P-ISSN: 1411-3031; E-ISSN: 2442-9651
Available online https://journal.uinsi.ac.id/index.php/dinamika_ilmu
doi: http://doi.org/10.21093/di.v23i2.7123
*DINAMIKA ILMU, 23(2), December 2023*

**DINAMIKA ILMU**
Journal of Education
Jurnal Pendidikan

# Research Trends on Mathematics Education of Multicultural Students in Turkey

**Feyyaz Öztop**

*Independent Researcher, Turkey*
*e-mail: feyyazoztop@gmail.com*

*Received 30 July 2023 | Received in revised form 14 September 2023 | Accepted 22 September 2023*

APA Citation:
Öztop, F. (2023). Research Trends on Mathematics Education of Multicultural Students in Turkey. *DINAMIKA ILMU, 23(2)*, 277-290.
http://doi.org/10.21093/di.v23i2.7123

**Abstract**

Examining the research on mathematics education of multicultural students in Turkey and identifying weak points can be a guide for better educational practices. The purpose of this study was to review previous studies on the mathematics education of students from different cultures in Turkey and to identify trends in those studies. The research was conducted using the document analysis method. The research data was collected from 36 studies that were found after scans in the Google Scholar and CoHE Thesis Center. Content analysis was used for analyzing the acquired data. The results show that 2022 included the most research on the topic, with secondary school students preferred as research participants in the greatest numbers. Additionally, it has been found that there were significantly more studies out there that purpose to describe the topic. On the other hand, it was determined that the most focused topic in the studies was the challenges in teaching and learning mathematics. It is recommended that more research be conducted on the mathematics education of primary school students from different cultures in Turkey.

**Keywords**: mathematics education, multicultural students, research trends

## 1. Introduction

Migration movements can bring people from different cultural characteristics into a country. Turkey is one of the countries where migration movements occur and where people from different cultures live. Many immigrants from other countries reside in Turkey for a variety of reasons, including business, education, and politics. The latest count places the total number of immigrants in Turkey at 4,893,752 (Göç İdaresi Başkanlığı, 2023). Additionally, due to the size of Turkey, regional and provincial cultural differences can be observed. The existence of students with different cultures in the country also necessitates meeting the educational needs of these students. Mathematics is one of the areas that students from different cultural backgrounds should be educated.

Tobe (2023) argues that mathematics is a fundamental subject that is a building block for many disciplines, including science, technology, engineering, and finance. According to Kusnandar and Yusuf (2023), whether people are conscious of it or not, every action they take involves mathematics. Additionally, Onoshakpokaiye (2023) asserts that no one can live without mathematics because it is useful to all facets of daily life. Every citizen of the nation needs to receive the best education possible in mathematics, a subject that is crucial to our lives.

On the other hand, studies point out that students' linguistic and cultural traits may have an impact on their mathematical achievement (Cui et al., 2022; Eddy & Easton-Brooks, 2011; Sam, 2003). Although mathematics is known as a universal language, many linguistic and cultural elements can be effective in the learning and teaching of mathematics. Therefore, it is important to take note of the opportunities for students from various cultural backgrounds to learn mathematics in various nations. In this situation, for students from different cultures to learn mathematics better and be more successful in mathematics, it is necessary to take steps to improve the educational practices of these students.

It is noteworthy that many studies focusing on mathematics education of students from different cultures are carried out in Turkey (Agaç & Öztürk, 2022; Agaç, 2023; Arısoy et al., 2022; Aydın & Çelik, 2017; Bahadır, 2021; Baştuğ, 2022; Bolat, 2021; Corlu, 2006, 2013; Çabuk Aksop et al., 2021; Çakır et al., 2022; Çakmak, 2019; Çiftçi, 2021; Dağlı & Yüksel, 2022; Güreş, 2019; Gürgah Oğul & Telli, 2023; Güvenç, 2020; Güvenç & Altun Yalçın, 2020; Hişmioğulları, & Yılmaz, 2021; İnci Kuzu & Aljadaan, 2021; Karaca & Demirbilek, 2022; Karsli-Calamak et al., 2020, 2022a, 2022b; Kaya & Ok, 2021; Mavi, 2022; Menteş & Akman, 2022; Obay & Çelik, 2021; T. Özcan, 2015; Ö. Özcan, 2022, Özdemir et al., 2023; Uludüz & Çalik, 2022; Valencia Mazzanti & Karsli-Calamak, 2022; Yılmaz et al., 2021; Yolcu, 2021; Yolcu & Doğan, 2022). It can be done to draw inferences about the topic in Turkey by analyzing these studies in terms of various variables and identifying their tendencies. These inferences can shed light on the conduct of studies on deficiencies or weak points in research. For example, examining which groups the studies were carried out on, what objectives they had more, and which subjects were mostly conducted can be a guide for future research.

It is seen that there are synthesis studies examining the research on the education of students from different cultures in the literature. For instance, Khalfaoui et al. (2021) reviewed studies to learn more about the structural and pedagogical factors that promote a positive learning environment in multicultural early childhood education settings. Parkhouse et al. (2019) examined the studies examining the professional development of teachers for the education of culturally

diverse students. Additionally, Uzunboylu and Altay (2021) examined multicultural education research in the world, while Günay & Aydın (2015) and Demirdağ & Ünlü-Kaynakçı (2019) examined multicultural education research in Turkey. On the other hand, Abdulrahim & Orosco (2020) synthesized research on culture-sensitive mathematics teaching at the K-12 level in the United States. Flavin & Hwang (2022) examined research on factors affecting the mathematics achievement of multicultural students in South Korea. These studies have generally shed light on the subject's areas of greatest attention and neglect.

While it is seen in the literature that there are synthesis studies examining the research on mathematics education of students with cultural diversity in different countries, there is no study in Turkey that examines the research on mathematics education of students from different cultures and reveals their tendencies. This study purposes to review previous studies on the mathematics education of students from different cultures in Turkey and to identify trends in those studies. The study is important because it is believed to help researchers, educators, policymakers, and decision-makers improve practices for teaching mathematics to students from diverse cultural backgrounds. The research attempted to address the following questions:

1) What is the distribution of the studies' publication years?
2) What is the distribution of the type of participants in the studies?
3) What is the distribution of the studies' purpose?
4) What is the distribution of the studies' topic?

## 2. Research Methodology

A qualitative research methodology was adopted and a document review method was used in this study due to the review of earlier studies on the mathematics education of students from different cultures in Turkey. Qualitative research is a process of developing field-specific explanations or theories in which the meanings created by individuals are examined (Özden ve Saban, 2019). The document review method means obtaining, reviewing, querying, and analyzing the various documents that are considered primary or secondary sources that make up the data set of the research (Özkan, 2021).

### 2.1. Data Collection

The study's data was collected using criterion sampling as its foundation. The Google Scholar database, which includes publications in the database such as Web of Science, Tr index, and the Databases of National Thesis Center of the Council of Higher Education, where Turkish postgraduate theses are collected, was used to gather the data. The two databases chosen for collecting the data were scanned using the keywords "multicultural", "culture", "cultural diversity", "culturally responsive", "math", "mathematics", "education", "instruction", "teaching", "learning", "course", and "lesson". Additionally, Turkish substitutes of the keywords listed in the scans were used. The titles, abstracts, and full texts of the studies were carefully examined during the scans. Also examined were the studies that make reference to the research listed in the Google Scholar database searches. The last scans for data collection were carried out in July 2023. It was checked whether all the publications reached during the data collection process complied with the determined criteria. The criteria for the study are:

1) The study must be in the context of Turkey
2) Study should be related to math education of multicultural students
3) The study must be a peer-reviewed journal article or graduate thesis (Doctoral dissertation or master's thesis)
4) The study must not have been produced from another publication.
5) Studies that didn't fit into the criteria were removed from the research after the controls. Figure 1 provides details on the studies' exclusion procedures.

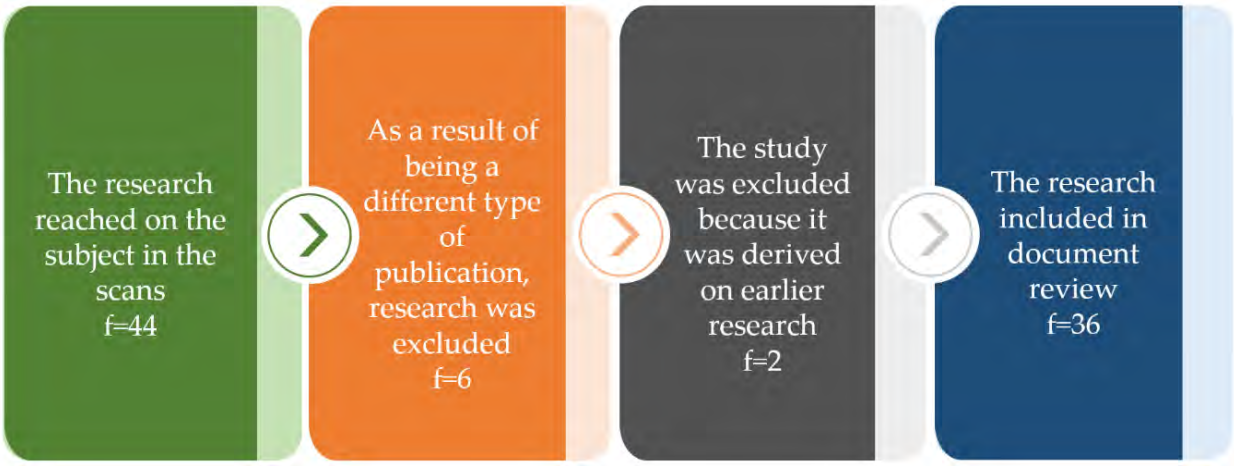


Figure 1. Informational diagram on research exclusions.

As can be seen in Figure 1, 44 studies on the subject and concerning Turkey were discovered by the scans. They are excluded because two of these studies were created from publications using the same data, and six of these studies are not articles or graduate theses. As a result, the document review covered 36 research. One doctoral thesis, eight master's theses, and 27 articles make up the publications that were looked at for the research.

### 2.2. Data Analysis

To achieve the purpose of the research, the analysis of the collected data was carried out with content analysis. A text or set of texts can be examined for specific words or concepts using content analysis (Büyüköztürk et al., 2020). For the coding made during the content analysis process, a "Classification Table of Studies on Mathematics Education of Multicultural Students" was created in the electronic environment. There is descriptive information about the studies (publication tag, participant type, purpose, and topic) in this classification table. The classification table-based coding was repeated on different days for reliability purposes, and it turned out that the coding results were the same on each occasion. The coding was done through a word processing program. The steps in the research process are presented in detail for validity.

## 3. Results

### 3.1. Distribution of Research on Mathematics Education of Multicultural Students by Publication Year

Figure 2 presents the analysis's conclusions regarding the distribution of the studies' publication years.

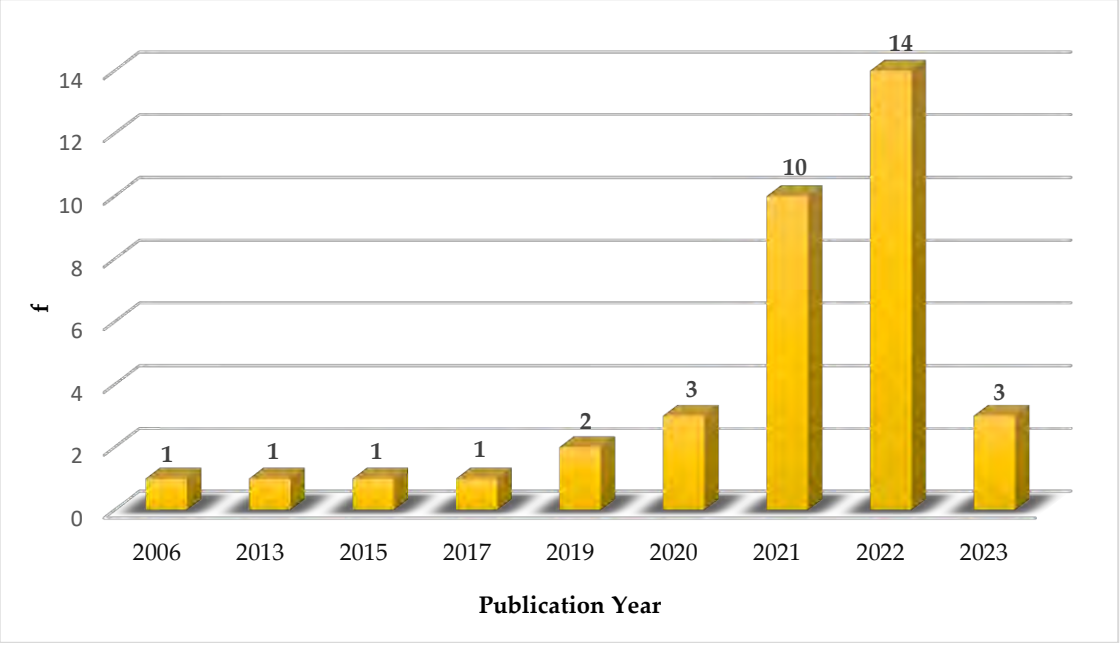


Figure 2. The studies' publication years.

According to Figure 2, studies on mathematics education of students from different cultures in Turkey were published between 2006 and 2023. The most research on the topic was published in 2022 (f=14). This was followed by 2021 (f=10), 2023 (f=3), 2020 (f=3), and 2019 (f=2), respectively. Additionally, a study on the topic was released in 2006 (f=1), 2013 (f=1), 2015 (f=1), and 2017 (f=1).

### 3.2. Distribution of Research on Mathematics Education of Multicultural Students by Participant Type

Figure 3 suggests the results of the analysis done for the distribution of the participant type of the studies on the topic.

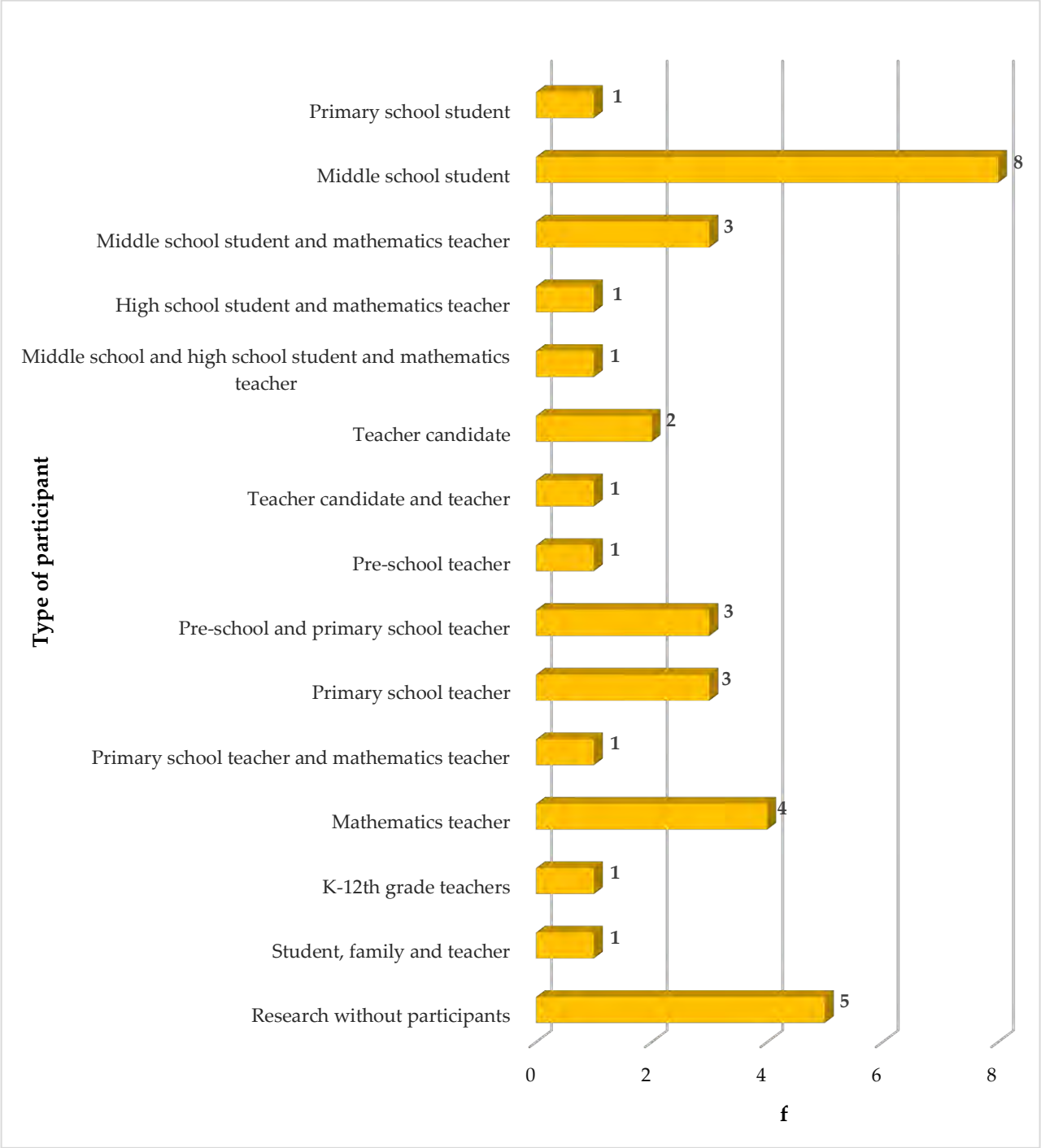


Figure 3. Type of participants in the studies

When Figure 3 is examined, it is seen that there are participants who are appurtenant in every education level from pre-school to higher education in the studies on mathematics education of students from different cultures in Turkey. It is seen that the highest number of participants in the topic are middle school students. This is followed by mathematics teachers (f=4), primary school

teachers (f=3), pre-school and primary school teachers (f=3), middle school students and mathematics teacher (f=3), and teacher candidates (f=2) respectively. The least common participant types in the studies are primary school student (f=1), high school student and mathematics teacher (f=1), middle school and high school student and mathematics teacher (f=1), teacher candidate and teacher (f=1), pre-school teacher (f=1), primary school and mathematics teacher (f=1), and student, family and teacher (f=1). Additionally, no participants were included in 5 studies.

### 3.3. Distribution of Research on Mathematics Education of Multicultural Students by Purpose

The findings of the analysis performed for the purpose of distribution of the studies on the topic are depicted in Figure 4.

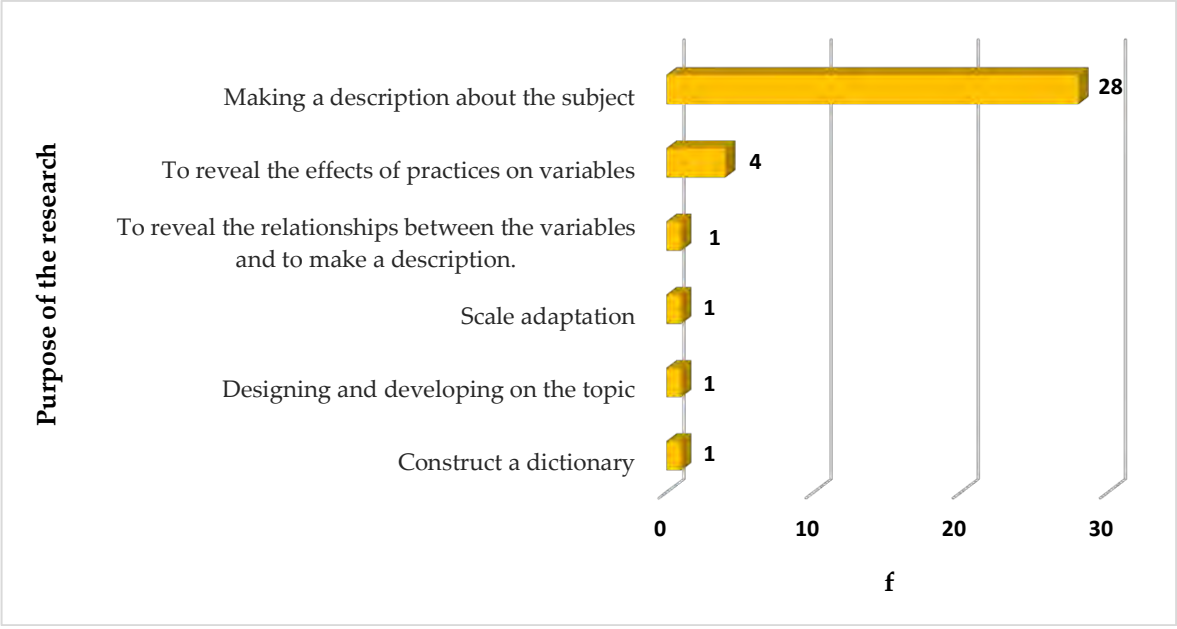


Figure 4. The study's purpose

As seen in Figure 4, the research on the mathematics education of students from various cultures in Turkey mostly aims to describe the topic. The revelation of the practices' effects on the variables followed this objective. Furthermore, the least research objectives were found to be to reveal the relationships between the variables and to make a description (f=1), Scale adaptation (f=1), designing and developing on the topic (f=1), and constructing a dictionary (f=1).

### 3.4. Distribution of Research on Mathematics Education of Multicultural Students by Topic

The findings of the analyzes made for the distribution of the research on mathematics education of students from different cultures in Turkey according to their topic are given in Figure 5.

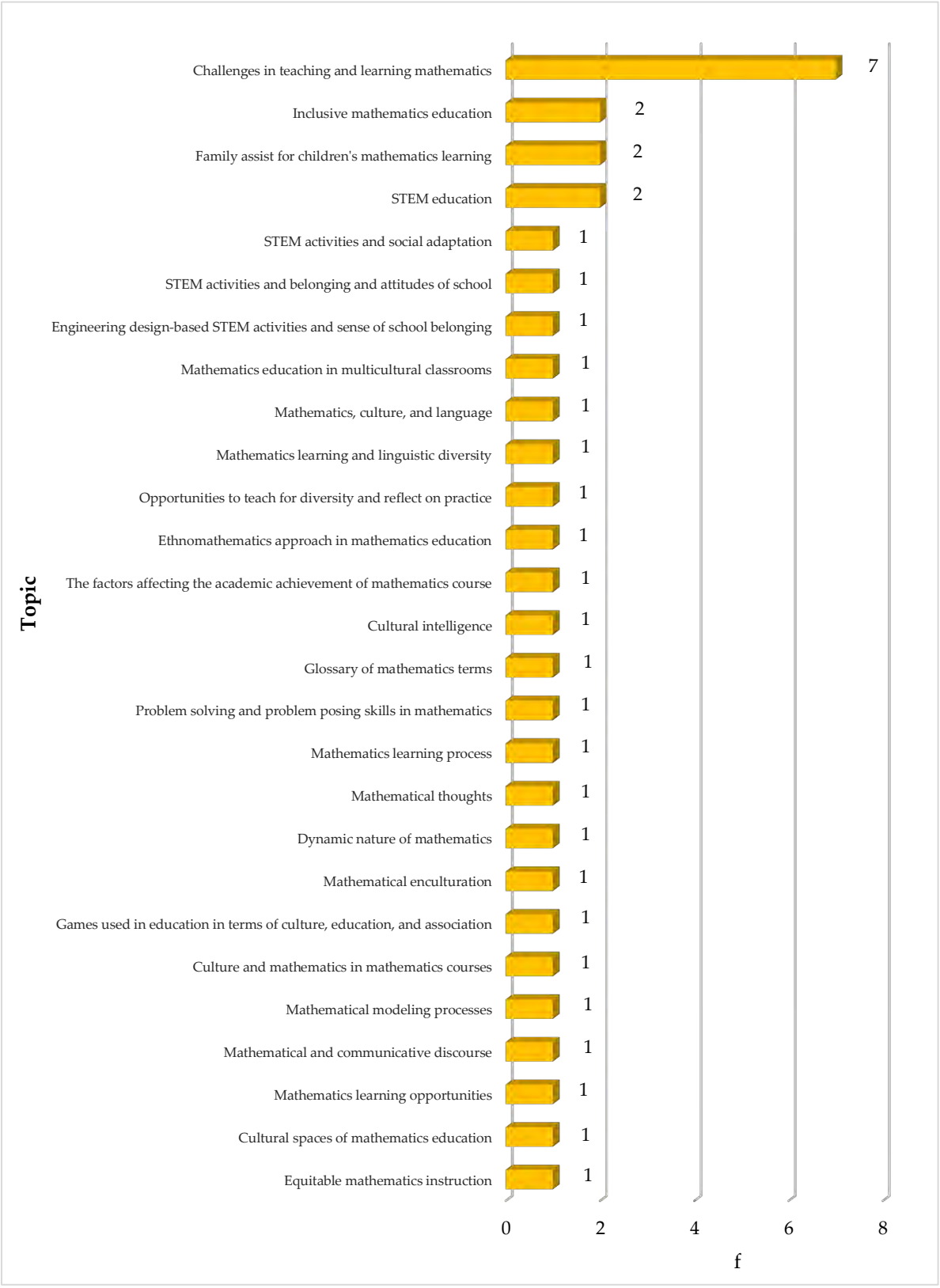


Figure 5. The study's topic

Figure 5 shows that in studies on the mathematics education of students from different cultures in Turkey, the challenges in teaching and learning mathematics (f=7) received the most focus. The topics inclusive mathematics education (f=2), family assist for children's mathematics learning (f=2), and STEM education (f=2) came after this. The least focused topics are STEM activities and social adaptation (f=1), STEM activities and belonging and attitudes of school (f=1), engineering design-based STEM activities and sense of school belonging (f=1), mathematics education in multicultural classrooms (f=1), mathematics, culture, and language (f=1), mathematics learning and linguistic diversity (f=1), opportunities to teach for diversity and reflect on practice (f=1), ethnomathematics approach in mathematics education (f=1), the factors affecting the academic achievement of mathematics course (f=1), cultural intelligence (f=1) glossary of mathematics terms (f=1), problem solving and problem posing skills in mathematics (f=1), mathematics learning process (f=1), mathematical thoughts (f=1), dynamic nature of mathematics (f=1), mathematical enculturation (f=1), games used in education in terms of culture, education, and association (f=1), culture and mathematics in mathematics courses (f=1), mathematical modeling processes (f=1), mathematical and communicative discourse (f=1), mathematics learning opportunities (f=1), cultural spaces of mathematics education (f=1), and equitable mathematics instruction (f=1).

## 4. Discussion

First, the publication year variable is stressed in the study, which examines research on the mathematics education of students from various cultures in Turkey and attempts to reveal their tendencies in this research. According to the findings, most research on the topic was published in 2022. This year was followed by 2021, 2023, 2020, and 2019, respectively. As we approach the past to the present, it is understood that there has been a significant increase in the number of studies on mathematics education of students from different cultures in Turkey. Research syntheses on multicultural education in Turkey also support these findings, showing that there is an increasing trend in the number of studies toward more recent history (Günay & Aydın, 2015; Demirdağ & Ünlü-Kaynakçı, 2019). The findings can be attributed to the rise in immigration to Turkey in recent years from various nations. The Turkish Statistical Institute reports that 242,496 foreigners entered Turkey from abroad in 2020, 615,095 foreigners in 2021, and 399,643 foreigners in 2022 (TURKSTAT, 2023abc). As can be seen, the findings of this study support Turkey's international migration statistics. It can be said that the number of studies on the education of people from different cultures has increased along with the rate of migration.

The type of the participant is yet another variable the study involves in the account. Studies on the mathematics education of students from various cultures in Turkey revealed that middle school students were the most popular participant type. Students were favored as the most participatory type in the synthesis study by Günay & Aydın (2015), which examined multicultural education research in Turkey. It can be said that researchers want to benefit from the knowledge and experience of middle school students on the topic. Additionally, it is understood that multicultural mathematics education studies mostly focus on the second level of elementary education. The fact that there are fewer studies on the first stage of primary education suggests that it may be due to the fact that more importance is given to language acquisition in the first stage.

The study's purpose is another variable that is being examined. It has been found in studies on mathematics education of students from various cultures in Turkey that the most goal is to describe the topic. Descriptive research makes a description of a situation, phenomenon, or event rather than analyzing the impact of an intervention (Bickman & Rog, 2009; Boudah, 2019; Johnson & Christensen, 2012). It can be said that researchers want to learn about various aspects of the subject by describing the subject.

Finally, the focus was placed on the studies' topic. It is understood that the challenges in teaching and learning mathematics are the most focus of studies on the mathematics education of students from different cultures in Turkey. It can be said that researchers examine the difficulties in the process of learning and teaching mathematics in order to contribute to the improvement of the education of students from different cultures. It can be said that researchers think that their research will help educational practices. It can be said that educational practices can be reviewed and organized with the implications of such studies.

## 5. Conclusion

This study looked at studies on the mathematics education of students from various cultures in Turkey and attempted to identify trends in those studies. The study is limited to studies that were accessed through searches made in databases with specified keywords and that met the inclusion criteria. It has been revealed that there has been a significant increase in the number of research on the topic, especially in recent years, from the past to the present. It has been concluded that the type of participant that is given the most importance and emphasized in studies on the subject is middle school students. It has been seen that the majority of the studies aimed at describing the topic. Finally, it has come to light that the studies focus mostly on the difficulties associated with teaching and learning mathematics.

It is hoped that this study, which tries to reveal the trends of these researches by examining the research on mathematics education of students from different cultures in Turkey, will contribute to the literature as it reveals important information. On the other hand, it is recommended that more research be conducted on the mathematics education of primary school students from different cultures in Turkey since the primary school level is a basic and important level. Also, more research can be done with different purposes besides description. More research can be done on current issues related to the mathematics education of students from different cultures in Turkey.

## REFERENCES

*The studies that are part of the analysis are marked by a *.*

Abdulrahim, N. A., & Orosco, M. J. (2020). Culturally responsive mathematics teaching: A research synthesis. *The Urban Review, 52*, 1-25. https://doi.org/10.1007/s11256-019-00509-2

*Agaç, G., & Öztürk, A. (2022). Classroom teachers' practices, competencies, and problems concerning inclusive mathematics education. *Dicle University Journal of Ziya Gokalp Education Faculty*, (42), 110-132. https://dergipark.org.tr/tr/download/article-file/2742740

*Agaç, G. (2023). Reflections of inclusion in primary school mathematics curricula: A historical analysis. *Journal of Theory and Practice in Education, 19*(1), 60-73. https://doi.org/10.17244/eku.1207352

*Arısoy, P., Demir, S., & Bağdemir, A. (2022). The effect of STEM activities implemented in the classroom on social adaptation of immigrant students. *International Journal of Primary Education Studies, 3*(2), 99-107. https://dergipark.org.tr/en/download/article-file/2792141

*Aydın, S., & Çelik, D. (2017). Validity and reliability study of the scale about preservice elementary mathematics teachers' opportunities to teach for diversity and reflect on practice. *Elementary Education Online, 16*(4), 1947-1965. https://doi.org/10.17051/ilkonline.2017.370879

*Bahadır, E. (2021). Ethnomathematics approach in mathematics education for migrant students. *Millî Eğitim, 50*(1), 577-594. https://doi.org/10.37669/milliegitim.959829

*Baştuğ, E. (2022). *Challenges faced by teachers who teach mathematics to syrian students* (Thesis No. 726144) [Master's thesis, Gaziantep University]. Databases of National Thesis Center of the Council of Higher Education.

Bickman, L., & Rog, D. J. (2009). Applied research design: A practical approach. In L. Bickman ve D. J. Rog (Eds.), *The SAGE handbook of applied social research methods* (2nd ed., pp. 3-43). Sage.

*Bolat, Y. (2021). Primary school teachers' views on Syrian Students' Turkish and math skills and the confronted challenges. *International Journal of Modern Education Studies, 5*(1), 92-117. http://dx.doi.org/10.51383/ijonmes.2021.84

Boudah, D. J. (2019). *Conducting educational research* (2nd ed.). SAGE.

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2020). *Eğitimde bilimsel araştırma yöntemleri* (29th ed.). Pegem Akademi.

*Corlu, M. S. (2006). *An ethnographic research: The cultural portraits of middle school mathematics classrooms in an international school* (Thesis No. 181251) [Master's thesis, Boğaziçi University]. Databases of National Thesis Center of the Council of Higher Education.

*Corlu, M. S. (2013). Describing the dynamic nature of mathematics as a cultural product. *International Schools Journal, 32*(2), 72-79. https://www.proquest.com/openview/c5b50ec7154dc8444b640111dcbb7be7/1?pq-origsite=gscholar&cbl=2029238

Cui, J., Lv, L., Du, H., Cui, Z., & Zhou, X. (2022). Language ability accounts for ethnic difference in mathematics achievement. *Frontiers in Psychology*, *13*(929719). https://doi.org/10.3389/fpsyg.2022.929719

*Çabuk Aksop, A., Özdemir, D., & Özçakır, B. (2021). Determining the cultural intelligence levels of mathematics teachers and examining them in terms of various variables. *YYU Journal of Education Faculty, 18*(2), 791-813. https://doi.org/10.33711/yyuefd.1029196

*Çakır, Z., Altun Yalçın, S., & Güvenç Günsel, Ş. (2022). The effect of engineering design-based STEM activities on the refugee students' sense of school belonging. *Journal of Science Learning, 5*(3).478-487. https://doi.org/10.17509/jsl.v5i3.39846

*Çakmak, L. (2019). *Determining the problems of foreign students in mathematics education* (Thesis No. 577810) [Master's thesis, Sivas Cumhuriyet University]. Databases of National Thesis Center of the Council of Higher Education.

*Çiftçi, E. (2021). *The study of creating a glossary of mathematics terms for syrian students studying in Turkey in secondary school and high school* (Thesis No. 663181) [Doctoral dissertation, Gazi University]. Databases of National Thesis Center of the Council of Higher Education.

*Dağlı, K., & Yüksel, S. (2022). Challenges faced by 2nd grade teachers during the process of syrian students' access to mathematics learning outcomes. *Journal of Uludag University Faculty of Education, 35*(1), 1-27. https://doi.org/10.19171/uefad.890849

Demirdag, S., & Unlu-Kaynakci, F. Z. (2019). Review of research on multiculturalism and multicultural education in Turkey: 2000-2018. *International Online Journal of Educational Sciences, 11*(5), 146-158. http://dx.doi.org/10.15345/iojes.2019.05.010

Eddy, C. M., & Easton-Brooks, D. (2011). Ethnic matching, school placement, and mathematics achievement of African American students from kindergarten through fifth grade. *Urban Education, 46*(6), 1280-1299. https://doi.org/10.1177/0042085911413149

Flavin, E., & Hwang, S. (2022). Examining multicultural education research in Korean mathematics education. *Research in Mathematical Education, 25*(1), 45-63. https://doi.org/10.7468/jksmed.2022.25.1.45

Göç İdaresi Başkanlığı. [@Gocidaresi]. (2023, July 16). Basın açıklaması [Image Attached][Tweet]. Twitter. https://twitter.com/Gocidaresi/status/1680636001855627270

Günay, R., & Aydın, H. (2015). Inclinations in studies into multicultural education in Turkey: A content analysis study. *Education and Science, 40*(178), 1-22. http://dx.doi.org/10.15390/EB.2015.3294

*Güreş, H. (2019). *Investigation of the mathematical thoughts of middle school 7th grade students with different cultural values: An ethnomathematics practice* (Thesis No. 581355) [Master's thesis, Anadolu University]. Databases of National Thesis Center of the Council of Higher Education.

*Gürgah Oğul, İ., & Telli, N. H. (2023). Preschool teachers' opinions on the mathematics learning process of immigrant children. *Van Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi, 20*(1), 408-428. https://doi.org/10.33711/yyuefd.1228637

*Güvenç, Ş. (2020). *Investigation of the effects of STEM activities on the seven climate and attitudes of schools for schools* (Thesis No. 638461) [Master's thesis, Erzincan Binali Yıldırım University]. Databases of National Thesis Center of the Council of Higher Education.

*Güvenç, Ş., & Altun Yalçın, S. (2020). The effect of Stem education on Syrian refugee students. *International Social Sciences Studies Journal, 6*(54), 119-128. http://dx.doi.org/10.26449/sssj.2035

*Hişmioğulları, E., & Yılmaz, S. (2021). The problems of Syrian secondary school students in geometry teaching: The case of Hatay province. *Recep Tayyip Erdoğan University Journal of Education Faculty (REFAD), 1*(2), 54-70. https://dergipark.org.tr/tr/download/article-file/3128510

*İnci Kuzu. Ç., & Aljadaan, M. M. (2021). The problem faced by Syrian refugee students in the general education process and especially in mathematics education. *Curr Res Soc Sci, 7*(2), 61-75. http://dx.doi.org/10.30613/curesosc.1003110

Johnson, B., & Christensen, L. (2012). *Educational research quantitative, qualitative, and mixed approaches* (4th ed.). SAGE.

*Karaca, B., & Demirbilek, M. (2022). Examining the factors affecting the academic achievement of Syrian secondary school students in mathematics lesson. *Turkish Journal of Mathematics Education, 3*(2), 39-66. https://tujme.org/index.php/tujme/article/view/50/27

*Karsli-Calamak, E., Tuna, M. E., & Allexsaht-Snider, M. (2020). Transformation of teachers' understandings of refugee families' engagement: Multilingual family mathematics spaces. *International Journal of Early Years Education, 28*(2), 189-205. https://doi.org/10.1080/09669760.2020.1765093

*Karsli-Calamak, E., Tuna, M. E., & Allexsaht-Snider, M. (2022a). Understanding refugee families' potentials for supporting children's mathematics learning. *Teachers College Record, 124*(5), 49-68. https://doi.org/10.1177/01614681221103948

*Karsli-Calamak, E., Olkun, S., & Sözen-Özdoğan, S. (2022b). Teaching mathematics in culturally and linguistically diverse classrooms: An examination of teacher practices. *Anadolu Journal of Educational Sciences International, 12*(1), 123-155. https://doi.org/10.18039/ajesi.926493

*Kaya, D., & Ok, G. (2021). Problems encountered by mathematics and science teachers in classrooms where Syrian students under temporary protection status are educated and suggestions for solution. *International Journal of Contemporary Educational Research, 8*(1), 111-127. https://doi.org/10.33200/ijcer.774094

Khalfaoui, A., García-Carrión, R., & Villardón-Gallego, L. (2021). A systematic review of the literature on aspects affecting positive classroom climate in multicultural early childhood education. *Early Childhood Education Journal, 49*(1), 71-81. https://doi.org/10.1007/s10643-020-01054-4

Kusnandar, N., & Yusuf, Y. (2023). Efforts to improve students' mathematical concepts understanding ability using Dienes Block Media. *Mathline: Jurnal Matematika dan Pendidikan Matematika, 8*(2), 603-620. https://mathline.unwir.ac.id/index.php/Mathline/article/view/416

*Mavi, S. (2022). *An investigation of a case of Turkish and Syrian seventh grade students' mathematical modeling processes* (Thesis No. 732688) [Master's thesis, Middle East Technical University]. Databases of National Thesis Center of the Council of Higher Education.

*Menteş, H. S., & Akman, B. (2022). The relationship between mathematics, culture and language in the early years. *Journal of Preschool and Elementary Education, 3*(1), 1-14. https://doi.org/10.29329/jpee.2022.457.1

*Obay, M., & Çelik, H. C. (2021). Examining middle school mathematics teachers' views on games used in education in terms of culture, education and association. *Electronic Journal of Social Sciences*, *20*(80), 1915-1932. https://doi.org/10.17755/esosder.885739

Onoshakpokaiye, O. E. (2023). An overview of reasoning ability in mathematics and mathematics achievement of students in tertiary institution. *IJIET (International Journal of Indonesian Education and Teaching)*, *7*(2), 309-318. https://doi.org/10.24071/ijiet.v7i2.5988

*Özcan, T. (2015). *The mathematical and communicative discourse in a multicultural content based classroom of an international school: An ethnographic study* (Thesis No. 395387) [Master's thesis, İhsan Doğramacı Bilkent University]. Databases of National Thesis Center of the Council of Higher Education.

*Özcan, Ö. (2022). *Investigation of the opinions of teachers and pre-service teachers on the relationship of culture and mathematics in mathematics lessons* (Thesis No. 750572) [Master's thesis, Yıldız Teknik University]. Databases of National Thesis Center of the Council of Higher Education.

*Özdemir, F., Çelik, H. C., & Çelik, E. (2023). Examination of problem solving and problem posing skills of foreign teacher candidates in mathematics: The sample of Siirt University. *Afyon Kocatepe University Journal of Social Sciences, 25*(1), 16-33. https://doi.org/10.32709/akusosbil.1051813

Özden, M. ve Saban, A. (2019). Nitel araştırmalarda paradigma ve teorik temeller. A. Saban ve A. Ersoy (Ed.), *Eğitimde nitel araştırma desenleri* içinde (3rd ed., s.1-30). Anı Yayıncılık.

Özkan, U. B. (2021). *Eğitim bilimleri araştırmaları için doküman inceleme yöntemi* (4th ed.). Pegem Akademi.

Parkhouse, H., Lu, C. Y., & Massaro, V. R. (2019). Multicultural education professional development: A review of the literature. *Review of Educational Research, 89*(3), 416-458. https://doi.org/10.3102/0034654319840359

Sam, L. C. (2003). Cultural differences and mathematics learning in Malaysia. *The mathematics educator, 7*(1), 110-122. https://math.nie.edu.sg/ame/matheduc/tme/tmeV7_1/08%20Lim%20Chap%20Sam%20Final.pdf

Tobe, A. G. D. (2023). Interplay of mathematics self-efficacy, anxiety, creativity beliefs, and learning styles among college students: Implications for curriculum alignment. *Journal of Namibian Studies: History Politics Culture*, *33*(S3), 1725-1765. https://namibian-studies.com/index.php/JNS/article/view/2172/1506

TURKSTAT [Turkish Statistical Institute] (2023a, April 6). *International migration statistics*, 2020. https://data.tuik.gov.tr/Bulten/Index?p=International-Migration-Statistics-2020-37212&dil=2

TURKSTAT [Turkish Statistical Institute] (2023b, April 6). *International migration statistics, 2021*. https://data.tuik.gov.tr/Bulten/Index?p=International-Migration-Statistics-2021-45814&dil=2#:~:text=In%202021%2C%20number%20of%20immigrants,to%20739%20thousand%20364%20people.

TURKSTAT [Turkish Statistical Institute] (2023c, July 24). *International migration statistics, 2022*. https://data.tuik.gov.tr/Bulten/Index?p=International-Migration-Statistics-2022-49457&dil=2#:~:text=494%20thousand%2052%20people%20immigrated,males%2C%2047.1%25%20were%20females.

*Uludüz, Ş. M., & Çalik, M. (2022). A thematic review of STEM education for disadvantaged students. *Canadian Journal of Science, Mathematics and Technology Education, 22*, 938-958. https://doi.org/10.1007/s42330-022-00247-w

Uzunboylu, H., & Altay, O. (2021). State of affairs in multicultural education research: A content analysis. *Compare: A Journal of Comparative and International Education, 51*(2), 278-297. https://doi.org/10.1080/03057925.2019.1622408

*Valencia Mazzanti, C., & Karsli-Calamak, E. (2022). "Kind of interrupting": teachers of young children understanding mathematics learning and linguistic diversity. *International Journal of Qualitative Studies in Education, 35*(2), 210-227. https://doi.org/10.1080/09518398.2020.1829740

*Yılmaz, Z., Gülbağcı Dede, H., Sears, R., & Yıldız Nielsen, S. (2021). Are we all in this together?: mathematics teachers' perspectives on equity in remote instruction during pandemic. *Educational Studies in Mathematics*, *108*, 307-331. https://doi.org/10.1007/s10649-021-10060-1

*Yolcu, A. (2021). Turkey's problem-solving child: A historical analysis of the cultural spaces of mathematics education. *Education and Science, 46*(206), 27-46. http://dx.doi.org/10.15390/EB.2020.8906

*Yolcu, A., & Doğan, M. F. (2022). Mathematics learning opportunities of culturally diverse learners: Primary and middle school mathematics teachers' perspectives and pedagogical strategies. *The Journal of Buca Faculty of Education*, (53), 390-408. https://doi.org/10.53444/deubefd.1063513