

Appendix 1. Studies evaluated in the research

No.	Imprint
A1	Tertemiz, N., Doğan, A., & Karakaş, H. (2017). Comparison of 4th Grade Gifted Students and Their Successful Peers' Problem Solving Strategies. *International Journal of Curriculum and Instruction Studies*, *7*(13).
A2	Öztürk, M., Akkan, Y., & Kaplan, A. (2018). 6-8. Grade 6-8 Gifted Students' Metacognitive Skills While Solving Problems: The Case of Gümüşhane. *Journal of Aegean Education*, *19*(2), 446-469.
A3	Aydoğdu, M. Z., & Keşan, C. (2016). 9th Grade Gifted Students' Geometry Problem Solving Strategies. Journal of Education and Instructional Research, 5(2), 48-55.
A4	Nacar, S. (2017). Studies on Mathematics Education of Gifted Students between 20052014. *Journal of Inonu University Graduate School of Educational Sciences, 4 (8)*, 48-65. doi: 10.29129/İnujgse.370573
A5	Bulut, A. S., Yıldız, A., & Baltacı, S. (2020). A Comparison Of Mathematics Learning Approaches Of Gifted And Non-Gifted Students. *Turkish Journal Of Computer And Mathematics Education (Turcomat)*, *11*(2), 461-491.
A6	Yildiz, A., Baltaci, S., & Aytekin, C. (2019). A Comparison Of Parents Of Gifted Students And Non-Gifted Students: A Case Of Expectations From Mathematics Education. *Cukurova University Faculty Of Education Journal*, *48*(1), 452-497.
A7	Inan, E. & Mert Uyangör, S. (2022). A Thematic Analysis Of Theses Prepared On Mathematics Education With Gifted And Talented Students In Turkey. *Participatory Educational Research, 9 (6)*, 19-40. doi: 10.17275/Per.22.127.9.6
A8	Özdemir, D., & Işıksal, M. (2021). Adaptation Study Of Mathematical Ability Test (Tomags) To Turkish. *Bartın University Journal Of Faculty Of Education*, *2021*(1), 200-217.
A9	Çıldır, M. (2017). An Investigation Into The Creative Problem Solving Skills Of Gifted Students. *Journal Of Gifted Education And Creativity*, *4*(1), 1-12.
A10	Erdoğan, F., & Gül, N. (2020). An Investigation Of Mathematical Problem Posing Skills Of Gifted Students. *Pegem Journal Of Education And Instruction*, *10*(3), 655-696.
A11	Erdoğan, F. & Erben, T. (2020). An Investigation Of The Measurement Estimation Strategies Used By Gifted Students. Journal Of Computer And Education Research, 8 (15), 201-223. doi: 10.18009/Jcer.680284
A12	Akdeniz, H., & Bangir Alpan, G. (2020). Analysis Of Gifted And Talented Students' Creative Problem Solving Styles. Talent, 10(1), 79-94. doi: Https://Doi.Org/10.46893/Talent.758416
A13	Dönmez, İ. & Yalmancı-Yücel, S. (2020). Analysis Of Scientific Epistemological Beliefs And Stem Attitudes Of The Gifted Students. Bartın University Journal Of Faculty Of Education, 9(3), 515-526.
A14	Yıldız, A., & Baltacı, S. (2017). The Effect of Lesson Study on Geometric Construction Problems Constructed by Science and Art Center Mathematics Teachers in Terms of Cognitive Level Levels. *Van Yüzüncü Yıl University Journal of Faculty of Education*, *14*(1), 14811516.
A15	Çetin, A., & Doğan, A. (2018). Problems Faced by Mathematics Teachers Working in Science and Art Centers. Ankara University Faculty of Educational Sciences Journal of Special Education, 19(4), 615- 641. Doi:10.21565/Ozelegitimdergisi.370355
A16	Şahin, E. (2021). Investigation of Science and Art Center Teachers' Opinions on Stem Education Approach. *Turkish Journal Of Educational Studies*, *8*(2), 129-160.
A17	Ayverdi, L., Avcu, Y. E., Ülker, S., & Karakış, H. (2020). Implementation and Evaluation of a Fetemm Activity with Family Participation in Science and Art Centers. *Journal of Research and Experience*, *5*(1), 24-36.
A18	Aydoğdu İskenderoğlu, T. & Yurtbakan, E. (2023). Comparison Of Problem-Posing Skills Of Gifted And Non-Gifted Primary School Students. International Journal Of Contemporary Educational Research, 10(1), 120-130. Https://Doi.Org/10.33200/İjcer.1185364
A19	Saygili, G. (2012). Determination Of The Problem Solving Level Of Gifted/Talented Students. *International Online Journal Of Primary Education*, *1*(1), 31-36.
A20	Okulu, H. Z., Arabacıoğlu, S., & Unver, A. O. (2022). Enriching Nature and Science Camps: An Investigation of a Stem Camp Designed for Gifted Students. *Journal of National Education*, *51*(235), 1983-2008.
A21	Taş, H. (2019). Effect Of Bibliotherapeutic Approach On Problem-Solving Skills Of Gifted/Talented Students. *Journal Of Education And Future*, (15), 95-104.

A22	Arslan, M., & Nacaroğlu, O. (2020). Investigation of the Awareness of Gifted Students about Euclid's 5th Postulate and Non-Euclidean Geometries. *International Journal Of Educational Studies In Mathematics*, *7*(1), 14-25.
A23	Nacar, S., Macit, E., & Altay, B., (2021). Examination Of Prospective Primary Mathematics Teachers' Attitudes And Self -Efficiency Beliefs Towards Gifted Education In Terms Of Various Variables. Journal For The Mathematics Education And Teaching Practices, 2(2), 81-91.
A24	Nacaroğlu, O., & Arslan, M. (2020). Investigation of the Knowledge Levels of Gifted Students about Symbols and Units Used in Science and Mathematics Courses. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education*, *14*(1), 271-291.
A25	Karaduman, G. B., & Davaslığil, Ü. (2019). The Effect of Differentiated Geometry Instruction on Creativity, Spatial Ability and Achievement in Gifted Students. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education*, *13*(2), 1305-1337.
A26	Deringöl, Y., & Davaslıgil, Ü. (2019). The Effect of Differentiated Mathematics Program on Gifted and Talented Students' Academic Self. *Journal of National Education*, *48*(223), 159178.
A27	Karabulut, R. (2019). Determination of the Relationship Between Intelligence Levels and Problem Solving Skills of Gifted Children Attending Primary School Second Grade. Journal of Kırşehir Faculty of Education, 20(3), 1484-1508.
A28	Akkaş, E., & Öztürk, F. (2018). The Effect of Differentiated Problem Solving Instruction on Gifted Students' Problem Solving and Creative Thinking Skills. *Journal of National Education*, *47*(1), 201-224.
A29	Ülger, B. B., & Çepni, S. (2020). Gifted Education And Stem: A Thematic Review. *Journal Of Turkish Science Education*, *17*(3), 443-467.
A30	Karahan, E., & Ünal, A. (2019). Gifted Students Designing Eco-Friendly STEM Projects. Journal Of Qualitative Research In Education, 7(4), 1553-1570. Doi: 10.14689/Issn.2148-2624.1.7c.4s.11m
A31	Kabakçı, D. A., & Demirkapi, A. (2016). The Effect of "Mathematics and Art" Course Activity Practices Applied in Izmit Science and Art Center on Students' Spatial Abilities. *Hayef Journal Of Education*, *13*(1), 11-22.
A32	Aytekin, C., Sarıca, R., & Aytekin, T. (2019). Gifted/talented students through the eyes of prospective elementary mathematics teachers. *Sakarya University Journal of Faculty of Education*, *19*(2), 30-54.
A33	Öksüz, C. (2010). Seventh Grade Gifted Students' Misconceptions about Point, Line and Plane. *İlköğretim Online*, *9(*2), 508-525.
A34	Eşsizoğlu, G., & Çetin, S. (2022). Impact Of Differentiated Teaching In Distance Education Practice On Gifted And Talented Primary Students. International Online Journal Of Primary Education (Iojpe), 11(1), 187-204. Https://Doi.Org/10.55020/Iojpe.1100221
A35	Uçar, F.M., Uçar, M.B., & Çalışkan, M. (2017). Investigation Of Gifted Students' Problem-Solving Skills. Journal For The Education Of Gifted Young Scientists, 5(3), 15-28.
A36	Yıldız, A. (2021). The Effect of Using Mathematics History Activities on the Views of Gifted Students on the History of Mathematics. *Journal of Science Mathematics Entrepreneurship and Technology Education*, *4*(3), 189-202.
A37	Aksoy, E., Narlı, S. (2015). Investigation of Learning Styles of Gifted Students in Mathematics Using Decision Trees. Turkish Journal of Giftedness and Education, 5(2), 147 - 156.
A38	Kırmızı, M. & Tarım, K. (2018). Investigation of Mathematics Teachers' Views on Gifted Students: A Metaphor Study. Sakarya University Journal Of Education , Volume: 8 Issue: 4 (Supplementary Issue), 337-350. doi: 10.19126/Suje.452059
A39	Sak, U., Ayvaz, Ü. (2017). Componential and Top 10% Analysis of Gender Differences in Mathematics Ability: The Example of Üyep. Turkish Journal of Giftedness and Education, 7(1), 38 - 61.
A40	Özbek, G., & Köse, E. (2022). Development of Mathematical Modeling Competencies Scale and Determination of Psychometric Properties: A Sample of Gifted Students. Ankara University Faculty of Educational Sciences Journal of Special Education, 23(4), 853-871. Https://Doi.Org/10.21565/Ozelegitimdergisi.874247
A41	Özdemir, D. (2018). Perceptions of Mathematically Gifted Elementary School Students Regarding Mathematics Lessons in Their Schools. Kastamonu Journal of Education, 26(1), 153-160. Doi:10.24106/Kefdergi.375695

A42	Bozkurt, E., Saka-Kılıç, Y. (2020). Secondary School Mathematics Teachers through the Eyes of Gifted Students in Mathematics. Mediterranean Journal of Educational Research, 14(34), 191 - 214. 10.29329/Mjer.2020.322.9
A43	Yetim, S. & Türk, T. (2020). Evaluation of Secondary School Mathematics Curriculum in terms of Gifted Students' Education According to Teachers' Opinions. Turkish Journal Of Computer And Mathematics Education (Turcomat), 11 (1), 241-279. doi: 10.16949/Turkbilmat.526817
A44	Esen, S., Gümüşer, B., Ayverdi, L. & Avcu, Y. E. (2019). Fetemm through the Eyes of Teachers, Administrators, Parents and Gifted Students. Journal of Science, Technology, Engineering, Mathematics and Art (J-Steam) Education, 2(2), 1-27.
A45	Tortop, H. S., & Akyıldız, V. (2018). Stem Self-Efficacy Scale Development Study for Teachers Towards Gifted Education. *Journal Of Gifted Education And Creativity*, *5*(3), 11-22.
A46	Inan, E. (2019). "An Activity Sample Of Differentiated Maths Programme For The Gifted Students" / "An Activity Sample Of Differentiated Maths Programme For The Gifted Students". Bilar: Journal of Science Harmony, 2 (2): 15-23. Doi: 10.37215/Bilar.2019257645
A47	Güçyeter, Ş. (2015). Investigation of Secondary School Mathematics Teachers' and Classroom Teachers' Judgments about the Characteristics of Gifted Students in Mathematics. Turkish Journal of Giftedness and Education, 5(1), 44 - 66.
A48	Tüzün, Ü. Tüysüz, M. (2018). Steam Training for Teachers of Gifted Individuals. Turkish Journal of Gifted Intelligence and Education, 8(1), 16 - 32.
A49	Erdoğan, F., & Erben, T. (2018). Investigation of Gifted Students' Problem Solving Skills Requiring Four Operations with Natural Numbers. İnönü University Journal of Faculty of Education, 19(3), 534-546. doi: 10.17679/İnuefd.486674
A50	Barış, N., & Ecevit, T. (2019). Stem Applications in the Education of Special Talented Students. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education*, *13*(1), 217-233.
A51	Yurt, E., & Kurnaz, A. (2015). Investigation of the Effects of Mathematics Self-Efficacy Sources on Mathematics Anxiety of Gifted Students. Pegem Journal of Education and Training, 5(4), 347-360, Http://Dx.Doi.Org/10.14527/Pegegog.2015.019.
A52	Karaaslan, G., & Turanlı, N. (2020). Investigation of Metacognitive Knowledge and Skills of Gifted Students in the Mathematics Teaching Process. *Journal of Child And Civilization*, *5*(10). Https://Doi.Org/10.47646/Cmd.2020.186
A53	Albayrak, H. B., Tarım, K. & Baypınar, K. (2023). Investigation of Mathematics Literacy Self-Efficacy Perceptions and Mathematics Literacy Achievement of Gifted Students, Trakya Journal of Education, 13(1), 115-127
A54	Yıldız, A. (2020). Attitudes Towards Mathematics Course, Academic Self-Efficacy and Self-Concept of Gifted Students. Journal Of Social And Humanities Sciences Research, 7(59), 2628-2636.
A55	Karaduman, B., Arslan, Ç. Broutın, M. S. T., & Ezentaş, R. (2023). Analyzing the Solution Processes of Mathematical Literacy Problems of Gifted Students According to Their Painting, Music and Numerical Abilities. *Turkish Journal Of Educational Studies*, *10*(2), 193-220.
A56	Koç Koca, A., & Gürbüz, R. (2023). Evaluation of Problem Solving Processes of Gifted Students and the Strategies They Use in the Process with the Help of Dpa's. Journal of Bayburt Faculty of Education, 18 (37), 177-197.
A57	Kurnaz, A., & Ekici, S. G. (2020). Evaluation of Intelligence Tests Used in Bilsem Diagnostic Process According to the Opinions of Psychological Counselors and Bilsem Teachers. *Journal of Child And Civilization*, *5*(10). Https://Doi.Org/10.47646/Cmd.2020.177
A58	Ayvacı, H. Ş., Küçük, M. & Bebek, G. (2023). Investigation of Special Talented Students' Interest in Stem Professions According to Some Variables. Journal of Van Yüzüncü Yıl University Faculty of Education, 20(1), 281-303. Https://Doi.Org/10.33711/Yyuefd.1122482
A59	Bircan, M. A., & Köksal, Ç. (2020). Investigation of Stem Attitudes and Stem Career Interests of Gifted Students. *Turkish Journal Of Primary Education*, *5*(1), 16-32.
A60	Erdoğan, F., & Gül, N. (2023). Repeated Pattern Skills and Cognitive Demand Levels of Gifted Students. Kocaeli University Journal of Education, 6(1), 70-95. Http://Doi.Org/10.33400/Kuje.1221801

A61	Şahin, E., & Kabasakal, V. (2018). Investigation of Student Opinions on the Use of Dynamic Mathematics Programs (Geogebra) in Stem Education Approach. *Anemon Muş Alparslan University Journal of Social Sciences*, *6*(Stemes'18), 55-62.
A62	Yurtbakan, E., & Aydogdu-Iskenderoglu, T. (2023). The Effect Of Stem For Gifted Activities' Mathematical Problem-Posing Skills Of Gifted Primary School Students. Journal Of Gifted Education And Creativity,10(2), 97-112.
A63	Kök, B., & Davaslıgil, Ü. (2014). The Effect Of Teaching Geometry Which Is Differentiated Based On The Parallel Curriculum For Gifted/Talented Students On Spatial Ability. Journal For The Education Of Gifted Young Scientists, 2(1), 40-52.
A64	Çıldır, M. (2015). A Special Case Study: The Game-Based Learning Process Of Two Gifted Students For The Surface Area Knowledge Of Geometric Shapes. Journal For The Education Of Gifted Young Scientists, 5(2), 21-40.
A65	Aydın, F. İ. K. (2021). The Needs Of Gifted Middle School Students For Developing An Effective Mathematics Program. *Journal Of Individual Differences In Education*, *3*(2), 30-43.
A66	Kaya, D. (2021). Thematic and Methodological Trends of Theses on Gifted and Talented in Mathematics Education in Turkey. *International Journal of Science and Education, 4 (3)*, 157-178. doi: 10.47477/Ubed.917732
A67	Öztürk, M., Akkan, Y., & Kaplan, A. (2017). Investigation of Gifted High School Students' Knowledge and Awareness of Proof Related Concepts1. *Journal Of Gifted Education And Creativity*, 4(2), 19-35.
A68	Sarikaya, İ., & Özgül, M. (2015). Perception Scale for Problem Solving Skills for Gifted High School Students. *Journal Of Gifted Education And Creativity*, *2*(2), 45-57.
A69	Kirişçi, N., & Konik, A. K. (2016). Self-Regulated Learning and Motivational Beliefs of Gifted and Normal Intelligence Level Students in Mathematics. *Hayef Journal Of Education*, *13*(2), 143-157.
A70	Doğan, A. & Paydar, S. (2020). Comparison of Number Sense Subcomponents of Gifted Students and Their Peers. Kahramanmaraş Sütçü İmam University Journal of Social Sciences, 17 (1), 21-44. doi: 10.33437/Ksusbd.689146
A71	Ozdemir, D. (2019). Number Sense Conceptions Of Gifted And Talented Preschool Children. Science, Education, Art And Technology Journal (Seat Journal), 3(2), 69-77.
A72	Baltacı, S., Yıldız, A., Kıymaz, Y., & Aytekin, C. (2016). Reflections from the DesignBased Research Process Conducted to Prepare Geogebra-Supported Activities for Gifted Students. *Mehmet Akif Ersoy University Journal of Faculty of Education*, *1*(39), 70-90.
A73	Kanbur Tekerek, B., & Argün, Z. (2022). Investigation of Gifted Students' Reasoning Skills in Geometry Learning Domain. Gazi Journal of Educational Sciences, 8(2), 306-332. Https://Dx.Doi.Org/10.30855/Gjes.2022.08.02.008.
A74	Öztürk, M., Akkan, Y., & Kaplan, A. (2014). Investigation of Gifted Students' Perceptions of Mathematics Concept. *Journal For The Education Of Gifted Young Scientists*, *2*(2), 49-57.
A75	Boran, A. İ., Açıkgül, K., & Köksal, M. S. (2015). The Relationship Between Gifted Students' Performance in Mathematics Olympiads and Their Iq and Mathematics Achievement. *Journal Of Theoretical Educational Science*, *8*(2).
A76	Kontaş, H., & Topal, T. (2015). A Study on Gifted Students' Learning Styles and Problem Solving Skills. *Journal Of International Social Research*, *8*(41).
A77	Kontaş, H., Ünişen, A. & Sürücü, M. (2016). "Gifted Students' Problem Solving Skills and Career Development. Turkısh Studıes -International Periodical For The Languages, Literature And History Of Turkish Or Turkic-, Volume 11/3 Winter 2016, Ankara/Turkey, Www.Turkishstudies.Net, Doı Number: Http://Dx.Doi.Org/10.7827/Turkishstudies.9223, P. 1569-1586.
A78	Tüysüz, C. (2013). Determination of Metacognition Levels of Gifted Students Towards Problem Solving Skills. *Mustafa Kemal University Journal of Institute of Social Sciences*, *10*(21), 157166.
A79	Coşkun, U. H., Sağır, T. M., & Girli, A. (2019). Parental Competence as a Predictor of Problem Solving Skills of Mothers with Gifted and Talented Children. *International Journal Of Educational Spectrum*, *1*(2), 106-130.
A80	Mecek, S., & Taşlıdere, E. (2015). Investigation of Gifted/Gifted Students' Academic Achievement in Mathematics and Physics in Terms of Various Variables. Pegem Journal of Education and Training, 5(5), 733-746, Http://Dx.Doi.Org/10.14527/Pegegog.2015.040.
A81	Demirci, N. & Işık Tertemiz, N. (2022). A Thematic Review Study on Mathematics Education Studies Published in Gifted Education Journals. International Turkish Journal of Educational Sciences, 10 (19), 381-410.

A82	Erdoğan, S. C. (2018). The Relationship Between Gifted Education Candidates' Perceptions of Problem Solving and Cognitive Flexibility Levels. *Iğdır University Journal of Social Sciences*, (14), 90-117.
A83	Tiryaki, A. Yaman, Y. & Çakıroğlu, Ö. (2021). Stem Applications in Special Talents: A Qualitative Study on Attitude and Creativity. Atatürk University Kazım Karabekir Education Faculty Journal, (43), 1-24. doi: 10.33418/Ataunikkefd.829745
A84	Koç Koca, A., & Gürbüz, R. (2021). Problem Solving Strategies Used By Gifted Secondary School Students To Solve Math Problems. Bolu Abant İzzet Baysal University Journal Of Faculty Of Education, 21(1), 348-359. Https://Dx.Doi.Org/10.17240/Aibuefd.2021.21.60703-862916
A85	Bildiren A, Kargın T (2019). The Effect of Early Intervention Program Based on Project-Based Approach on Gifted Children's Problem Solving Skills. Education And Science, 44(198), 343 - 360. 10.15390/Eb.2019.7360
A86	Şahin E (2018). Determining the Opinions of Gifted/Special Talented Students Towards Stem Education Approach and Algodoo as a Stem Material. Mediterranean Journal of Educational Research, 12(26), 258 - 280. 10.29329/Mjer.2018.172.14
A87	Özçelik, A. & Akgündüz, D. (2018). Evaluation of Out-of-School Stem Education with Gifted/Special Talented Students. Trakya University Journal of Faculty of Education, 8 (2), 334-351. doi: 10.24315/Trkefd.331579
A88	Gürel R, Özdemir İ (2019). Investigation of Mathematics Anxiety Levels of Gifted and Non-Gifted Secondary School Students. Mehmet Akif Ersoy University Journal of Faculty of Education, 1(52), 261 - 286. 10.21764/Maeuefd.355505
A89	Yıldız A, Baltacı S, Kurak Y, Güven B (2012). Investigation of Gifted and Non-Gifted 8th Grade Students' Use of Problem Solving Strategies. Journal of Uludağ University Faculty of Education, 25(1), 123 - 143.
A90	Yazgan Sağ, G. & Argün, Z. (2016). Gifted Students' Cognitive Predictions About Mathematical Problems They Encounter. Journal of Uludağ University Faculty of Education, 29 (2), 445-467. Retrieved From Https://Dergipark.Org.Tr/Tr/Pub/Uefad/Issue/26859/282489
A91	Akgül S, Nuhoğlu H (2020). Investigation of Mathematics Anxiety and Perfectionism Levels of Gifted Students. Journal of Yaşadıkça Education, 34(2), 299 - 312. doi: 10.33308/26674874.2020342204
A92	Akgül, S. (2019). The Power of Gifted Students' Mathematics Self-Efficacy to Predict Their Mathematics Achievement. Ekev Academy Journal, 1 (78), 481-496. Retrieved From Https://Dergipark.Org.Tr/Tr/Pub/Sosekev/Issue/71525/1150995
A93	Doğan A, Çetin A (2018). Investigation of Gifted Students' Perceptions Towards Mathematics Problem Solving Attitude and Processes. Cumhuriyet International Journal of Education, 7(4), 510 - 533. 10.30703/Cije.459434
A94	Yazgan Sağ G (2016). Motivational Predictions of Gifted Students in Mathematical Problem Solving Situations. Kastamonu University Kastamonu Journal of Education, 24(3), 1165 - 1182.
A95	Güney, K. K. & Özmen, H. (2020). Evaluation of the Program Prepared for the Development of Problem Solving Skills of Gifted Students in Terms of Social Validity and Effect on Critical Thinking Skills. Journal of Science Teaching, 8 (2), 143-173.
A96	Kaplan, A., Doruk, M. & Öztürk, M. (2017). Investigation of Gifted Students' Reflective Thinking Skills for Problem Solving: The Case of Gümüşhane. Journal of Bayburt Faculty of Education, 12 (23), 415-435.
A97	Aygün, Y. , Orbay, K. & Aydın Güç, F. (2021). Comparison of Mathematical Thinking Processes of Gifted and Non-Gifted Students. Journal of National Education, 50 (229), 337-362.
A98	Koç Koca, A. & Gürbüz, R. (2019). A Study on the Mathematics Problem Solving Strategies of Gifted and Other 4th Grade Students. Van Yüzüncü Yıl University Journal of Faculty of Education, 16 (1), 1638-1667. doi: 10.33711/Yyuefd.661309
A99	Sak, U., (2013). Education Programs For Talented Students Model (Epts) And It's Effectiveness On Gifted Students' Mathematical Creativity. Education And Science, 38(169), 51 - 61.
A100	İlgün, Ş., Altıntaş, E., Şimşekler, Z., Ezentaş, R. (2018). A Case Study on Mathematical Abstraction in Gifted Children. Turkish Studies (Electronic), 13(4), 707 - 727. 10.7827/Turkishstudies.13176
A101	Saygılı, G., Atahan, R. (2014). Investigation of Gifted Children's Reflective Thinking Skills for Problem Solving in Terms of Various Variables. Süleyman Demirel University Faculty of Arts and Sciences Journal of Social Sciences, 0(31), 181 - 192.
A102	Karabacak, F., Kirişçi, N. (2019). Comparison of Gifted and Normal Intelligence Students' Satisfaction Levels with Selective Problem Solving Technique in Mathematics Course. Turkish Journal of Giftedness and Education, 9(2), 131 - 144.

A103	Bayazıt, İ. & Koçyiğit, N. (2017). A Comparative Investigation of Gifted and Normal Intelligent Students' Achievement in Non-Routine Problems. Abant İzzet Baysal University Journal of Faculty of Education, 17 (3), 1172-1200. Doi: 10.17240/Aibuefd.2017.-337598
A104	Arslan, S., Bütün, M., Gökçek, T., Güneş, G., Çakıroğlu, O., Baran, B. & Coştu, S. (2017). Implementation of 3D Virtual Learning Environment (Mathlıfe) for Mathematics in Life: Experiences and Challenges Turkish Journal of Computer and Mathematics Education, 8(3), 459-480.