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A Letter to My Teacher: Perceptions of Middle School Students and Pre-Service Mathematic Teachers of Their Mentor Teacher

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A Letter to My Teacher: Perceptions of Middle School Students and Pre-Service Mathematic Teachers of Their Mentor Teacher

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Abstract

This research was conducted to determine the perceptions of pre-service teachers and middle school students towards mathematics teachers. For this purpose, the perceptions of both the pre-service teachers and students regarding six mathematics teachers were discussed comparatively. The research method is case study. The data of this study were collected through reflective letters of pre-service teachers ($f=35$) and students of these teachers ($f=105$) to six middle school mathematics teachers. The collected data were analyzed in the MAXQDA qualitative data analysis program. As a result of the analysis, it was determined that pre-service teachers and middle school students had positive and negative perceptions towards the mentor teacher in the categories of designing the learning-teaching process, attitude and classroom management. When the perceptions of middle school students towards their teachers were examined, it was seen that the positive attitude towards the teacher started out. While the students mentioned less about classroom management, it was seen that pre-service teachers talked more about and they were able to evaluate teachers from different perspectives in the context of classroom management. However, it has seen that both pre-service teachers and students have more negative perceptions about the design of the learning-teaching process than positive perceptions. In addition, it was determined that the negative perceptions of the preservice teachers about the mentor teachers stood out, while the students' perceptions of their teachers were more positive.

Introduction

In Türkiye, mathematics is the most feared subject, and a subject in which performance is unsuccessful at all levels of education and, thus, it is accepted that this situation should not be seen independently from mathematics teachers (Demirkol & Ergin, 2017). Moreover, students' successful performance in mathematics depends, not only on their own efforts and motivation, but also on the ability of their teachers to make students enjoy mathematics and to teach them at a level which is most suited to them (Ağiroğlu-Bakır, 2021). This is suggested because students' positive or negative attitudes and beliefs towards mathematics are directly affected by their mathematics teachers (Yetim Karaca & Ada, 2018; Wilkins & Ma, 2003). Therefore, it is important to know how teachers are perceived by their students (Cerit, 2008).

It is known that there is a relationship between students' learning of mathematics and teachers' education and experience (Ojo, 1986) and also between teachers' attitudes towards their students and mathematics (Adeleke, 2011). Moreover, effective mathematics teaching depends on teachers' in-depth knowledge and understanding of the mathematics they teach and their ability to make flexible use of this knowledge in their teaching tasks (National Council of Teachers of Mathematics-NCTM, 2000). To ensure this, teacher training institutions are expected to provide a sound education for pre-service teachers, so they are able to teach mathematics by understanding it and to acquire all necessary skills and qualifications (Adeleke, 2011). In this context; while vocational teacher training courses answer the questions of who, why, where and how to teach, the practical teaching course provides the opportunity to use theoretical knowledge obtained in vocational teacher training courses (Küçükahmet, 2002). Additionally, although there are many theoretical courses undertaken during tertiary education, the practice sessions in schools affiliated with the Ministry of National Education has a significant impact on the learning of pre-service teachers (Karadüz, Eser, Şahin & İlbay, 2009). Because practical lessons serve as a bridge between theoretical courses and practice (Giebelhaus & Bowman, 2002) and provide knowledge and skills to complement theoretical courses (Ulvik, Helleve & Smith, 2018).

That teachers teach as they are taught, and that they need to view teaching in different ways in order to learn to teach in different ways is an understanding that finds general acceptance (Schifter, 1998). Therefore, it would not be wrong to say that the teaching style of pre-service teachers will be shaped by their observation of both the teaching practices of their mentor teacher's practices and the teachers in their own education life. As it is known, a mentor teacher is "the teacher who provides guidance to the student pre-service teacher in regard to teaching practices required of the teaching profession" (MoNE, 2021, p. 1053). In the practice process, mentor teachers and pre-service teachers mutually benefit from each other (Schön, 1990). In the Teaching Practical course, pre-service teachers are present in a real classroom environment, sometimes as a teacher and sometimes as an observer, and they have the opportunity to see to what extent their learning in theoretical courses and practice are compatible with each other. Further, although teaching practice experiences provide critical opportunities for pre-service teachers to change their perceptions regarding their teaching careers, any negative situations that they observe or experience during these practice sessions can negatively affect their beliefs and perceptions about the teaching profession (Tarman, 2012). In this regard, determining the perceptions and attitudes of pre-service teachers towards their mentor teachers is of significance.

In the studies conducted regarding mathematics teachers, the perceptions of both students (Kebap & Çenberci, 2020; Şengül, Katrancı & Gerez-Cantimer, 2014; Yetim Karaca & Ada, 2018) and pre-service mathematics teachers (Çırak-Kurt & Yıldırım, 2020; Demirkol & Ergin, 2017; Şahin, 2013) were mostly tried to be revealed through metaphors. In addition, although there are studies on pre-service teachers' perceptions and beliefs about the teaching practical courses in the literature (Çiçek & İnce, 2005; Eraslan, 2008; Hascher, Cocard & Moser, 2004; Mau, 1997; Özdaş, 2018; Özkılıç, Bilgin & Kartal, 2008; Tarman, 2012; Tezel-Özbek & Aytakin, 2003), studies directly addressing the thoughts and perceptions about the mentor teacher are limited (Topkaya & Yalın, 2006). In this study, it was aimed to address the perceptions of pre-service mathematics teachers about their mentor teachers and also the perceptions of middle school students about their mathematics teachers. In order to realise this aim, as different to other studies, letters of reflection were used. As known, reflection is a basic human

capability allowing to consider the aims, motives, methods and means of one's own, and in others, actions and thoughts (Zuckerman, 2004). According to Dewey (1933), reflection requires attitudes that value the individual and intellectual development of oneself and others. Educators consider reflective writing as a strategy that encourages reflection and critical thinking (McGuire, Lay, & Peters, 2009). Reflective letters, which is a form of reflective writing, can also be used by many researchers as a qualitative method to generate data to re-assess themselves and their lived experiences (Pithouse-Morgan, Khau, Masinga & van de Ruit, 2012).

While the mathematics teachers, about whom letters were written, were mentor teachers of the pre-service teachers who participated in the study, they were also the current teachers of the middle school students at the school where the pre-service teachers were carrying out their teaching practice sessions. The aim here was to compare the perceptions of mathematics teachers from the perspective of students and pre-service teachers. In this context, the questions of the research are as follows:

- 1- What are the perceptions of middle school mathematics teachers about their mentor teachers?
- 2- What are middle school students' perceptions of their mathematics teachers?
- 3- How do middle school students' and pre-service teachers' perceptions of the same mathematics teachers differ?

Method

This study, which was conducted to determine the perceptions of pre-service teachers and middle school students towards mathematics teachers, was designed as a case study.

Participants

In this study, data was collected through letter of reflection written to six different middle school mathematics teachers. The study was conducted at a university in the Eastern Black Sea Region and at a middle school in the province where the university is located. Participation in the study was voluntary and 35 middle school pre-service mathematics teachers volunteered to take part in the study. In addition, three middle school students were randomly selected from the class in which each pre-service teacher carried out their teaching practice, and a total of 105 volunteer middle school students were included in the study by writing letters to their mathematics teachers. The six teachers to whom the letters were written were given the pseudonyms Leyla, Elif, Bahar, Ece, Hakan and Burak. The pre-service teachers were coded PT1, PT2, ..., PT35 and the students were coded S1, S2, ..., S105.

Data Collection

In this study, in which data was collected through letters of reflection, one of the researchers gave a total of 4 hours of training about reflective thinking skills and reflective writing to the pre-service teachers spread over a duration of 2 weeks. Then, three middle school students were randomly selected from the classrooms where the pre-service teachers conducted their teaching practice sessions. The pre-service teachers provided a one-hour training to these middle school students about reflective thinking and writing suitable to their level with the

guidance of the researcher. Then, these students were asked to write letters of reflection about their math teachers. The pre-service teachers were also asked to write letters of reflection to the same teacher (who was also the mentor teacher). Thus, data was collected through the letters written by both pre-service teachers and middle school students to the same mathematics teacher. Participation was voluntary.

It was observed that the pre-service teachers started their letter by addressing the mentor teachers as “Dear Teacher [name of teacher]”, “Esteemed Teacher [name of teacher]”, “Respected Teacher [name of teacher]”, while students used expressions such as “My dear teacher”, “Dear respectable teacher”. The letters of pre-service teachers were observed to end with an emphasis on their own professional careers, whereas the students mostly wrote of their wish to meet again.

Data Analysis

The analysis phase of the study started after collecting the reflective letters by pre-service teachers and students. Since the study was prepared in the qualitative research paradigm, data was analyzed by means of the qualitative data analysis program, MAXQDA. In this scope, the researchers came together and decided on the steps to be followed for the analysis. Firstly, the letters written by pre-service teachers and middle school students were coded independently by the researchers. Before merging the separate codes, the researchers saw that the opinions of student pre-service teachers and students about a certain teacher overlapped with each other at times and sometimes did not. For this reason, it was decided to use the “Clusters” feature of the qualitative analysis program to comparatively examine the perceptions of pre-service teachers and students of the each of the six teachers. After the independent coding of the researchers were completed, the codes that did not match were identified, and a consensus was reached. In addition, it was determined that some of the codes were scattered, so it was decided that the relevant codes should be combined under a general title. For example, codes such as the teacher giving mathematical definitions and creating misconceptions were merged and gathered under the title of *perceptions of negative learning-teaching process*. On the other hand, codes such as involving students in the lesson, emphasizing new generation questions were combined and grouped under the title of *perceptions of positive learning-teaching process*.

Results

In this study, which was conducted to determine the perceptions of pre-service teachers and middle school students towards the same mathematics teachers, it was found that the participants had both positive and negative perceptions. In the next step, positive and negative perceptions towards each mathematics teacher was analyzed amongst themselves. In this scope, the findings, the perceptions of pre-service teachers and students, and the positive and negative perceptions towards the mathematics teacher are presented, respectively.

Perceptions of Pre-service Teachers

An analysis of the letters of reflection of the pre-service teachers showed that negative perceptions of the mentor

teachers were considerably higher than their positive perceptions. The positive and negative perceptions of pre-service teachers include their perceptions about classroom management, learning-teaching process, attitude towards students and development of pre-service teachers. However, in the negative perceptions of the pre-service teachers, unlike the negative perceptions of the students, it was determined that they also had perceptions regarding communication with the teacher. Findings summarizing the positive and negative perceptions of pre-service teachers concerning the mathematics teachers are presented in Figure 1.

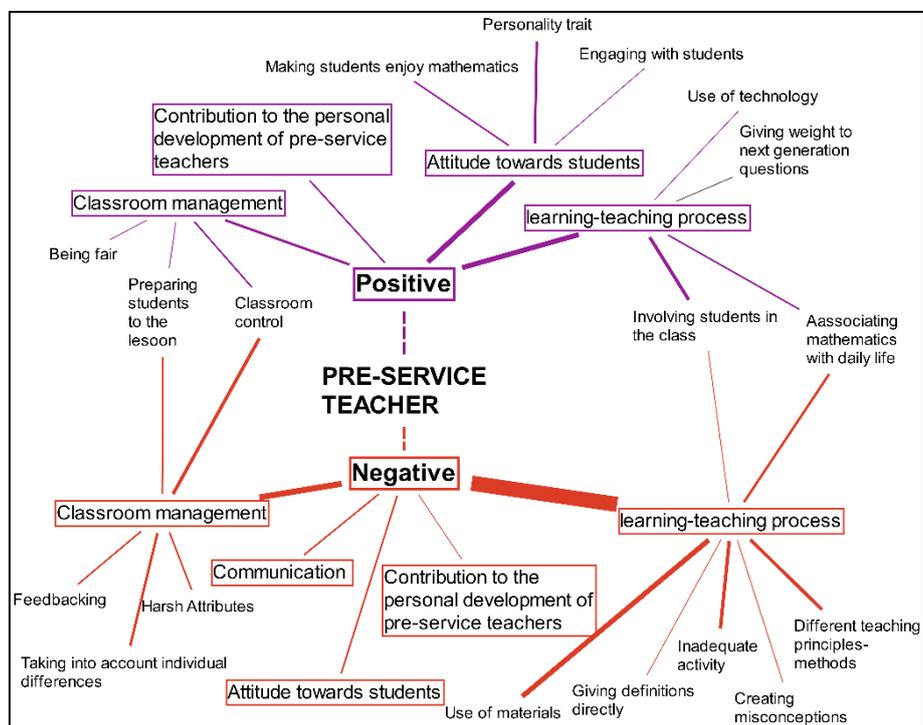


Figure 1. Pre-Service Teacher Perceptions of Mentor Teachers

In Figure 1, it can be seen that among pre-service teachers' negative perceptions of the mathematics teacher, their perceptions of the learning-teaching process stands out. Among the negative perceptions concerning the learning-teaching process, the perception about use of materials is more prominent compared to the others. It was observed that the majority of the pre-service teachers (n=10) stated that the use of materials in the mathematics lesson made mathematics more concrete. For example, PT25 coded pre-service teacher said, “*In one of your lessons, you said that in the equation $(+5)-(-7)$, two minuses makes a plus by taking a traditional approach and explained it to the children in this way. However, it would have been better understood and more memorable if you had cut out stamps from cardboard or told a story with the help of an elevator*”, from we can deduce that the use of materials would have made it easier to understand, and an emphasis was placed on the teacher not making use of materials.

It was observed that one pre-service teacher stated that the use of only the Z book leads students to rote learning, and another pre-service teacher emphasized that since students are in close relation with technology, materials related to technology should be included in the learning-teaching process. Apart from the use of materials, teachers not including activities and different teaching principles-methods in the learning-teaching process are among other negative perceptions of most pre-service teachers. There were pre-service teachers who made the suggestion that

teachers generally use activities to reinforce mathematical concepts, but that it would be more appropriate to use them in the introduction part of the lesson. In addition, pre-service teachers stated that teachers did not conduct many group activities and suggested that group work be conducted more often. In this context, among the negative perceptions of pre-service teachers is that teachers did not place much emphasis to different teaching principles and methods, such as cooperative learning. Some pre-service teachers (n=3) stated that the teacher directly provided mathematical definitions and that students were not given the opportunity to discover for themselves. Additionally, another perception that directs the perceptions of pre-service teachers having negative perceptions about the learning-teaching process is that teachers did not associate mathematics with daily life. The pre-service teachers emphasized that lessons should be more so related to daily life, rather than teaching exam-oriented lessons. Further, despite it being the case for only a small number of teachers (n=2), the fact that some teachers used statements that may cause confusion of concepts negatively affected the perceptions of pre-service teachers towards the learning-teaching process. For example, PT7's statement of "*Another aspect in which I experienced disappointment was the wrong explanations you gave during the lesson. A student asked why the equation $y+5$ could not be divided into two, and I observed that your answer was that 5 cannot be divided into two. I inferred that this explanation could create an incorrect understanding in the students. Because based on your explanation, it would then be very normal for students to think that in an equation such as $(1+4)$, since 4 is divided into two, the whole equation can be divided into two...*" supports the observation.

A review of Figure 1 shows that, negative perceptions about classroom management is the second most frequent after the negative perceptions about the learning-teaching process. Teacher dominance in the classroom played a major role in creating the perception of pre-service teachers regarding classroom management. The pre-service teachers stated that the teacher's own negative mood in the classroom, not using their tone of voice effectively, using wrong reinforces, and frequently engaging in off-topic conversations had a negative effect on classroom management. In addition, it was determined that the use of a harsh tone to the students also had an effect on the pre-service teachers' negative perceptions of the teacher's classroom management. For example, the statement of PT20 provides support to this situation: "*You should show more compassion to your students. Even flowers grow and bloom with love and water. They are only children. Your smile brings them joy and life. I will treat my own students positively no matter what*". In addition, teachers' not taking into consideration the individual differences of students were also effective in the formation of negative perceptions about their classroom management. Based on the perceptions of pre-service teachers, the situations in which individual differences were not taken into consideration were identified as not taking inclusion students into consideration, not lecturing according to student level and focusing only on the better performing students. For example, the statement of PT18's supports the perception that individual differences were not taken into consideration: "*When we entered class 7A, I noticed that you focused on the students who were studying in the class. Some students were disengaged from the lesson and you did not notice this. For example, while you were teaching the lesson from the workbook, I noticed that the student sitting next to me was scribbling and drawing pictures on his notebook instead of writing the equations solved on the board. It was obvious that he was detached from the lesson. Yes, some students may be more enthusiastic and hardworking, but the attitude of students who approach mathematics with a negative attitude needs to be broken. When I am lecturing, I would try to encourage self-confidence in students who do not come up to the board too often with sentences such as 'Let's solve the problem together'.*" On the other hand, it was

seen that some pre-service teachers (n=4) had negative perceptions about classroom management, in terms of considering that feedback given by the teacher as insufficient. In this context, it was observed that pre-service teachers made statements such as not giving immediate feedback and not giving enough feedback to students who did not understand. For example, PT8's statement, "*I realized that repeating the same solution to the student who did not understand how to solve the question did not lead the student to understand*", supports the negative perceptions.

The pre-service teachers (n=5), who thought that mathematics teachers had negative attitudes towards students, stated that these teachers had a harsh attitude towards their students. However, the frequency of positive perceptions of can pre-service teachers in regard to attitude towards students are more than the number of negative perceptions. On the other hand, it was seen that other negative perceptions of pre-service teachers included perceptions about the development of the pre-service teacher and communication. In this scope, some pre-service teachers emphasized that they experienced problems in communication because they were not introduced to the students.

When the positive perceptions of pre-service teachers about mathematics teachers are analyzed, it can be seen that the positive perceptions about the attitude towards students and the learning-teaching process are higher in frequency compared to the other positive perceptions. It was seen that the teacher's personality traits, showing an interest in students and attempting to ensure students enjoy mathematics were effective in creating positive perceptions of pre-service teachers about the attitude towards students. For example, PT28 stated the following about teacher Bahar, providing support to this claim: "*Your friendliness towards the students in the classroom, the way you approach them is very good for children of that age...Because the preconception of mathematics in most children may be caused by the teachers who teach the lesson. I noticed that your tender approach towards the students increased the interest of many students in mathematics*". In addition, it was also observed that pre-service teachers stated that teachers' positive attitudes towards students were effective in their participation in the lesson. The pre-service teachers stated that students were given ample time to think and students were given the opportunity to reason. As an example, the statement of PT13 supports this perception: "*Teacher Hakan had identified the actions that would mobilize the students in the flow of the lesson well. Students can quickly adapt to the new subject based on the previous subject. Of course, this is related to the questions asked by the teacher. Teacher Hakan allows a lot of time for the students to reason. In other words, he does not try to finish the lesson quickly, he wants the students to think. For example, while explaining prime numbers, he said that the smallest prime number is 2, and when the students ask why it is not 1, he allows the students discover it for themselves.*" It is among the findings that perceptions of positive attitudes towards students are intertwined with perceptions of the learning-teaching process.

It is seen that pre-service teachers have both positive and negative perceptions about giving examples from daily life. It was found that the frequency of negative perceptions (n=6) were more than positive perceptions (n=2). While PT29 stated to about Teacher Leyla that "I cannot see daily life in your lessons as much as I would have liked, you should adopt it a little more..." in regard to the aspect of daily life in her lessons, PT7 mentioned that Teacher Hakan associated the lessons with daily life in his lessons with such expressions as, "Your explaining the

lessons by associating them with daily life makes it easier for us and our students in terms of both comprehension and permanence of these subjects". Therefore, it is possible to say that the opinions about each teacher, differs. On the other hand, the fact that positive perceptions towards the learning-teaching process show less diversity than negative perceptions is one of the significant findings of the study.

Other positive perceptions of pre-service teachers about the learning-teaching process include aspects regarding the emphasis on new generation questions and the use of technology are included. However, it is seen that there are very few positive perceptions about these two categories (n=2). On the other hand, it is seen in Figure 1 that there are also negative perceptions among the positive perceptions of pre-service teachers, as it is the case regarding perceptions about classroom management. It is seen that pre-service teachers' perceptions about preparing/not preparing students for the lesson and dominating the classroom are common in both positive and negative perceptions. However, it is seen that perceptions of treating students fairly are included only in positive perceptions.

Perceptions about taking into account the development of pre-service teachers are included in both positive and negative perceptions. However, it was seen that positive perceptions were more frequent in comparison to the negative perceptions. In the letter written by PT34 to Teacher Hakan about taking into account the development of pre-service teachers, the following was written: *"It is a very positive approach that, instead of expecting progress immediately, you patiently wait for the duration of the process and consider the slightest development as a success. Each week you have evaluated us in more detail than the previous week. This situation pushes pre-service teachers to be more careful and do better."*

Perceptions of Students

When the letters of reflection written by students to their mathematics teachers were analyzed, it was found that, contrary to the perceptions of the pre-service teachers, the frequency of positive perceptions of the students were considerably more than their negative perceptions. The positive and negative perceptions of the students included classroom management, learning-teaching process and attitude towards students. The findings summarizing students' positive and negative perceptions of mathematics teachers are presented in Figure 2.

When the positive perceptions of the students in Figure 2 are analyzed, it can be seen that perceptions related to the attitude towards the teacher stand out in comparison to the other categories. In the letters written by students, it was observed that they drew heart shaped emojis and flowers when expressing their positive attitude towards their teachers. Some students stated that they can know themselves with their teacher and that their teachers were always there for them. S4 expressed that his family had a role in his positive attitude towards the teacher, stating *"My brother used to speak very highly of you, I too love you very much, you are a great teacher, but I cannot do well in exams"*. When the perceptions of positive attitudes towards the teacher are examined, it is seen that aspects such as empathizing with the student and the teacher's personality traits and unique lecturing constitute the majority of positive perceptions. It was observed that the students expressed the personality traits of their teachers as being kind, practical, energetic, humorous, and even dressing nicely. Emphasizing the personality traits of

Teacher Ece, S119 had stated “...If it wasn't for you, my intelligence for math would be lower. With your personality, your humor and your lessons, you have gained a place in our hearts like a nail hammered into the wall...” On the other hand, it is seen that the teacher’s unique lecturing style played a significant role in the positive perceptions of the students for the teacher. In other words, it may be stated that the lecture style of teachers has an impact on whether the student develops a positive perception of the teacher. For example, the statements of S78 support this finding: “Teacher, first of all, I would like to say that I like you very much, I am excited to take your classes. Your lecture style is great.... I feel lucky to have a teacher like you. I will never forget you even if I leave next year, I hope I have not done anything to offend you...”.

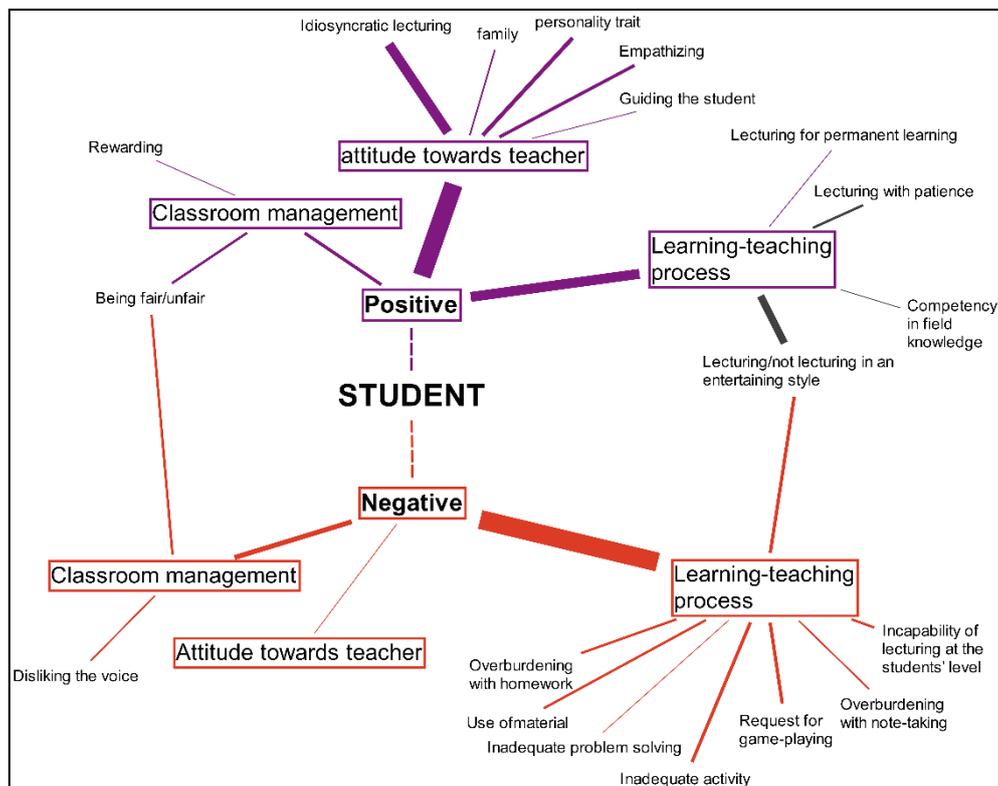


Figure 2. Student Perceptions of Their Teachers

It was also seen that students have positive perceptions about the learning-teaching process of mathematics teachers. In this scope, perceptions related to an entertaining lecture style stand out. In addition, although students mostly think that their teachers teach entertaining lessons (n=25), there are also students who find their teachers’ lessons boring (n=18). Among the positive perceptions of the students towards entertaining lectures, it was found that the students frequently used expressions such as “Teacher Burak is a lot of fun, he explains the lessons very well”, “...the math lesson is very entertaining”. It was observed that some students associated entertaining lessons with the personality traits of the teacher. For example, S56 emphasized the personality trait of the mathematics teacher in their statement, “it makes me happy that you are funny during the lesson”. In addition, some students who had positive perceptions about entertaining lecturing styles, stated that their interest in mathematics increased because of this. On the other hand, when the positive perceptions towards the learning-teaching process are analyzed, it is seen that the perceptions towards patience in lecturing are higher than the others. The students who had this perception stated that the teacher tirelessly explained when they asked questions or that the teacher make

efforts in order for the students to gain something. As an example to this situation, the statement of S89 offers support: *“When there is something that is not understood in the lessons, you always help. Even though you know that we do not like exponential expressions, you do your best to make us enjoy them...”* On the other hand, it is seen that competence in field knowledge and providing permanent learning were the least effective in the formation of positive perceptions towards the learning-teaching process.

When the other positive perceptions of the students about the mathematics teacher are examined, it is seen that they had positive perceptions regarding classroom management. However, it is worth noting that these perceptions are fewer than both the positive perceptions among the students and the negative perceptions. Regarding the positive perceptions of the students on classroom management, it is seen that there are perceptions about being fair and giving rewards. For example, S78’s statement of, *“Teacher Elif gives us really nice pens and chocolates as gifts when we score 100 in the exam. She values us...”*, shows that her perception is positive. In relation to the positive perceptions of the students about being fair, it was found that they used words such as *“you do not discriminate”*, *“you are not a feminist”*, *“you call on everyone in turn”*. On the other hand, as can be understood from Figure 2, it is seen that students also have negative perceptions on the issue of fairness. However, it is among the findings of the study that positive perceptions of fairness are more frequent than that of the negative perceptions.

An analysis of negative perceptions of the students about their mathematics teachers found that negative perceptions about the learning-teaching process were higher than those of other categories. It was found that the lack of games and activities in mathematics lessons plays an important role in the formation of this negative perception. For example, a number of students making statements such *“I like what my teacher explains, but they could explain it with more games (S78)”* and *“I think it would be good if they could play games, not in the lessons, but at least between the lessons (S19)”* supports this situation. On the other hand, when other negative perceptions of the students about the learning-teaching process are considered, it was found that they also mentioned the use of materials.

Some students even gave suggestions to the teacher about which kind of materials to use. For example, the statement of S90 supports this situation: *“I like your lessons because you make it easier for us to learn by writing and not asking us to buy a smart notebook. However, if I were you, I would ask us to buy a smart notebook and give us our homework from there. At the end of the subject, I would reinforce the lessons by using the website called Wordwall”*. On the contrary to this statement, some students expressed that they were not satisfied with the fact that they had to write a lot in a notebook in the mathematics lesson and that writing a lot in a notebook made the mathematics lesson boring. Another negative perception about the learning-teaching process was related to giving too much homework. One other negative perception is that lessons are not taught according to the level of the students. In the letter of S45, it was stated that *“Although I like your lecturing, you lecture too fast and move on to another subject immediately. I did not understand some topics and when I come to you, you do not easily share information about that topic and you give too much homework”*. The student expresses their thoughts on Teacher Burak, informing that he does not teach according to the level of the student and gives too much homework.

General Overview of Positive Perceptions of the Participants toward the Six Teachers

The letters written by pre-service teachers and students to the same mathematics teacher were analyzed; it was found that their positive perceptions overlapped to a great extent. However, the differing positive perceptions towards each teacher according to three categories (classroom management, learning-teaching process and attitude towards the teacher) is among the interesting findings of the study. The findings summarizing the positive perceptions of pre-service teachers and students towards each teacher in a holistic manner are presented in Figure 3.

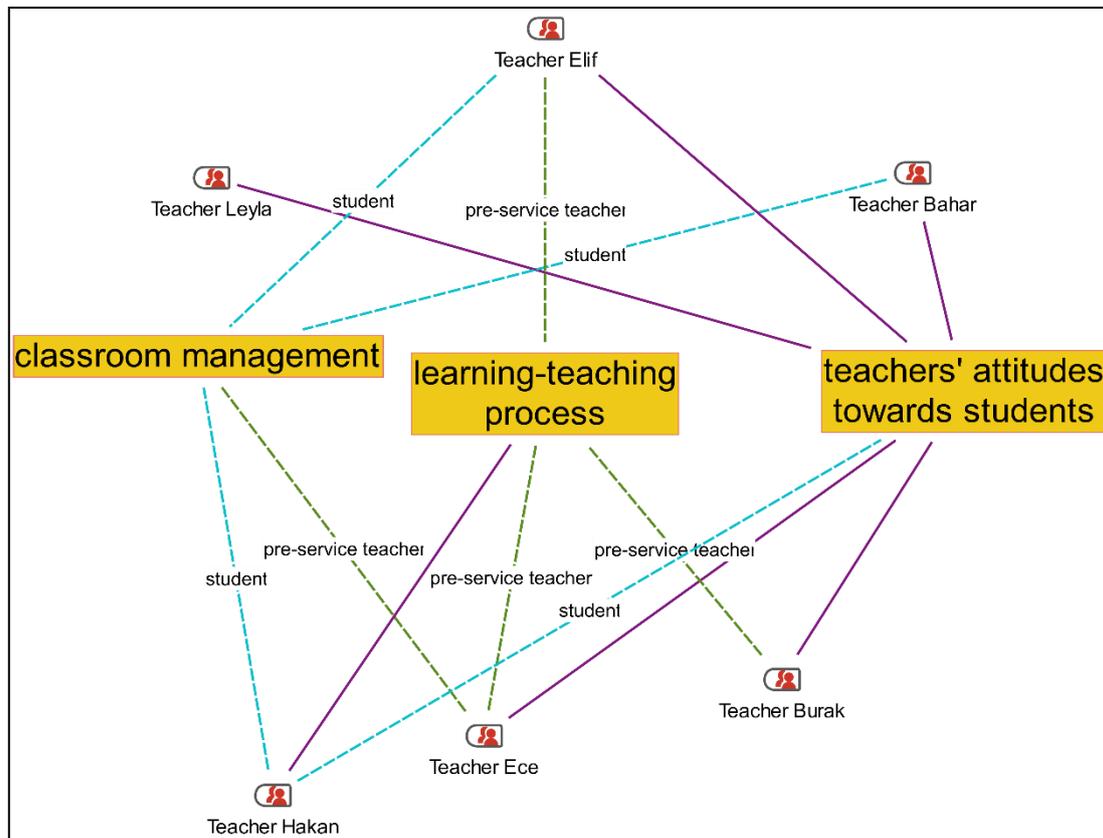


Figure 3. Positive Perceptions of Pre-Service Teachers and Students towards Their Mentor Teacher
(purple lines: positive perceptions of pre-service teachers and students, blue lines: only positive perceptions of students, green lines: only positive perceptions of pre-service teachers)

An analysis of Figure 3 shows that pre-service teacher and student perceptions of each teacher differ according to *classroom management, learning-teaching process* and *attitude towards the teacher*. However, it was found that the similarities in the positive perceptions of pre-service teachers and students towards the attitude towards the teacher were higher in comparison. For example, the perception of PT25 coded pre-service teacher towards Teacher Elif was as follows: “*First of all, I would like to start my letter by saying that when I observed you for the first time, your attitude towards students attracted my attention. My first impression was that you were very strict and authoritarian towards the students. As I continued my observation process, I realized that this was actually a process carried out with highly responsible and conscientious students as a result of the positive bond of trust you have established with the students*”. The perception of the student coded S3 towards the same teacher

is as follows: “*Teacher Elif is a very good teacher, she treats us very well, does what we say, explains the lesson very well, talks to us, loves us...*”. As can be seen, it can be said that the perceptions of the pre-service teacher and the student towards the attitude towards this particular teacher are in common. However, when the perceptions of attitudes towards Teacher Hakan were analyzed, only students had positive perceptions, while pre-service teachers did not have positive perceptions about the teacher. On the other hand, when positive perceptions about classroom management were undertaken, it was seen that students and pre-service teachers did not have common perceptions towards the same teacher. To give an example, while only students had positive perceptions about Teachers Elif, Bahar and Hakan, only pre-service teachers had positive perceptions about classroom management about Teacher Ece. It is noteworthy that only one pre-service teacher had positive perceptions about classroom management. The pre-service teachers stated that they had positive perceptions as they got to know the teacher. As an example, the PT14 coded pre-service teacher’s perception of Teacher Ece was as follows: “*I have been attending your lessons/classes for several weeks and I feel lucky to have encountered a different learning profile. As far as I could see, it is among your objectives to ensure students are active during the lesson. I deduced this from the fact that you give different students the right to speak in the classroom*”.

When the perceptions of each teacher are analyzed within themselves, it was seen that only the positive perceptions of pre-service teacher and student fully overlapped for Teacher Leyla. It is noteworthy that these perceptions are related to the attitude towards the teacher. Regarding Teachers Bahar and Burak, while the perceptions of both student and pre-service teachers about attitude overlapped, the perceptions in other categories differed. In another example, while only students expressed their perceptions about Teacher Bahar’s classroom management, only pre-service teachers expressed their perceptions about Teacher Burak’s learning-teaching process. Regarding Teacher Elif, it was seen that perceptions about classroom management were expressed by students, while perceptions on learning-teaching process were expressed by pre-service teachers. This being the case, it can be said that pre-service teachers expressed their thoughts about the learning-teaching process more frequently. When the perceptions in three different categories about Teacher Ece are analyzed, it is worth noting that attitude was a common perception and perceptions about classroom management and learning-teaching process were provided only by pre-service teachers.

General Overview of Negative Perceptions of the Participants toward the Six Teachers

An analysis of the letters written by pre-service teachers and students to the same mathematics teachers showed that there were similar and differing negative perceptions. The findings summarizing the negative perceptions of pre-service teachers and students towards each teacher are presented in Figure 4, holistically.

When Figure 4 is analyzed, it can be seen that negative perceptions towards each teacher differ within themselves, as is in positive perceptions. In this scope, it was found that negative perceptions of pre-service teachers and students on the learning-teaching process and their attitudes towards students/teachers differed from each other. However, it was seen that perceptions of pre-service teachers and students towards classroom management overlap to a great extent. In other words, both pre-service teachers and students provided criticism on the classroom management of the same teacher. While pre-service teachers had negative perceptions about classroom

control and not taking individual differences into consideration, students had more negative perceptions about not acting in fairness. On the other hand, the fact that negative perceptions about attitude belonged only to students is among the findings of the study which is of interest. In fact, the positive perceptions of students towards the teacher's attitude (f=35) are considerably higher than the negative perceptions (f=4), but it was seen that there are also students who do not like the teacher's attitude. In this scope, it was found that the teacher's having an angry temperament was effective in the formation of students' negative perceptions towards the teacher. When we look at the negative perceptions of students and pre-service teachers in the learning-teaching process, it is seen that the perceptions of students and pre-service teachers overlap to a great extent (Teachers Leyla, Elif, Ece, Hakan and Duygu). It was seen that only pre-service teachers (f=2) had negative perceptions of Teacher Bahar. When the letters of these pre-service teachers were analyzed, it was seen that they mentioned that the teacher made misconceptions in the lesson and that materials should be used to eliminate these misconceptions. It was found that the pre-service teachers made mention of instructional explanations such as misconceptions and the teacher giving definitions from a different perspective than the students.

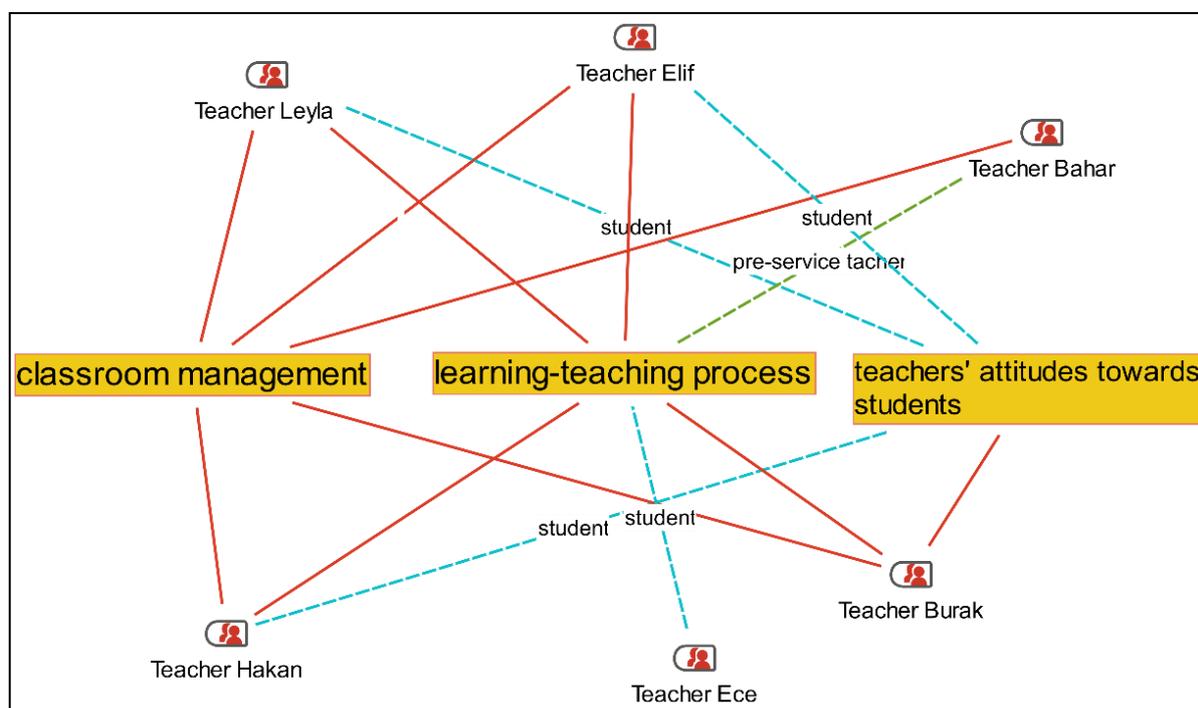


Figure 4. Negative Perceptions of Pre-Service Teachers and Students towards the Mentor Teacher
 (red lines: negative perceptions towards pre-service teachers and students, blue lines: only negative perceptions towards students, green lines: only negative perceptions toward pre-service teachers)

When the perceptions for each teacher are examined, it is seen that both pre-service teachers and students have negative perceptions about Teacher Burak's classroom management, learning-teaching process and attitude towards students. For example, the perception of pre-service teacher coded PT9 made the following statement about Teacher Burak, "First of all, when you come to class in the morning, some of the children are still sleepy, some of them are displaying the tiredness of the whole week. The moment you come to class, you sit at the table and turn on the smart board by saying 'ok, this is the page where we had left off, open your books' and start immediately start the lesson. In such a situation, the children start by trying to focus on the lesson, without having

started the day”, expressing that there is a quick transition to the lesson without preparing the students for the lesson. The perception of the student coded S47 about the same teacher is as follows: “*Teacher, when you lecture, you explain [the topic] as if we already know the topic; that is, you lecture in a mathematical language through equations, you do not lecture as if you are explaining a subject, you teach very quickly and I did not understand some topics...*” As can be seen, it was found that negative perceptions about the same teacher are in support of each other. On the other hand, when the negative perceptions about Teachers Elif, Leyla and Hakan are examined, it is seen that the perceptions in two categories are common, and the perceptions about attitude are expressed only by the students. In regard to Teacher Bahar, it is seen that there is a common perception and perceptions about the learning-teaching process belong only came from pre-service teachers. When the negative perceptions about Teacher Ece were examined, it was seen that only perceptions about the learning-teaching process were made mention. The fact that these perceptions belonged only to the student is among the interesting findings of the study.

Discussion, Conclusions and Recommendations

In this study, a comparative analysis of the perceptions of pre-service middle school mathematics teachers and middle school students regarding their mentor teachers was undertaken. As a result of the study, it was found that pre-service teachers and middle school students had positive and negative perceptions towards their mentor teachers in the categories of designing the learning-teaching process, attitude and classroom management. In addition, it was observed that pre-service teachers expressed their perceptions concerning communication with the teacher differently from the students. It can be said that the mentor teachers’ teaching strategies, classroom management skills, communication or interaction with students are critical aspects that enable pre-service teachers to take them as role models (Alemdağ & Özdemir-Şimşek, 2017). In this study, it was understood that pre-service teachers expressed their views on such issues.

As it is known, it is very important for mentor teachers to be able to critically assess pre-service teachers, and their own, teaching processes (Zeichner, 1990). The participating pre-service teachers undertook an evaluation on the knowledge of the mentor teachers, especially regarding the subject area teaching knowledge, with the consideration that they were already trained in mathematics teaching. Under the category of learning-teaching process, it was found that the perceptions were mostly negative as a result of the evaluation. The pre-service teachers criticized the mentor teachers for not using enough materials, not conducting sufficient activities, mostly preferring to use the lecture method and not applying a variety of teaching methods and techniques. Whereas, an innovative mathematics teacher should use materials in appropriate contexts by taking into account the interests, needs and even culture of their students in meaningful contexts (Clarke, 1997). Other studies have also revealed that pre-service teachers believe that the use of materials in mathematics education is effective (Yetkin-Özdemir, 2008).

Besides the use of materials, the inclusion of activities in the lessons is another factor that is thought to improve the quality of mathematics education (Horoks & Robert, 2007), in addition to ensuring student participation in the lesson, that is, teachers listening carefully to their students’ ideas and explanations (NTCM, 2000). However, in

this study, the mentor teachers, who were expected to set an example for pre-service teachers in this context, did not use activities and materials in their lessons and did not take action to ensure student participation in the lesson and thus the perceptions of pre-service teachers were negatively affected. Moreover, the deficiencies of the mentor teachers, negatively affected the perceptions of pre-service teachers, whereas the mentors have the potential to contribute directly to pre-service teachers ability to perform in the teaching profession effectively and efficiently and who are expected to help and guide them in teaching in the learning-teaching process (MoNE, 2021; Süral, 2017). In this context, there were pre-service teachers who stated that mentor teachers did not contribute to their development. The studies of Paker (2008) and Kasap, Demir, and Ünsal (2022) also found similar results.

Another noteworthy result of the study regarding the teaching-learning process was that some traditional methods (such as teachers providing definitions directly to students) were criticized and perceived negatively by pre-service teachers. However, students should be permitted to participate in all mathematical activities from the starting point, including the construction of definitions (Freudenthal, 1973). In addition, although pre-service teachers had mostly negative perceptions about associating mathematics to daily life, there were also pre-service teachers who appreciated the mentor teacher in this sense. Considering that associating mathematics with daily life makes mathematics teaching more effective (Gainsburg, 2008), it was pleasing to see that pre-service teachers are aware of this issue. This idea is supported by research that show that pre-service teachers advocate for the necessity and effectiveness of associating mathematics with daily life (Karakoç & Alacacı, 2015; Kavdır, 2011; Lee, 2012; Yiğit-Koyunkaya, Uğurel & Tataroğlu-Taşdan, 2018).

According to the results of the study, it was seen that the perceptions of middle school students about the teaching process of mathematics teachers differ from pre-service teachers. This is due to the perceptions of middle school students about the learning-teaching processes being more positive than that of the pre-service teachers. Nevertheless, it was the learning-teaching process that came to the forefront among the students' negative perceptions of their mathematics teachers. Similar to pre-service teachers, students also criticized their teachers for not using materials and not including activities. In another study, it was observed that middle school students expected their teachers to have a good command of mathematics topics and explain the lesson well (Yetim-Karaca & Ada, 2018). Another important factor in the negative perception of mathematics teachers by the students participating in the study is that they do not teach the lesson according to the level of the students.

Moreover, pre-service teachers also emphasized that teachers do not take into account the individual differences of students. Such a situation also evokes the related mathematics teachers' lack of knowledge of student recognition. It has been shown in other studies that teachers' and pre-service teachers' knowledge of recognizing students is deficient (An, Kulm & Wu, 2004; Baran-Kaya, 2019; Chick & Baker, 2005; Driel & Berry, 2010; Zuya, 2014). When it is considered that knowledge of student recognition includes understanding students' prior knowledge on the topic, learning difficulties, errors and the reasons behind them (Shulman, 1987), it can be understood that it is an important type of knowledge in effective mathematics teaching. Other negative aspects that the middle school students stated about the learning-teaching process was the issue of giving too much homework and writing down too much in notebooks. However, since many studies have shown that students who do more homework are more successful (Glasman & Besson, 2004), even though this situation is perceived as

negative by the student, whether it is positive or negative considering its benefits could be discussed.

Regarding the learning-teaching process, some of the students participating in the study thought that their teachers gave entertaining lessons, while some of them thought the opposite. Pre-service teachers did not express an opinion on this issue. The positive aspects of the teaching processes of the mentor teachers, which were found as positive aspects by the pre-service teachers, were ensuring student participation in the lesson, associating the lesson with daily life and using technology. On the same issue, the students mentioned such aspects as explaining the topic patiently, ensuring the permanence of learning, and knowing the subject area well. It is interesting that although there are overlapping issues in the negative perceptions of pre-service teachers and middle school students for the same teachers regarding the learning-teaching process, while the positive perceptions of the two groups were mostly not common. This may be due to the positive attitudes the students harbour towards their teachers. The fact that especially entertaining lecturing style and patience while teaching come to the fore is an indication of this; because it was observed that the students associated these aspects of teaching with their positive attitudes towards their teachers.

Students expectations of their teachers is to ensure that they enjoy mathematics with patience and tolerance by repeating it many times (Yetim-Karaca & Ada, 2018). In this study, the positive attitudes of the students towards their mathematics teachers, as observed in their letters, are noteworthy. They stated that their teachers had a unique teaching style and emphasized their personality traits such as being fun, patient and having empathy. Similarly, Şengül et. al. (2014) found in their study that middle school students used positive metaphors such as “flower, angel, book and professor”, which emphasized the guide, advisor, knowledgeable, instructive and entertaining aspects of mathematics teachers, and that they used very few negative metaphors.

The perceptions of the participating students and pre-service teachers about the attitudes of the six mathematics teachers towards their students were complimentary and were mostly positive. However, pre-service teachers did not express this situation as frequently as the students. In fact, negative perceptions of teachers predominated in all three categories. However, it is worth mentioning that despite students’ negative criticisms of their teachers in the areas of teaching process and classroom management, they had very few negative perceptions about their teachers in regard to attitude. Considering that middle school is one of the periods when the teacher has the most influence on students (Ayan, 2014) and that teachers have an impact in students’ attitudes towards mathematics (Kurt, 2019; Önal, 2013), students’ positive perceptions of their mathematics teachers are pleasing to see.

Another issue addressed in this study in context of the letters written by pre-service teachers and students was classroom management. In the scope of classroom management, students expressed more superficial issues such as fairness/unfairness of teachers, tone of voice and reward/punishment practices. Among these issues, being fair was mentioned by both students and teachers. Considering that teachers who do not act in fairness are not liked by their students (Ada, 2007), it can be said that this issue also has an impact on the negative perceptions of the students and pre-service teachers in this study about the teacher’s attitudes towards the student. However, since they had not yet started their teaching career, classroom management was the main source of concern pre-service teachers (Rahimi & Asadollahia, 2012) and based on the pedagogical education they received at university, pre-

service teachers were able to discuss classroom management from different aspects and in more depth.

The majority of pre-service teachers provided criticism to the mathematics teachers in regard to classroom management. The inability of middle school mathematics teachers to ensure classroom control was one of the main negative perceptions regarding classroom management. Some pre-service teachers participating in Öntaş, Atmaca & Kaya's (2017) study also stated that their mentor teachers could not practice good classroom management. The pre-service teachers who participated in the study of Alemdağ and Özdemir-Şimşek (2017) stated that they had the most difficulty in the area of classroom management.

As perhaps known, teachers may sometimes give up using active teaching methods due to the fear of losing classroom dominance (Akpınar, Çolak & Yiğit, 2012). This suggests that the six teachers participating in the study may not have included sufficient activities, materials and different teaching methods for similar reasons. Apart from this, other perceptions of pre-service teachers about mentor teachers in the context of classroom management were found to be as being harsh to students, incorrect reinforcement and feedback, preparing/not preparing students for the lesson and issues related to fairness.

Apart from the development of pre-service teachers, another issue that was mentioned by only the participating pre-service teachers was the issue of communication. In this regard, it was observed that the mentor teachers' not having supported the pre-service teachers in communicating with the students and not introducing the pre-service teachers to the students in the class caused negative perceptions. Similarly, Alemdağ & Şimşek (2017) found that not introducing the pre-service teachers to the students negatively affected the communication between the students and the teachers and even caused the students to call the pre-service teachers "you" instead of "teacher". Other studies on pre-service teachers and mentor teachers were found to also reveal that mentor teachers have poor communication with students and pre-service teachers (Arkün-Kocadere & Aşkar, 2013; Taşdere, 2014). As a result of the research, it is suggested that reflecting the teaching ideals of pre-service teachers are important, especially in regard of the issues related to the learning-teaching process, as also stated by Beck & Kosnik (2002).

In this study, letters of reflection were used to reveal the perceptions of pre-service teachers and middle school students about the same mathematics teachers. It is suggested that the research study may be repeated by conducting longer duration and observation-based studies. By writing reflective letters, pre-service teachers can ensure to have a tool in which they can discuss their own practices throughout their teaching career and thus have the chance to question practices and learn from their experiences. In addition, it will give a chance for teachers to see their shortcomings and shape their teaching and approaches accordingly by having students from all levels write letters about them.

Notes

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