European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available on-line at: www.oapub.org/edu

DOI: 10.46827/ejes.v9i11.4534 Volume 9 | Issue 11 | 2022

CHALLENGES OF BEING A SECONDARY SCHOOL MATHEMATICS TEACHER

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Abstract:
This study was conducted to reveal the challenges experienced by mathematics teachers working in secondary schools. The study is a descriptive case study which was carried out in accordance with a qualitative understanding. The participants of the study consisted of 145 secondary school mathematics teachers. The participants reported the challenges they experienced by writing on a form developed by the researchers. The data obtained were analysed through the content analysis method, by considering the professional experiences of the participants. The findings of the study indicated that the challenges experienced by the participating mathematics teachers were based on four basic sources including learner, teaching process, parents, and curriculum. Learner-related challenges included students' negative attitude towards mathematics, lack of prior knowledge, unwillingness to learn, lack of study habits and misconceptions. In terms of the challenges related to the teaching process, the participants stated that they experienced difficulties in the following areas: teaching according to student level, teaching abstract concepts, the pressure of high-stake tests, teaching with more effort compared to other courses, and limited technological infrastructure. Parent-based challenges, on the other hand, included parents' prejudice against mathematics and unrealistic expectations from their children. As for the curriculum-related challenges, the mathematics teachers faced difficulties because of an excessive number of topics in the curriculum, abstract concepts, constantly changing curriculums and curriculum's being above the student level.

Keywords: Mathematics, secondary school, mathematics teacher, challenges experienced

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1. Introduction

The information age we live in requires societies to have qualified individuals. Having realized the importance of an educated population, most of the developed countries have started to structure their education systems accordingly. As a result of this situation, it has become essential for countries to follow each other's education systems and adapt good examples to their own systems (Balay, 2004). Today, it is of critical importance to raise qualified individuals who can think critically, have problem-solving skills, know how to access information, and are open to personal development. In addition, there is more need for individuals who have developed mathematical thinking and can use mathematics in modeling and problem-solving for the solution of new problems that have emerged in recent years (MoNE, 2018). In order to satisfy this need, mathematics course itself and raising successful students in this course stands out as an important issue.

However, students' math anxiety (Al Mutawah, 2015), negative attitudes towards this course (Bonne & Johnson, 2016), and perceiving math as a difficult, useless, and boring course (Murray, 2011) are among the factors that negatively affect their success. In the process of raising successful individuals in mathematics, teachers play critical roles. A study conducted with 415 adults from ten different professions (Akkaş & Toluk Uçar, 2020) shows that among the sources of mathematics success, innate mathematics ability comes in the first place and the mathematics teacher in the second place. This order indicates that people who are successful in mathematics are generally believed to be naturally gifted by society while it also highlights the importance of mathematics teachers as a crucial factor in success.

When research studies in the literature are examined, it is observed that mathematics teachers are a key element of every good education system (Marban, Palacios & Maroto, 2021). The reason for this is the fact that teacher motivation has a positive effect on student learning motivation (Frommelt, Schiefele & Lazarides, 2021). How mathematics teachers manage to teach in the classroom and their interactions with their students affect students' motivation and participation in the lesson (Leon, Medina-Garrido & Ortega, 2018). Apart from these, parents' attitudes and expectations and students' involvement in mathematics experiences positively affect students' motivation (Ingram & Meaney, 2021).

Teachers believe that good mathematics teaching can be performed with teachers who have a good content knowledge of mathematics, develop mathematical understanding, motivate students to participate in the teaching process, and have effective classroom management skills (Wilson, Cooney & Stinson, 2005). Also, teachers underline a variety of different points for a meaningful learning experience such as encouraging their students to understand what has been taught and supporting their students to make connections between what they have learned and their real-life experiences (Polman, Hornstra & Volman, 2021). Besides, by encouraging students to actively participate in the lesson, it can be ensured that students develop positive attitudes towards learning mathematics (Konstantinidou & Kyriakides, 2022).

In recent years, numerous studies have been conducted in which students, parents, school administrators and teachers are referred to for their opinions on the desired qualities of a good mathematics course or mathematics teacher (Forsblom, Peixoto & Mata, 2021; Jameel & Ali, 2016; Polman, Hornstra & Volman, 2021; Yu & Singh, 2018). Moreover, students' attitudes towards mathematics and the difficulties they experience in mathematics lessons (Brown, Brown & Bibby, 2008; Hanin, Colognesi & Van Nieuwenhoven, 2021; Passolunghi, DeVita & Pellizzoni, 2020; Quintero, Hasty, Li, Song & Wang, 2021; Yayla & Bangir-Alpan, 2019), families' attitudes towards mathematics (Ingram & Meaney, 2021; Lui & Leighton, 2021) and the relationship between students' socio-economic status and their success (Bakan Kalaycıoğlu, 2015; Sciffer, Perry & McConney, 2022) are the research topics that have been investigated most. When these studies are examined, it is seen that the role of the teacher in good mathematics education is stressed. The desired mathematics teachers are those who can motivate their students to the lesson, have good classroom management skills and deep mathematics knowledge, and can communicate well with parents and school administration.

Considering the studies conducted, it is viewed as essential to reveal what kind of challenges the mathematics teachers, who are expected to perform numerous responsibilities, face while conducting their lessons. However, no research has been found on this subject. Because of all these reasons, the aim of this study is to find out the views of mathematics teachers working in secondary schools about the challenges they encounter based on qualitative data, and to examine these challenges by considering their professional experiences.

2. Method

2.1. Research Design

This study, which aims to reveal the views of mathematics teachers working in secondary schools about the challenges they encounter, is a descriptive case study based on qualitative understanding. As stated by Thomas (2011), the case study is based on the analysis of people, events, decisions, periods, projects, policies, institutions, or similar systems holistically using one or more methods. Descriptive case studies, on the other hand, are conducted to describe a situation and to explain a phenomenon in detail based on the relationships between variables (Gay, Mills, & Airasian, 2009; Lincoln & Guba, 1985). Rather than generalizing the findings obtained, it is aimed to set an example so that similar situations can be understood. This study, besides determining the views of the mathematics teachers working in secondary schools about the difficulties they encounter, was also intended to reveal whether the challenges experienced by these teachers differ depending on their professional experiences.

2.2. Participants

The sample of this study was comprised of 145 secondary school mathematics teachers. The participants consisted of three different groups of mathematics teachers in terms of professional experience. The first group included mathematics teachers with relatively

limited experience who have been working as mathematics teachers for less than a year. The second group consisted of teachers with professional experience ranging between one year and five years. The last group included mathematics teachers who have been teaching for more than five years. The descriptive statistics regarding the participants' gender and professional experience are presented in Table 1.

Table 1: Descriptive statistics regarding the participants' professional experience and gender

Teaching Experience	Female		Male		Total	
	f	%	f	%	f	%
Less than a year	28	19.31	11	7.59	39	26.90
1 to 5 years	47	32.41	16	11.03	63	43.44
More than 5 years	18	12.42	25	17.24	43	29.66
Total	93	64.14	52	35.86	145	100.00

Table 1 demonstrates both frequency and percentage values regarding the participants' professional experience and gender. While 93 (64.14%) of the participants were female, 52 (35.86%) of them were male mathematics teachers.

2.3. Data Collection Tool

In the study, a form consisting of two parts developed by the researchers was used as the data collection tool. The first part of the form contained questions related to the participants' personal information. In the second part, there was one open-ended question written based on the purpose of the study. In this question, the participants were asked to write down the difficulties they encounter while working as a mathematics teacher in detail, based on their experiences. This form, which was prepared as a draft, in the beginning, was examined by two researchers including one expert in the field of Measurement and Evaluation and another expert in the field of the Turkish Language. The experts stated that the form prepared was appropriate in terms of both the purpose of the study and language and expression. After that, this form was applied to nine secondary school mathematics teachers and it was determined that the teachers did not have any problems in the application process, so the data collection tool took its final form for the actual application.

2.4. Data Collection

The data of the study were collected through the online application of the final form. Once the form was ready, it was uploaded to Google Forms. In order to reach the sample, firstly, an e-mail was sent to those who graduated from Mathematics Education Department, Faculty of Education, Pamukkale University in the 2019-2020 academic year. They were informed about the purpose and content of the study to be conducted, and they were invited to participate in the study. Also, they were requested to share the e-mail with other mathematics teachers with whom they work together and to let them know about the study.

The forms responded by the secondary school mathematics teachers, who voluntarily participated in the study, were written to a data file prepared in an electronic

environment. The file was checked regularly, and a reminder message was sent fifteen days after the first e-mail was sent to increase participation. Twenty days after the second e-mail was sent, it was determined that no new data was obtained in the electronic environment and the data collection process was terminated.

It was determined that a total of 161 participants were included in the study voluntarily. As a result of the examination of the data file, duplicate entries and irrelevant answer forms were eliminated, and the data collection set belonging to 145 participants was enumerated starting from one, and then the analysis of the obtained data was initiated.

2.5. Data Analysis

Descriptive statistics techniques were used for the questions in the first part of the data collection tool regarding the personal information of the participants. The open-ended question in the second part was analysed through the content analysis method.

The answers given by the participants to this question, which were asked to find out the participants' views on the challenges encountered while working as a mathematics teacher on the basis of their experiences, were read several times independently by both researchers. Next, the second researcher first created a code list according to the answers given to the question with the analysis she performed, then brought similar codes together and reached the sub-themes and finally the main themes. The second researcher prepared a form considering the sub-themes and main themes she reached based on an inductive understanding. This form prepared was presented to the first researcher who was asked to match the participants' views into this form. When the first researcher completed the process, the analyses carried out by both researchers were compared and the reliability of the research was determined as 93% using the formula "Reliability = Number of agreements / Number of agreements + Disagreements" (Miles & Huberman, 1994). However, both researchers then worked on differences until they achieved 100% agreement. In this process, the sub- and main themes, upon which there was no agreement at the beginning, were examined by the researchers together in detail and renamed by reaching a common decision. Findings obtained from the analysed data were presented in tables with frequency and percentage values, according to the professional experience of the participants. Considering the importance of revealing the participants' views clearly (Creswell, 2007; Yıldırım & Şimşek, 2006), direct quotations were provided. These direct quotations were presented together with the participant's gender (F= female, M= male), professional experience (I= less than 1 year, II= 1 to 5 years, III= more than 5 years) and the form number. For example, (F, III, 109) is an excerpt from the form numbered 109 and refers to a quotation from a female participant with more than five years of teaching experience.

3. Findings

The data obtained from the views of the participants about the challenges they encountered while performing their job were analysed. The emerging themes and sub-

themes are presented in Table 2, including the frequency values and the professional experiences of the participants to give an idea to the reader.

Table 2: Themes and sub-themes distributions regarding participants' views on the challenges encountered as mathematics teacher

Themes	**Subthemes**	**Teaching Experience**			**Total**
		Less than a year	**1 to 5 years**	**More than 5 years**	
Learner Related Challenges	• Negative attitude towards mathematics	20	38	17	75
	• Lack of prior knowledge	1	6	3	10
	• Unwillingness to learn	2	2	3	7
	• Lack of study habits	-	1	2	3
	• Misconception	-	2	1	3
	Subtotal	**23 (57.50%)**	**49 (60.49%)**	**26 (50.00%)**	**98 (56.65%)**
Challenges Related to Teaching Process	• Teaching according to student level	4	5	6	15
	• Teaching abstract concepts	3	6	2	11
	• Pressure of high-stake tests	-	4	2	6
	• Teaching with more effort compared to other courses	2	2	1	5
	• Limited technological infrastructure	2	1	1	4
	Subtotal	**11 (27.50%)**	**18 (22.22%)**	**12 (23.08%)**	**41 (23.70%)**
Parent-Related Challenges	• Prejudice against mathematics	3	5	6	14
	• Unrealistic expectations	-	1	3	4
	Subtotal	**3 (7.50%)**	**6 (7.41%)**	**9 (17.31%)**	**18 (10.40%)**
Curriculum Related Challenges	• Excessive number of topics and abstract concepts	2	5	4	11
	• Constantly changing curriculum	1	1	1	3
	• Curriculum above the student level	-	2	-	2
	Subtotal	**3 (7.50%)**	**8 (9.88%)**	**5 (9.61%)**	**16 (9.25%)**
Total		**40 (100%)**	**81 (100%)**	**52 (100%)**	**173 (100%)**

As is seen in Table 2, the challenges encountered by the participants while working as a mathematics teacher are based on four main sources. The findings show that the challenges experienced by the participants related to being a mathematics teacher are primarily due to the learner. This is followed by the challenges experienced in the teaching process, the challenges stemming from the parents and the curriculum-related challenges respectively.

Figure 1 below shows the distribution of these difficulties, reported by the participants, according to their professional experience.

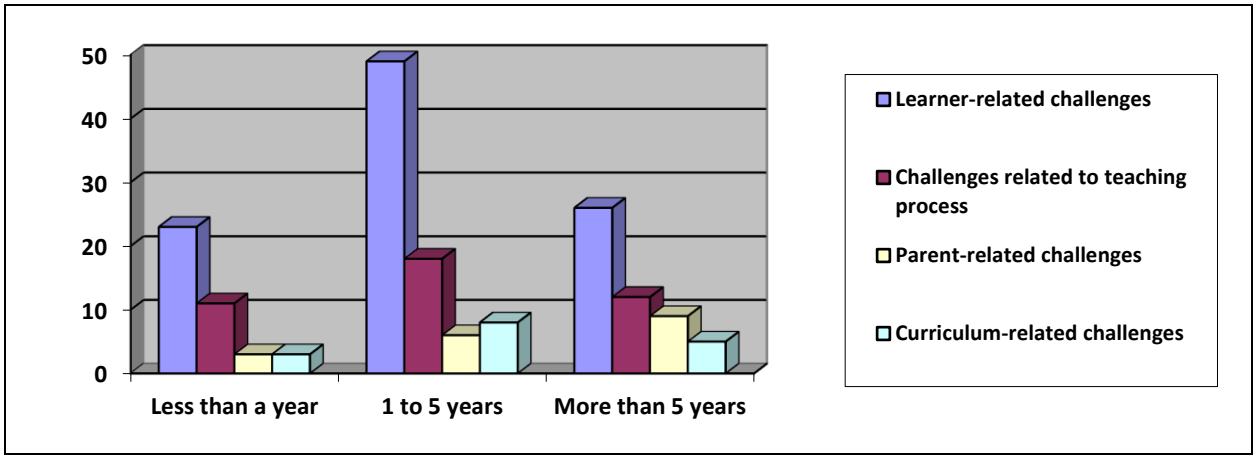

Figure 1: Distribution of the themes according to the professional experience of the participants

Looking at Figure 1, it is seen that regardless of their professional experience, all the participants primarily underlined the learner-related challenges they experienced, followed by the challenges they experienced in the teaching process. The participants having 1 to 5 years of professional experience expressed their curriculum-related challenges in the third place and the parents-related challenges in the last place. The participants having more than five years of professional experience, on the other hand, emphasized the parent-related challenges in the third place and the curriculum-related challenges in the last place. As for the novice teachers with less than a year of professional experience, they expressed both parents- and curriculum-related problems equally, on a limited basis. The themes that emerged in the study are discussed below one by one.

3.1 Learner-Related Challenges

The participants emphasized the learner-related challenges they experienced as mathematics teachers in the first place. These challenges included students' negative attitude towards mathematics, lack of prior knowledge, unwillingness to learn, lack of study habits and misconceptions about some mathematics topics. The participants noted the difficulties they experienced regarding students' negative attitude towards mathematics with the following words: "*Students regard mathematics as a very difficult course to get a good grade…*" (F, I, 33); "*Students view mathematics as a nightmare*" (F, I, 20); "*Not being able to change the image of math as an incomprehensible lesson*" (M, II, 10); "*Eliminating students' perception that 'mathematics is difficult* " (F, II, 64); "*Students' beliefs about mathematics: 'I can't do it* " (F, III, 112); "*Mathematics is, unfortunately, a difficult and intimidating subject for most students. It is the hardest thing to change this belief, I think.*" (F, II, 36); "*Dealing with students' fears of mathematics*" (F, II, 115). The following statement of one participant "*It is very difficult to try to break down the prejudice against mathematics that I had in my childhood now in my own students*." (F, II, 83) reveals the fact that the negative attitude towards mathematics course has continued to exist over the years. The fact that students approach the mathematics lesson with a previously acquired negative attitude surely

puts a strain on the teachers. On this issue, another participant explained her views in the following way: "*Mathematics is one of the subjects that students are most prejudiced about. Therefore, some students approach mathematics negatively. This situation creates some challenge for me*." (F, II, 9). Also, considering the belief that students have more prejudice against mathematics compared to other courses, one participant remarked that "*It can be difficult to win everyone's heart in mathematics, this is true for other courses as well, but the difference is that there is more prejudice against mathematics compared to other courses, which can be a factor that can create difficulty for us in the teaching process*" (F, I, 23). Another participant said "*Unfortunately, it is a lesson that is approached with prejudice, so it is more difficult to help children like this lesson and to teach it compared to other courses*" (F, II, 79). This challenge arising from negative attitudes also brings with it the necessity for teachers to make efforts to eliminate these prejudices. About this issue, a participant said, "*Math is a lesson that is approached with biases, and it takes a lot of effort to overcome these biases*." (M, I, 25) while another said "*There is a great prejudice among students against mathematics and the mathematics teacher should be able to break down this prejudice. In this sense, the teacher has a great responsibility*." (F, II, 35).

Except for the prejudice students have against mathematics, students' lack of prior knowledge also creates difficulties for teachers. Regarding this subject, the participants expressed their thoughts with the following words. "*Having students who haven't acquired basic mathematical skills*" (M, III, 27); "*Trying to help students with a low math background love mathematics*" (F, II, 77); "*Trying to teach mathematics to students with a poor background*" (F, II,100), and *"… Another important issue is that the student's mathematics background must be at a sufficient level. If not, the student may start to lose his/her interest in the lesson*." (F, II, 35).

Additionally, students' unwillingness to learn, lack of study habits and misconceptions create challenges for teachers. Regarding these challenges, one participant said, "*Trying to teach math to unwilling and aimless students is difficult*" (F, III, 110). While one participant reported "*The fact that students have learned some concepts incorrectly at previous grade levels*" (F, II, 63), another said, "*The hardest part is that the students who have completed primary education with a poor math background and even do not have basic operations skills do not make any effort, rather display laziness. And saying that they do not want to go on their education anyway, these students do not study in any way- no matter how hard I tried*." (F, II, 70).

3.2 Challenges-Related to Teaching Process

The participants also reported that they experienced challenges in the teaching process as mathematics teachers. These challenges included teaching according to student level, teaching abstract concepts, the pressure of high-stake tests, performing teaching with extra effort and limited technological infrastructure.

The participants mentioned that they face challenges in teaching according to the level of students. In this regard, one participant emphasized the challenge faced with the following words: "*Teaching the course according to the math level of the students*" (F, I, 8) and another participant highlighted the following challenge: "*Addressing the student level*" (M,

I, 28). Similarly, another teacher expressed her opinion by saying, "*Explaining simple subjects based on my student's level in my class*" (F, II, 66).

The participating teachers also expressed the challenge of teaching abstract concepts in mathematics lessons. In this sense, a participant said, *"… I have difficulties in teaching mathematics because the content we are talking about cover abstract concepts*." (M, II, 44). Similarly, others explain the challenge in the following ways: "*Concretizing some abstract concepts and topics in the minds of students*." (M, II, 51) "*Explaining abstract concepts clearly, especially to secondary school students*." (M, II, 5), "*It is difficult to explain the abstract concepts*." (M, I, 30), "*Trying to teach abstract concepts to students.*" (F, II, 120).

Besides, the fact that mathematics questions are an important determinant in high-stake exams puts intense pressure on teachers. One teacher explained the challenges arising from this situation with the following words: "*Parents and the school principal expect you to be successful in the exam all the time. The point they miss is that their own children take the exam, not us*" (F, II, 83). Another teacher said *"… comparison of the scores of mathematics courses with the scores of other branches in the High School Entrance Examination and the failure attributed us as a mathematics teacher. Another challenge is to turn into a private school teacher in the 8th grade because of the pressures and preparations for the exam, while having fun and making students love math in the 5th, 6th and 7th grades*" (F, II, 70).

Another challenge for the participating teachers is that they believe they have to work more than other teachers in the teaching process. One participant expressed his thoughts on this subject with the following words: "*It is considered as the most important lesson, and this causes more fatigue on teachers.*" (M, III, 71) and another participant said, "*It requires more energy than other branches in the teaching profession*" (F, I, 16).

Additionally, according to the teachers, another challenge in the teaching process stems from the limited technological infrastructure. One participant underlined this challenge by saying "I*nsufficient technological facilities in schools, the difficulties we have in creating a classroom environment where children can learn by exploring*" (F, II, 69) while another participant said, "*As a teacher, I know that I should be technologically more equipped and have a good command of numerical games but I feel uneasy as I do not have these qualifications*." (F, III, 4).

3.3 Parent-Related Difficulties

The participants stated that they also experience challenges due to their parents. Parents' having a prejudice against mathematics is the main challenge among these. This is followed by the fact that parents do not have realistic expectations from their children.

Regarding parents' prejudice against mathematics, one of the participants explained her opinions in the following way: *"…in my three years of teaching experience, I realized that children's negative attitude towards mathematics arises from their parents. Because parents instil this idea in their children from the moment, they start school by saying that mathematics is a very difficult lesson. As a result, children bring their fear with them to the class*." (F, II, 83). Similarly, another participant emphasised the challenge by saying: "*Parents' fear of mathematics. The children of all families who harbour this fear naturally approach the lesson uneasily*." (F, II, 96). Also, another participant explained that "*Most of the students and*

parents have prejudice about mathematics. They perceive mathematics as a lesson in which it is difficult to be successful, and this challenges me." (M, II, 44).

Another dimension of the parent-related challenges experienced by the teachers is the unrealistic expectations of the parents from their children. About this challenge, the participants expressed their ideas in the following way: "*Each student's parents expect them a high success in mathematics*" (F, III, 109); "*Parents' expectations (regardless of student level) are always high*." (F, III, 131), "*It is challenging to inform the parents of the children having no math ability in a suitable way about the fact that their child is incompetent in mathematics*." (F, III, 57).

3.5 Curriculum-Related Difficulties

The participants also mentioned the challenges they experienced arising from the mathematics curriculum. One of these challenges was that there is an excessive number of topics in the mathematics curriculum and the topics are mostly abstract. One participant explained this by saying, "*Since mathematics is an abstract and difficult lesson to understand, it challenges us from time to time*" (F, II, 90). Another participant said, "*Mathematics is abstract. There are too many topics. That's why, sometimes this makes it difficult to teach*." (F, III, 4).

The constant changes in the mathematics curriculum and the fact that it is above the student level are other challenges reported by the teachers in the study. Some example quotes about these challenges are as follows: "*Constantly changing curriculums*" (M, III, 68); "*Being able to teach the curriculum that changes every year by relating it to the topics covered in previous years*" (M, I, 92); "*The limited time to teach the essentials; the curriculum density*." (M, III, 138); "*The curriculum is so strict. We are not able to adjust it according to student level*" (F, II, 81); "*Trying hard to catch up with the curriculum in classes with students with very low academic success*" (F, II, 130).

4. Discussion and Conclusion

This study was carried out in order to reveal the views of mathematics teachers working at the secondary school about the challenges they experienced, and it was concluded that the challenges faced were based on four basic sources. These included learner-related challenges, challenges related to the teaching process, parent-related challenges, and curriculum-related challenges.

The challenges faced arising from learners stand out in the first place and considering this source of the challenges, students' negative attitude towards mathematics is the leading challenge. The teachers argued that they have difficulties because their students regard mathematics as a difficult subject and approach it with anxiety, and they stated that these prejudices hinder student success. This finding is also supported by some other studies indicating that students' math anxiety, negative attitudes towards the course, and perception of math as a difficult, boring, and useless lesson are among the factors that negatively affect their success (Al Mutawah, 2015; Bonne & Johnson, 2016; Murray, 2011). Furthermore, the findings obtained reveal that

teachers experience challenges due to students' lack of math knowledge, unwillingness to learn, lack of study habits and mathematical misconceptions. These challenges experienced by the teachers due to learners are in line with the findings of some other studies. A similar study conducted by Dağdelen and Ünal (2017) regarding the problems faced by secondary school students in mathematics lessons and by the teachers who conduct these lessons in the teaching-learning process also reveals that teachers mostly experience learner-related problems. While having a negative attitude towards the lesson was the primary challenge considering learner-related challenges, it was followed by a low level of readiness. In addition, during the mathematics lectures, students think that their learning difficulties are caused by themselves, and they expect the solution from their teacher. It is for sure that teachers play a critical role in eliminating these problems that are believed to be caused by students. Similar to the views of secondary school mathematics teachers, high school mathematics teachers also stated that students are uninterested in mathematics lessons (Berkant & Gençoğlu, 2015). Similar findings were found in studies conducted with high school students (Brown, Brown & Bibby, 2008; Murray, 2011).

It was also found in the study that mathematics teachers encountered challenges in the teaching process. The areas where they had challenges included teaching according to students' math levels and teaching abstract concepts.

In addition, the teachers noted that the high school entrance exam, which is applied to place students in high schools that admit students through examination, creates pressure on students and parents. This exam consists of social and scientific parts. In the social part, there are a total of 50 questions from four tests including Turkish language (20 questions), Turkish Republic History of Revolution and Kemalism (10 questions), Culture of Religion and Knowledge of Ethics (10 questions), and Foreign Language (10 questions). In the scientific section, there are 40 questions in total from two tests. The first test includes 20 mathematics questions and the second test contains 20 physics, chemistry and biology questions. The teachers stressed that these twenty mathematics questions are a determining factor for success among all these sections and that they feel extra challenged because of the fact that the students' mathematics achievements at the country level remain low compared to other subtests. This finding reported by the teachers as a challenge of being a mathematics teacher in the study also coincides with the statistics. 1,031,799 (83.46%) out of 1,236,308 students studying in the eighth grade in the 2021-2022 academic year in Turkey took the 2022 High School Entrance Exam, and among the tests that have 20 questions, the test with the lowest average of correct answers is mathematics (4.74), and when the item difficulties were examined, it was seen that the lowest rate of average correct answers given by the students was in mathematics test (LGS, 2022). Likewise, it is known that the mathematics achievement of students in many countries and in Turkey who want to study at university is of great importance in the exams they take (Martin, Gholson, & Leonard, 2010; MoNE, 2020). In the study conducted by Yanık et al. (2016), the finding that high school entrance exam puts pressure on mathematics teachers is parallel with this finding. In addition, this situation can explain the fact that mathematics teachers believe that they

have a job that requires considerable effort compared to other courses and that they regard this as a challenge. Besides, the teachers experience challenges due to limited technological infrastructure.

Another source of challenges experienced by the teachers comes from the parents. Parents' prejudice against mathematics is at the forefront of these parent-related challenges. The teachers experienced challenges due to the parents' perceptions that mathematics lesson is difficult. This finding of the study is similar to the finding of the study conducted by Özcan (2016) indicating that the number of parents who believe mathematics is more difficult than other lessons is higher in secondary school compared to primary school and that mathematics is perceived as a relatively difficult lesson. Another parent-related challenge is that parents do not have realistic expectations from their children. Parents, regardless of their children's mathematics level, expect their children to reach success beyond their level. This unrealistic expectation creates challenges for teachers. As mentioned before, high-stakes tests put pressure on teachers. This pressure is further increased when unrealistic expectations of parents from their children are added. According to the study conducted by Bozkurt and Dülger (2021), parents believe that mathematics is necessary for students to have a good profession and future. Students could reach this by showing high performance in entrance exams, so it is understood that parents attribute importance to mathematics mostly in terms of exam success.

The fact that there are too many topics in secondary school mathematics, and most of them are abstract, that the curriculum is constantly changing and that it is above the student level are the challenges that teachers believe arise from the mathematics curriculum. Similarly, in the study carried out by Dağdelen and Ünal (2017) to identify the problems perceived by teachers in the mathematics teaching process, the curriculum was determined as the main problem category, and under this category, the leading problems were that the curriculum is intense and consists of abstract topics. Teachers provide teaching services to their students as the implementers of the curriculum. It should not be forgotten that no matter how perfect a program is in theory, it takes shape in the hands of its practitioners. Investigating the challenges experienced by mathematics teachers, who are the implementers of the mathematics curriculum, can make significant contributions to curriculum development studies.

In this study, the challenges experienced by the mathematics teachers were also examined in terms of their professional experiences. The results revealed that regardless of their professional experience, the teachers stated that they experience learner-related challenges in the first place and challenges related to the teaching process in the second place. The participants having 1 to 5 years of experience mentioned curriculum-related challenges in the third place and the parent-related challenges in the last place while the participants with more than five years of professional experience emphasized the parent-related challenges in the third place and the curriculum-related challenges in the last place. The novice teachers having less than a year of professional experience, on the other hand, expressed both parents' and curriculum-related problems equally, on a limited basis.

Since this study is a qualitative study conducted with secondary school mathematics teachers, it is surely not possible to generalize the findings obtained to all mathematics teachers working in secondary schools. However, it is notable as it provides insights into the sources of the challenges faced by secondary school mathematics teachers while they perform their profession. In addition, carrying out studies in order to eliminate these challenges reported by the teachers will contribute to the field.

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