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Pre-service Teachers' Journey of "Teaching" through Micro-Teaching: A Mixed Design Research

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Abstract

The aim of this study was to experimentally investigate the effect of micro-teaching on pre-service classroom teachers' teaching knowledge and skills and determine their views of micro-teaching activities, and their perceptions of the concepts of "student" and "teacher" through their mind maps. The study sample consisted of 13 senior pre-service classroom teachers. Embedded mixed methods design was used. The study consisted of two parts: quantitative and qualitative. In the quantitative part, a one group pretest-posttest experimental design was used. In the qualitative part, phenomenology was used. In the quantitative part, data were collected using the Micro-Teaching Assessment and Observation Form (MTAOF) (a self-assessment and peer assessment form). In the qualitative part, data were collected using a focus group semi-structured interview form and mind maps generated by pre-service teachers. MTAOF and peer assessment results showed that micro-teaching activities had a positive effect on participants' teaching knowledge and skills. Focus group interviews showed that participants had positive views of micro-teaching activities and of the teaching practice course. Mind maps showed that participants had multidimensional perceptions of the concepts of "student" and "teacher."

Keywords

Micro-teaching
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Introduction

The quality of education depends on the quality of teachers, who significantly affect the elements of the education system (Kaya & Büyükkasap, 2005). It is, therefore, of paramount importance to have well-equipped teachers. Theoretical courses offered by education faculties transform students into well-equipped teachers and provide them with activities to help them develop professionally. Activities in teacher training programs allow pre-service teachers to put theory into practice and develop teaching skills (Bayat & Öztürk, 2017). The teaching practice and school experience courses offered by teacher training programs, therefore, play a key role in preparing pre-service teachers for the profession (Marulcu & Dedetürk, 2014). The teaching practice course is the first stage where pre-service teachers put their knowledge and skills into practice in real learning settings while the school experience course is the last stage where they are provided consultancy services on teaching (Struyk & McCoy, 1996). However, research shows that activities and observational practices do not fully encourage pre-service teachers to put theory into practice and that teaching practices are not enough to gain teaching

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experience (Goodman, 1986; Lanier & Little, 1986; Taşdere, 2014). Pre-service teachers should, therefore, put their teaching knowledge and skills into practice in classroom settings and reflect on their experiences prior to engaging in teaching professionally (Kuran, 2009). Micro-teaching is one of the best methods for teacher education because it allows preservice teachers to establish a relationship between theory and practice and recognize their shortcomings and encourage them to take responsibility in learning and to assess themselves (Kpanja, 2001; Sevim, 2013).

Micro Teaching

Micro-teaching was first developed by Dwight W. Allen at Stanford University in the 1960s to provide practical and preliminary experience in teaching to investigate the effects of education under controlled conditions, and to use it as in-service training for experienced teachers (Cooper & Stroud, 1967, as cited in Marulcu & Dedetürk, 2014). With a decision made by the Council of Higher Education [CHE], micro-teaching was introduced to the teacher training programs of education faculties for the first time in 1990-1991 in Turkey (Uşun & Zorlubaş, 2007). Micro-teaching is an effective method that reduces pre-service teachers' anxiety and increases their self-confidence and allows them to put theory into practice, develop research and teaching skills, and evaluate themselves (Galanouli, Murphy, & Gardner, 2004; Güven, 2011). Micro-teaching activities are performed to allow pre-service teachers to gain teaching experience in classes with smaller teacher-student ratios and shorter class periods (Kallenbach & Gall, 1969). Micro-teaching activities take up five or twenty minutes of a class and allow pre-service teachers to put theory into practice in front of their peers (Allen, 1980; Huber & Ward, 1969). The main goal of micro-teaching is to allow pre-service teachers to put theory into practice, recognize their own strengths and weaknesses, and improve themselves (Fisher & Burrell, 2011). Micro-teaching activities also help them develop feedback and critical thinking skills. It is of paramount significance for pre-service teachers to approach their own teaching in a critical way and give feedback to their peers and receive feedback from them about their micro-teaching performance (Saraçoğlu, Gürışık & Furat, 2018). To achieve this, they should evaluate their own performance, attend their peers' presentations and assess them, and improve themselves in line with their feedback (Semerci, 2000).

Significance of the Study

Most studies address the effect of micro-teaching on teacher preparation (Akkuş & Üner, 2017; Chatzidimou, 2011; Napoles, 2008; Ostrosky, Mouzourou, Danner, & Zaghlawan, 2013) and perceptions of micro-teaching (Fernández & Robinson, 2006; Sevim, 2013; Göçer, 2016; Saraçoğlu et al., 2018). National studies on micro-teaching published between 1992 and 2016 are qualitative studies (63%), quantitative studies (20%), mixed studies (15%), and reviews (2%) (Güven, Kahveci, Öztürk, & Akın, 2016). There are, however, no studies that experimentally investigate the effectiveness of micro-teaching activities and determine pre-service teachers' views and mind maps.

This study is important in the sense that it investigated the effectiveness of micro-teaching activities in teacher preparation, determined their views of micro-teaching activities and of the teaching practice course, and analyzed their mind maps concerning the concepts of "student" and "teacher." Considering the limited number of mixed methods studies on micro-teaching (Güven et al., 2016), we believe that this study will contribute to the literature. Interviews were conducted to collect qualitative data in order to evaluate and interpret quantitative data in more detail. This study also employed the mind map method to determine pre-service teachers' perceptions of teachers and students, who are the two indispensable elements of teaching settings. Determining pre-service teachers' perceptions of the concept of "teacher" is of critical importance to be able to identify their tendency towards the teaching profession and to prevent mislearning about it (Akça Berk, Gültekin, & Çençen, 2015), to provide them with a new framework to encourage them for self-evaluation (Kıral, 2015), and to ensure that teaching practices are performed effectively (Yıldırım Hacıibrahimoğlu, 2016).

Research Objective

The aim of this study was to investigate the effect of micro-teaching on pre-service classroom teachers' teaching knowledge and skills and determine their views of micro-teaching activities and their perceptions of the concepts of "student" and "teacher" through their mind maps. To that end, the study sought answers to the following subquestions regarding preservice classroom teachers:

1. Is there a significant difference between their MTAOF self-assessment pretest and posttest mean scores?
2. Is there a significant difference between their MTAOF peer-assessment pretest and posttest mean scores?
3. What are their views on micro-teaching activities?
4. What are their views on the teaching practice course?
5. What do they take into account when preparing lesson plans?
6. What are their views on the concept of "teacher"?
7. What are their views on the concept of "student"?
8. How do they portray teachers on their mind maps?
9. How do they portray students on their mind maps?

Method

An embedded mixed design was used. In an embedded design, qualitative and quantitative data are collected simultaneously or sequentially and support each other and provide new perspectives. An embedded mixed design, qualitative research should incorporate a quantitative dimension (a case study) while quantitative research should incorporate a qualitative dimension (an experiment). The second dimension should strengthen the whole design from various aspects (Creswell & Plano Clark, 2011).

In the quantitative part of this study, a one group pretest posttest design was used. A significant difference between the arithmetic means of pretest and posttest scores indicates that the intervention is effective (Balcı, 2005; Karasar, 2008, as cited in Uyangör & Dikkartin, 2009).

In the qualitative part of the study, phenomenology was used. Based on the lived experience, phenomenology seeks an answer to the question "What is truth?" A researcher who uses phenomenology is interested in participants' subjective experiences and investigates how they perceive a phenomenon and what kind of meanings they attach to it. Phenomenology is a descriptive research method, and therefore, concerned with facts rather than generalization (Akturan & Esen, 2008, as cited in Göçer, 2013).

Participants

Participants of the study consisted of 13 (7 girls and 6 boys) classroom teacher candidates who were studying in the Department of Classroom Education at the Faculty of Education at a state university in the 2018-2019 academic year. Participants were recruited using convenience sampling under the guidance of the teaching staff within the scope of the teaching practice course. The study was conducted for 14 weeks in the classrooms and practice school of the faculty.

Data Collection Tools and Data Analysis

In the quantitative part, a Micro-Teaching Assessment and Observation Form (MTAOF) was used to determine the difference between the first and last videos taken by participants during the self-assessment and peer assessment application process. The MTAOF was first used by Ceyhun and Karagölge (2002) and laterimproved by Gürses, Bayrak, Açıkyıldız, and Doğar (2005) as a data collection tool. The MTAOF consists of two subscales: "micro-teaching lecture stage" (12 items) and "micro-teaching presentation stage" (11 items). The micro-teaching lecture stage consists of 12 items scored on a 3-point Likert type scale ("1 = No," "2 = Satisfactory," "3 = Yes"). The micro-teaching presentation stage consists of 11 items scored on a 3-point Likert type scale ("1 = Requires Further Attention," "2 = Satisfactory," "3 = Good"). Before analysis, the Shapiro-Wilks test was used to assess whether the quantitative data were normally distributed. The results showed that the data were not normally distributed, and therefore, the wilcoxon signed-rank test was used for analysis (Büyüköztürk, 2010). Table 1 and Table 2 show the Shapiro-Wilks test results.

Table 1. MTAOF Peer Assessment Normality Test

Score	N	Shapiro- Wilks	$\overline{X}$	Sd	Ss	Skewness	Kurtosis
Pretest	13	.010	1.93	12	.183	-1.907	5.265
Posttest	13	.038	2.53	12	.133	-1.251	1.120

The Shapiro-Wilks test results showed that participants' MTAOF peer-assessment pretest and posttest scores were not normally distributed (S-W=.010 Sd=12 $p< 0.05$; S-W= .38 Sd=21 $p>0.05$) (Table 1). Therefore, the Wilcoxon signed-rank test was used for analysis.

Table 2. MTAOF Self-Assessment Normality Test

Score	N	Shapiro- Wilks	$\overline{X}$	Sd	Ss	Skewness	Kurtosis
Pretest	13	.428	2.47	12	.252	-.719	.021
Posttest	13	.029	2.72	12	.265	-1.500	2.584

The Shapiro-Wilks test results showed that participants' MTAOF self-assessment pretest scores were normally distributed (S-W= .029, Sd=12, $p <0.05$), but their posttest scores were not (S-W=.428 Sd=12 $p> 0.05$) (Table 2). Therefore, the Wilcoxon signed-rank test was used for analysis.

Qualitative data were collected through focus group interviews and mind maps for the concepts of "teacher" and "student." Focus group interviews were conducted using a semi-structured interview

form. Focus group interviews were analyzed using inductive analysis while mind maps were analyzed using descriptive analysis.

The interviews were transcribed and read by the researcher and an expert multiple times and then coded. Each of the questions directed to students regarding micro teaching practices was handled as a subheading and codes and themes were created based on the answers given by the students (Biçer, 2011). The researcher and the expert exchanged ideas and engaged in discussions throughout the process. In qualitative research, reliability is defined as the consistency between codes derived from data by more than one researcher (Creswell, 2013, as cited in Karataş, Bozkurt, & Hava, 2016). The researcher and the expert compared the codes and grouped the non-matching ones under different categories or removed them. They reached a consensus in terms of coder reliability to develop themes. The inter-coder reliability was the ratio of the sum of agreements to the total number of agreements and disagreements (Miles & Huberman, 1994, as cited in Karataş et al., 2016). The researcher and the expert compared their themes and codes at the end of matching and found the inter-coder reliability 85%. Direct quotes from participants were also used to provide an accurate and coherent picture of participants' views (Yıldırım & Şimşek, 2011, as cited in Atav, Kunduz & Seçkin, 2014). In this context, themes were defined and interpreted in the results section.

The researcher and the expert classified the keywords in the mind maps of participants. Then, the content analysis of the keywords in the main and subbranches was made and codes and themes were created. In this context, the similarities in the main branches were determined as themes and the similarities in the sub branches were determined as the code (Kartal, 2018). The researcher and the expert compared the codes and grouped the non-matching ones under different categories or removed them. The inter-coder reliability was the ratio of the sum of agreements to the total number of agreements and disagreements (Miles & Huberman, 1994, as cited in Karataş et al., 2016). The researcher and the expert compared their themes and codes at the end of matching and found the inter-coder reliability %90. The names of the participants expressing the theme and codes are assigned by pseudonyms (Filiz, Ferhat, Nurdan etc.). The symbols on the main and subbranches, expressed by theme and code, were presented in the Table. In addition, keywords and symbols matched with the participants' drawings were explained in detail in the Table (Kartal, 2018). Direct quotes were also added under the Tables to provide an accurate and coherent snapshot of participants' views and to improve the reliability of the study (Yıldırım & Şimşek, 2011).

Experimental Process

Micro-teaching activities were performed in the teaching practice course. Within the scope of this course, pre-service teachers visit certain schools for classroom teaching for six hours a week, and then, attend two-hour classes as part of the teaching practice courseoffered by a lecturer of the faculty of education in order to evaluate their own teaching (CHE, 1998). The application process consisted of the following stages:

1. Prior to application, participants were asked to choose topics related to micro-teaching activities and to plan lessons. After application, participants were asked which points they paid attention to when planning the lessons.

2. The application consisted of two presentations performed by participants. They recorded their first 30-40 minutes presentations and then watched them in the faculty classrooms together with the lecturer. They used peer assessment to provide feedback to their peers in relation to the quality of their performance. A real classroom was the environment of choice for the micro-teaching practice to provide participants with a more realistic teaching experience and more realistic feedback from their peers. Therefore, the application was set to 30-40 minutes.

3. The 23-item MTAOF was used to allow participants to assess their own and their peers' micro-teaching performance.
4. After presentation, participants' views and critiques of their own and their peers' micro-teaching performance were determined.
5. Participants recorded their second presentations four weeks after the first one (first video shoot) and followed the same procedure. They continued their practice between the two video shoots.
6. After all presentations, focus group interviews were conducted with two groups of six participants.
7. Lastly, participants were asked to create mind maps regarding the concepts of "teacher" and "student." They were informed about the mind mapping technique and then asked to draw the image that came to mind when they heard the words "teacher" and "student." They were handed out crayons and allowed to draw for a 45-minute class period. Figures 2, 3, 4, and 5 show some of their drawings.

Figure 1 shows the steps of the experimental process.

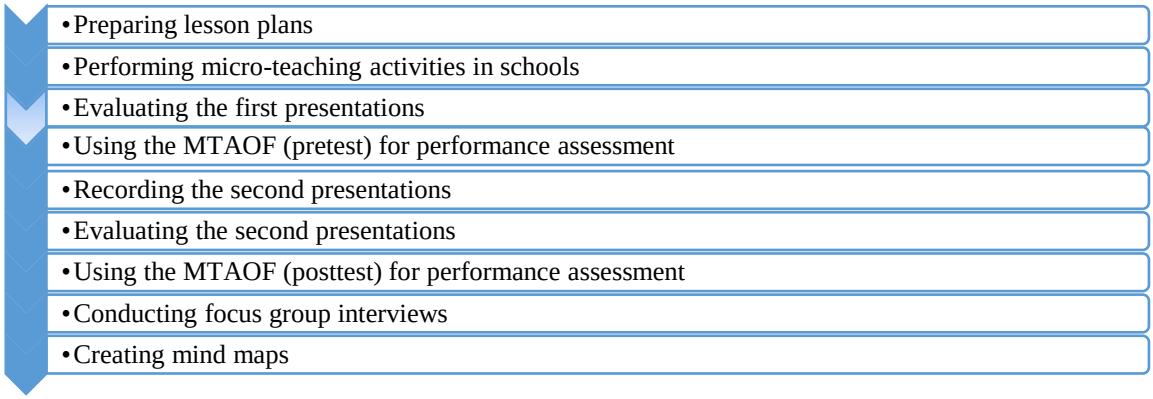

Figure 1. Experimental Process

Results

This section presents the analysis results of the MTAOF, focus group interviews and mind maps.

MTAOF Results

The Wilcoxon signed-rank test was used to seek answers to the first research question. Table 3 shows the results.

Table 3. Wilcoxon Signed-Ranks Test Results of Participants'MTAOF Self-Assessment Pretest and Posttest Scores

Score	Ranks	N	Sum of Ranks	Mean Rank	z	p
Pretest-Posttest	Negative Ranks	1	.00	11.00	-3.180	.001
	Positive Ranks	12	92	6.67		
	Difference	0				

The Wilcoxon signed-rank test results showed a significant difference between participants' MTAOF self-assessment pretest and posttest mean scores (z=-3.180, p <0.05), (Table 3). This result showed that micro-teaching helped participants recognize their shortcomings and improve themselves.

The Wilcoxon signed-rank test was used to seek answers to the second research question. Table 4 shows the results.

Table 4. Wilcoxon Signed-Ranks Test Results of Participants'MTAOF Peer Assessment Pretest and Posttest Scores

Score	Ranks	N	Sum of Ranks	Mean Rank	z	p
Pretest-Posttest	Negative Ranks	0	11.00	.00	-2.413	.016
	Positive Ranks	13	80.00	7.00		
	Difference	0				

The Wilcoxon signed-rank test results showed a significant difference between participants' MTAOF peer assessment pretest and posttest mean scores (z=-2.413, p <0.05). This result showed that micro-teaching helped participants improve themselves and that their peers noticed that improvement and reflected it on the results.

Focus Group Interview Results

This section addressed participants' responses to the questions in the interview form used during the focus group interviews.

Focus group interviews were conducted to answer the third research question. Table 5 shows the results.

Table 5. Participants' Views of Micro-Teaching

Theme	Code		Participants
Positive	Recognizing Weaknesses	Observing Development/Self	Filiz, Ferhat, Nurdan, Erdem, Mehmet, Aynur
		Speech/Enunciation	Ferhat, Nurdan, Erdem
		Speech Rate/Tone of Voice	Derya, Erdem, Filiz
		Classroom Management	Nurdan, Zerrin, Öykü, Aynur
		Answering Students' Questions	Mehmet, Zerrin, Nurdan
		Shyness	Ferhat, Serhat
		Patience	Derya
		Field knowledge	Filiz, Zerrin, Nurdan
		Taking Student Level into Consideration	Şenol
			Derya, Öykü, Şenol
		Communication	Nergis
		Authoritarian	Aynur, Öykü, Erdem
			Erdem, Nergis, Şenol
	Providing Professional Feedback	-	Nurdan, Ferhat, Filiz, Zerrin, Mehmet
		Application	Nurdan
	Self-Confidence	-	Nurdan, Mehmet
	Social Learning	-	Erdem, Zerrin, Nurdan, Filiz
Negative	Camera	Stressful	Filiz, Erdem, Ferhat, Nurdan
		Reservation	Ferhat, Nurdan, Erdem

Participants' views were grouped under two themes: "positive" and "negative." The theme "positive" included the codes "recognizing weaknesses," "providing professional feedback," "self-confidence," and "social learning." Most of participants' positive views of micro-teaching fell under the heading "observing development/self" under the code "recognizing weaknesses." The majority of participants' negative views of micro-teaching fell under the heading "stressful" under the code "camera." Direct quotes from participants are as follows:

> *Nurdan: It helps us develop self-confidence. I was always quiet, I wouldn't make a peep, but for the first time I was self-confident about teaching, which was great. We all saw it and learned from each other's strengths and weaknesses. We recognized our own weaknesses and had a chance for self-assessment. For example, we got to give and receive feedback, I mean, from you as well as from my peers, which was very nice.*
>
> *(Positive)*
>
> *Filiz: I can also see that there has been a significant improvement in my performance since my first presentation. I mean, I can also tell from my friends' feedback, but I must say I feel a little nervous when the camera is on.*
>
> *(Negative)*

Focus group interviews were conducted to answer thefourth research question. Table 6 shows the results.

Table 6. Participants' Views of Teaching Practice Course

Theme		Code	Participants
Awareness	Shortcomings	Having a Good Command of the Course Material	Zerrin, Filiz, Şenol, Nergis,
		Getting Down to Students' Level	Şenol, Öykü, Nergis
		Avoiding Students' Questions	Zerrin, Nurdan, Öykü
		Classroom Management/Authority in the Classroom	Mehmet, Erdem, Şenol, Aynur, Öykü
		Patience	Derya
		Self-Expression/Talking	Erdem
		Association of Topics	Ferhat
		Application	Ferhat
	Advantages	Theoretical Knowledge	Erdem, Ferhat
		Getting along with Children	Nurdan, Öykü, Nergis, Şenol, Öykü
		Authority in the Classroom /Classroom Management	Zerrin, Nergis, Öykü
		Loving Students	Filiz, Öykü, Nergis
		Compassion/Conscience	Mehmet
		Drawing Attention	Şenol, Öykü
		Use of Materials	Aynur, Şenol
		Control of Tone of Voice/Talking	Erdem, Filiz
		Communication with the Whole Class	Şenol, Nergis, Filiz

Table 6. Continued

Theme	Code	Participants
	Educational Game	Zerrin, Nurdan, Erdem, Filiz
	Smart Board / E-Resources (Morpa Campus, Education Information Network, Education Center Etc.)	Zerrin, Nurdan, Erdem, Derya, Mehmet, Ferhat
	Mixed Questions	Erdem, Zerrin, Öykü
	Sources on the Market/Booklets	Zerrin, Nurdan
Measurement and Evaluation Tools, Methods and Techniques	Practices in MONE Books	Zerrin
	Materials	Derya, Zerrin, Mehmet
	Classic Questions	Erdem
	Worksheets (Tests)	Erdem, Öykü, Nergis, Şenol, Erdem
	Right-Wrong	Derya, Erdem
	Filling in the Gaps	Erdem, Derya, Öykü, Nergis
	Painting	Zerrin, Derya, Nergis
	Strategy of Teaching through Presentation	Derya, Aynur, Nergis, Öykü, Erdem
	Strategy of Teaching through Exploration	Zerrin, Derya, Nurdan, Şenol, Ferhat, Nergis, Öykü, Erdem
	Show	Derya, Zerrin, Mehmet
Learning-Teaching Process Strategies, Methods and Techniques	Cooperative Learning	Mehmet
	Narration	Derya, Zerrin, Nurdan
	Q&A	Derya, Zerrin, Nurdan, Aynur, Öykü, Nergis, Erdem, Şenol
	Educational Game	Filiz, Öykü
	Drama	Derya, Nergis, Öykü
	Station	Derya
	Depends	Erdem, Zerrin, Mehmet
Recommendation	Classroom Management	Mehmet
	Classrooms for Interns	Zerrin, Serhat

Participants' views of the teaching practice course were grouped under the themes of "awareness," "strategies, methods and techniques," "measurement and evaluation tools, methods and techniques," "improvement," and "recommendation." Most participants' views of the teaching practice course related to the codes of "shortcomings" and "advantages" under the theme of "awareness." The codes of "educational game" and "smart board/e-resources" were prominent under the theme of "measurement and evaluation tools, methods and techniques." Direct quotes from participants are as follows:

> *Zerrin: I don't mind it at all, I mean, I don't care if the camera is rolling or if people are watching me. It's just that I cannot have a solid grasp of the course material, that's my weakness. I prepare the night before. I don't think I can convey it any better anyway, that's another weakness of mine. Then I thought about the questions that students might ask. One of them had asked "how far is earth from the sun?" and so I said to myself "Ow, I should know more about the subject."*
>
> *(Awareness, Strategies, Methods and Techniques, Measurement and Evaluation Tools, Methods and Techniques, Improvement)*

Serhat: I believe I'm good at classroom management in theory, I mean, I know a lot about it, but it doesn't matter how good you are, all that matters is how well you can convey the material, which at first I was totally terrible. I was nervous and could not express myself at all. Now that I know all about classroom management, I believe that I can be a good teacher. My friends also told me that they also noticed a significant progress in my performance in the second video. But I just can't speak more slowly, I wish I could. But I think that there has been an improvement in general. Besides, some students are more talented than others; noticing them and guiding them in line with their abilities would be very nice. I will be careful about things like this.

(Awareness, Improvement, Recommendation)

Focus group interviews were conducted to answer thefifth research question. Table 7 shows the results.

Table 7. Things that Participants Take into Account When Preparing Lesson Plans

Theme	**Code**	**Participants**
Subject	Depending on Association with	Ferhat, Nergis All
Stages of Plan Preparation	All	All
Intern Teacher	Support/Guide	Mehmet, Derya, Erdem, Filiz, Şenol, Aynur, Öykü
Student	Level Interest	Mehmet, Derya, Ferhat, Şenol, Erdem Zerrin, Öykü, Nergis
Outcomes	-	Nurdan, Öykü
Time/Duration	-	Aynur, Şenol

The themes concerning the preparation of lesson plans were "subject," "stages of plan preparation," "intern teacher," "student," "time/duration," and "outcomes." Direct quotes from participants are as follows:

Ferhat: It depends. There are some topics, I mean it says "math" or "verbal" on the lesson plan that the teacher gives us, it has nothing to do with math, you can't use that, so lesson plan depends on the topic. I mean, you should take students' level into account, I mean, what's the best way to use? Visual, figural or verbal, I try to give it all.

(Subject, Stages of Plan Preparation, Student)

Filiz: First of all, I find out about students' level, I mean, I first talk to their teacher. I ask the teacher about their level and then I make my plan and get them to do activities.

(Intern Teacher, Student)

Focus group interviews were conducted to answer the sixth research question. Table 8 shows the results.

Table 8. Participants' Views of the Concept of "Teacher"

Theme	Code	Participants
Personality Trait	Affectionate/Warm-Hearted	Zerrin, Filiz, Derya
	Innovative	Öykü
	Self-Improving	Öykü
	Promoting Self-Confidence	Zerrin, Serhat, Erdem, Şenol
	Knowing Students	Zerrin, Erdem
	Helpful	Şenol
	Kind-Hearted	Şenol
	Preparing for Life	Şenol
	Teaching How to Teach	Nergis, Serhat, Öykü
	Fun	Öykü
	Honest	Derya
	Advanced Communication Skills	Nergis
Occupation	Field Knowledge	Ferhat
	OccupationalKnowledge	Ferhat
Immediate Circle	Parents	Ferhat, Aynur
	Friend	Şenol
	Complementary	Derya
Inspiring	Book	Mehmet
	Life	Mehmet
	Superior Being	Nurdan, Şenol
	Guide	Ferhat, Şenol, Öykü, Erdem
	Role Model	Öykü, Erdem

Participants' views of the concept of "teacher" were grouped under the themes of "personality trait," "occupation," "family," and "inspiring." Direct quotes from participants are as follows:

> *Derya: I see my teacher as complementary to family, not entirely my parents but not entirely my teacher either. I have some shortcomings, and I want to be complementary to my students. For example, imagine you plant a seed; the mother is the sun and the father is water, and I should be the air.*
>
> *(Immediate Circle, Complementary)*

> *Erdem: I agree with that. Students need self-confidence to be able to express themselves. They have great views, for example, the topic is overpasses, and the students asks where they lead to. They think differently but they just can't express themselves. Not for all, but if you instill self-confidence in them, they can express themselves way better, that's why self-confidence is important to me.*
>
> *(Personality Trait)*

Focus group interviews were conducted to answer the seventh research question. Table 9 shows the results.

Table 9. Participants' Views of the Concept of "Student"

Theme	Code	Participants
Molding	Tabula rasa	Zerrin, Şenol
	Sapling	Şenol, Öykü
	Paste	Mehmet
	Thinner than Hair	Derya
Improving	Critical Perspective	Mehmet
	Different Perspective	Şenol, Öykü, Erdem
	Self-Confidence	Mehmet, Şenol, Filiz
Emotional	-	Derya, Serhat, Nurdan
Innocent	-	Derya, Öykü, Ferhat
Curious	-	Şenol, Nergis, Aynur
Careful	-	Öykü, Nergis, Şenol

Participants' views of the concept of "student" were grouped under the themes of "molding," "improving," "emotional," "innocent," "curious," and "careful." Direct quotes from participants are as follows:

> *Zerrin: You know they say a student's mind is like a tabula rasa, I totally agree with that, it is like a tabula rasa, it becomes whatever you put in it.*
>
> *(Molding)*

> *Mehmet: That's how I see a student, I see him as paste to be molded, to be shaped. I mean, studentsare really like paste, when you help them develop a perspective, they can tell right from wrong, so you should mold them the way you want them to be.*
>
> *(Molding, Improving)*

Mind Maps Results

Participants' mind maps were analyzed to seek answers to the eighth research question. Table 10 shows the results.

Table 10. Participants' Mind Maps for Teachers

Theme	Code	Participants
Personal Characteristics	Understanding/Tolerance	Nergis, Erdem
	Innovative	Erdem, Öykü
	Affection	Nergis
	Knowledge	Nergis
	Patience	Nergis
	Compassion	Nergis
	Trust	Nergis
	Respectful	Erdem
	Social	Erdem
	Creative/Different perspective	Öykü
	Productive	Öykü
	Helpful	Öykü
	Good-Humored	Öykü
	Light	Öykü
	Skill	Serhat
Social Life/Life	Sports/Play	Şenol, Ferhat, Mehmet
	Picnic/Eating	Şenol, Ferhat
	Mother	Erdem
	Father	Erdem
	Friend	Erdem
	Colleague	Erdem
	Vacation/Trip	Şenol
	Music	Ferhat
	Child	Mehmet
	Book	Mehmet
School/Teaching	-	Nergis, Ferhat
	Notebook	Öykü, Nergis
	Pen	Öykü, Nergis
	Board	Öykü
	Book	Nergis
	Bag	Ferhat
	Class	Serhat
	Science	Serhat
	Achievement	Ferhat
	Humanity	Mehmet
	Information	Mehmet
Student	Self-confidence	Serhat
	Happiness	Serhat
	Sharing	Serhat
	Love/Respect	Serhat
	College	Ferhat
	Goal	Ferhat
	Difference	Ferhat
	Occupation/Teacher	Ferhat

Table 10. Continued

Theme	Code	Participants
Education/Learning	Primary School	Mehmet, Erdem
	High School	Mehmet, Erdem
	Undergraduate/College	Mehmet, Erdem
	Ethics	Serhat
	Behavior	Serhat
	Development	Serhat
	Secondary School	Erdem
Occupational	Pedagogy	Erdem
	Field knowledge	Erdem
	General Knowledge	Erdem
	Student	Şenol
	Achievement	Şenol
	Goal	Şenol
System	Hierarchy	Serhat
	Plan	Serhat
	Rules	Serhat
	Time	Serhat
Family	Parents	Mehmet, Öykü
	Child/Student	Mehmet, Öykü
	Sibling	Nergis
	Friend	Nergis
Life	Hardship	Şenol
	Lack of Sleep	Şenol
	Dreams	Şenol
Science	Technology	Serhat
	Material	Serhat
	Agenda	Serhat

Participants' perceptions of teachers on their mind maps were grouped under the themes of "personal characteristics," "social life/life," "school/teaching," "student," "education/learning," "occupational," "system," "family," "life," and "science." The codes of "understanding/tolerance" and "innovative" under the theme of "personal characteristics" were the most prominent. Under the code of "understanding/tolerance," participants drew happy faces and hearts. The codes of "sports/play" and "picnic/eating" were the most prominent under the theme of "social life/life." Under the code "sports/play," participants drew footballs and goal posts. Under the theme of "school/teaching," participants' drawings referred mostly to the codes of "notebook" and "pen." Under the theme of "student," participants' drawings referred mostly to the codes of "self-confidence," "happiness," "sharing," "love/respect," "college," "goal," "difference," and "occupation/teacher." Participants drew a female student under the theme of "student." The codes of "primary school," "high school" and "undergraduate/college" stood out under the theme of "education/learning." Participants made drawings of students playing hopscotch for the code of "primary school" while they drew two stick figures for friendship in high school. For the code of "college," they emphasized the concept of article and made a drawing of a book. The theme of "occupational" included the codes of "pedagogy," "field knowledge," "general knowledge," "student," "achievement," and "goal." Participants drew a student concerning the code of "pedagogy," a teacher standing next to a board for the code of "field knowledge," a book for the code of "general knowledge," a student for the code of "student," and an arrow for the code of "goal." The theme of "system" was composed of the codes of "hierarchy," "plan," "rules," and

"time." Participants emphasized holidays, entertainment, special occasions and unity under the code of "time." The codes of "parents" and "child/student" were the most prominent codes under the theme of "family." The theme of "life" consisted of the codes of "hardship," "lack of sleep" and "dreams." The codes of "technology," "material," and "agenda" were the most prominent codes under the theme of "science." Figure 2 and Figure 3 presents some examples of mind maps for teachers.

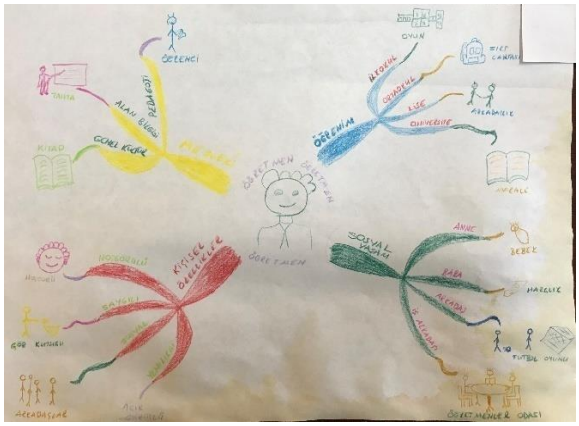

Figure 2. Example of Mind Maps for Teachers

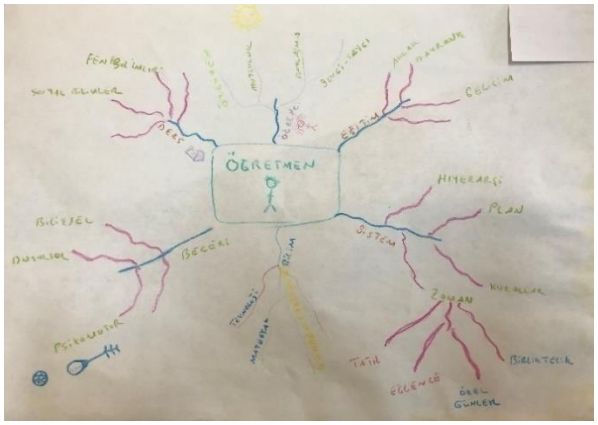

Figure 3. Example of Mind Maps for Teachers

Participants' mind maps were analyzed to seek answers to the ninth research question. Table 11 shows the results.

Table 11. Participants' Mind Maps for Students

Theme	Code	Participants
School	Competition	Zerrin
	Friendship	Zerrin
	Achievement	Zerrin
	Student	Hakan
	Obeying rules	Zerrin
	School Adjustment	Zerrin
	Class	Hakan, Aynur
	Vacation	Nurdan
	Book	Filiz
	Experiment	Derya
	Flag	Derya
	Uniform	Aynur

Table 11. Continued

Theme	Code	Participants
Teacher	Teacher	Zerrin, Filiz, Nurdan, Hakan
	Lawyer	Hakan
	Headmaster	Aynur
	Occupation	Hakan
Test	-	Aynur
	PPSA	Filiz
	Stress	Nurdan
	Hardship	Nurdan
	Speed	Derya
Family	-	Hakan, Filiz
	Friends	Filiz, Nurdan
	Parents	Aynur
	Home	Hakan
	Mother-Father	Hakan
	Siblings	Hakan
	Baby	Hakan
Play	-	Derya, Hakan, Filiz
	Football	Hakan
	Hide-and-Seek	Hakan
Sentimentality	My Family	Derya
	Space	Derya
	Dream	Derya
	Play	Derya
	Love	Hakan
	Affection	Filiz
	Happiness	Derya
Home	Health	Derya
	Basic needs	Derya
	Sleep	Zerrin
	Watching TV	Zerrin
	Affection	Zerrin
	Reading	Zerrin
	Help	Zerrin
Nature	Animals	Hakan
	Shepherd	Hakan
	Lightning	Filiz
	Black cloud	Filiz
Brain	Dream	Zerrin
	Free	Zerrin
	Curiosity	Zerrin
	Creative	Zerrin, Derya
Neighborhood	Play	Zerrin
	Cleaning	Zerrin
	Reading	Zerrin
	Love for Animals	Zerrin
School Report	Certificate of Achievement	Nurdan
	Certificate of High Achievement	Nurdan
	Bad	Nurdan

Table 11. Continued

Theme	Code	Participants
Full of Life	Teacher	Derya
	School	Derya
	Class	Derya
	Occupation	Derya
	Me	Derya
Social Pressure	Flock	Filiz
	Beating	Filiz
Human	Getting Old	Nurdan
	Drudgery	Nurdan

Participants' mind maps showed that they addressed the concept of "student" under the themes of "school," "teacher," "test," "family," "play," "sentimentality," "home," "nature," "brain," "neighborhood," "school report," "full of life," "social pressure," and "human." They especially emphasized the theme of "school" and one of its codes of "class." They drew desks, benches, and a board for the code of "uniform" while they drew a clock to express "being late" under the code of "vacation." The code of "teacher" was the most prominent code under the theme of "teacher," which was especially emphasized by participants. It is noteworthy that they drew a banknote to express their views of the code of "teacher." What is more, they drew a smiling student in front of a smiling teacher and drew an angry-looking student in front of an angry-looking teacher. They emphasized the theme of "test" by itself and expressed views under the codes of "stress," "hardship," "PPSA," and "speed." Participants drew a test sheet for the codes of "hardship" and "stress." It is noteworthy that they highlighted the theme of "family" on its own, which consisted of the codes of "parents," "home," "mother-father," "siblings," "friends," and "baby." Most participants highlighted the theme of "play" on its own, which consisted of the codes of "football" and "hide-and-seek." They did not emphasize any certain code under the theme of "sentimentality," which however consisted of the codes of "my family," "space," "dream," "play," "love," "affection," and "happiness." The theme of "home" consisted of the codes of "health," "basic needs," "sleep," "watching TV," "affection," "reading," and "help." Moreover, participants drew figures or wrote words that looked like the codes in question. For example, they drew a stick figure watching TV for the code of "watching TV" and a stick figure distributing food for the code of "help," and wrote the words "picture," "poetry," and "novel" for the code of "reading." The theme of "nature" consisted of the codes of "animals," "shepherd," "lightning," and "black cloud." Participants drew a lightning, a black cloud, some sheep and a shepherd stick figure for the codes of "lightning," "black cloud," "animals," and "shepherd, respectively." The theme of "brain" consisted of the codes of "dream," "free," "curiosity" and "creative." Participants drew a bird with its wings wide open for the code of "free." The theme of "neighborhood" consisted of the codes of "play, "cleaning," "reading," and "love for animals". Participants drew stick figures jumping rope, a stick figure with a cloth in his hand and a cleaning bucket, a stick figure with a book in her hand under a tree, and a dog and a stick figure petting it for the codes of "play, "cleaning," "reading" and "love for animals," respectively. The theme of "school report" consisted of the codes of "certificate of achievement," "certificate of high achievement" and "bad." Participants drew a smiling woman to describe the codes of "certificate of achievement," "certificate of high achievement" while they drew an angry man to describe the code of "bad." The theme of "full of life" consisted of the codes of "teacher," "school," "class," "occupation," and "me." The theme of "social pressure" was composed of the codes of "flock" and "beating." A participant drew a couple of sheep to describe the code of "flock." Lastly, the theme of "human" consisted of the codes of "getting old" and "drudgery." A participant drew an

old person and a porter to portray the codes of "getting old" and "drudgery, respectively". Figure 4 ve Figure 5 presents some examples of mind maps for students.

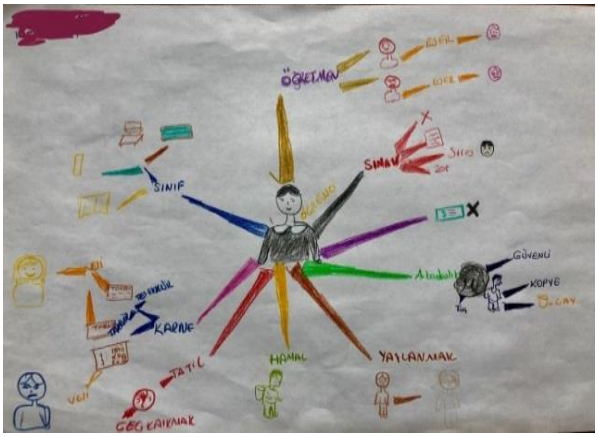

Figure 4. Example of Mind Maps for Students

Figure 5. Example of Mind Maps for Students

Discussion and Conclusion

This study investigated the effect of micro-teaching on pre-service classroom teachers' teaching knowledge and skills and determined their views of micro-teaching activities, and their perceptions of the concepts of "student" and "teacher" through their mind maps. The results showed that micro-teaching significantly helped participants gain teaching knowledge and develop teaching skills. Participants had significantly higher MTAOF self-assessment and peer assessment posttest scores than pretest scores, indicating that micro-teaching helped them gain teaching knowledge and develop teaching skills. This is due to the fact that micro-teaching was applied and that participants saw their weaknesses on their first videos and received feedback from their peers, and thus, had a chance to improve themselves. This result is supported by qualitative results as well. In the focus group interviews, participants were asked questions concerning the effect of micro-teaching. The themes that emerged from the interviews were "recognizing weaknesses," "providing professional feedback," "observing development/self," "social learning," and "self-confidence." Participants had a chance to see their peers' weaknesses and mistakes by watching their performance and tried not to make those mistakes in their second sessions, which resulted in social learning. Based on the videos, participants also gave feedback to their peers and critiqued their performance to help them develop professional skills. The videos also allowed them to see their own mistakes, and peer feedback helped them improve themselves. These results are consistent with the literature (Duban & Kurtdede Fidan, 2015; Ekşi, 2012;

Ostrosky et al., 2013). Research shows that micro-teaching is a simulation of a real classroom environment that allows for instant feedback, reduces confusion and indicates to students that lecturing in a real classroom environment is very different from lecturing in front of peers (Upadhyay, 2017; Zhou, Xu, & Martinovic, 2017). Kılıç (2010) reported that micro-teaching helped pre-service teachers develop planning, teaching, classroom management, communication, and evaluation skills. Saraçoğlu et al. (2018) also found that pre-service teachers who performed micro-teaching were able to approach their own teaching performance more critically and develop themselves professionally, reinforce their own positive behavior and modify their negative behavior based on peer feedback about their weaknesses and mistakes. Feedback also reinforced participants' positive behaviors and encouraged them to replace negative behaviors with constructive behavior patterns.

Some participants thought that micro-teaching had some disadvantages despite its numerous positive aspects. For example, they stated that they were embarrassed and stressed out by the rolling camera during micro-teaching sessions. This result is consistent with literature. Gürbüzoğlu Yalmancı and Aydın (2014) reported that pre-service teachers found micro-teaching activities stressful, didn't like worrying, and were of the opinion that sessions should be recorded privately.

Participants stated that the teaching practice course raised their awareness of their weaknesses, helped them put theory into practice, and provided them with the opportunity to communicate with students in a real classroom environment and to use their course materials. They had a chance to experience teaching with real students in a real classroom setting and use different assessment tools, methods and techniques together during their teaching. Some participants suggested that performing micro-teaching in a classroom of theirown would help them develop classroom management skills moreThis might be due to the fact that the teaching practice course provides pre-service students with the opportunity to use their knowledge and skills and lecture real students in a real classroom environment and, in this way, see their strengths and weaknesses. There are contrasting results in the literature. Some studies reported that the teaching practice course provided pre-service teachers with occupational experience and improved their occupational perceptions (Baran, Yaşar, & Maskan, 2015; Christenson & Barney, 2011; Msangya, Mkoma, & Yihuan, 2016). Avcı and İbret (2016) also reported that the teaching practice course allowed pre-service teachers to put theory into practice, experience the teaching profession, and get to know students and communicate with them better. However, some other studies argued that pre-service students faced challenges during the implementation of the teaching practice course (Demir & Çamlı, 2011; Dinçer & Kapısız, 2013; Görgen, Çokçalışkan, & Korkut, 2012; Kana, 2014; Saka, 2019).

Participants stated that they paid most attention to course materials and lesson plan steps and then to application teachers' views, students' levels, course outcomes, and class length when preparing lesson plans for micro-teaching sessions. This result has been reported by some previous studies. Ramazan and Yılmaz (2017) and Ünver (2003) found that pre-service teachers prepared lesson plans at the request of application teachers and needed the support of advisors to prepare them. Kablan (2012) reported that theoretical and practical training on lesson plan preparation enabled pre-service teachers to recognize the significance of lesson plans during teaching and increased the effectiveness of teaching.

Participants' perceptions of the concept of "teacher" were classified under the themes of "personal characteristics," "social life/life," "school/teaching," "student," "education/learning," "occupational," "system," "family," "life," and "science," suggesting that they attributed many different and special meanings to the concept of "teacher" in every stage of life. This result also indicated that participants associated the concepts of understanding/tolerance and innovativeness with teachers and believed that teachers should possess pedagogical knowledge, field knowledge, and general

knowledge. They saw their teachers as part of their family and even as close as parents, friends or siblings. They also considered teachers to be an integral part of education, school, system and science. Another point worth noting is that participants associated the concepts of "teacher" and "student" with each other, suggesting that they see teachers in separable from students. The interviews conducted with participants for the analysis of their mind maps yielded similar results. They addressed numerous personality traits and occupational skills (field and occupational knowledge) that they thought teachers should possess. They also stated that they thought teachers should be like parents and guide their students. Similar results have been previously reported. Yıldızlı, Erdol, Baştuğ, and Bayram (2018) conducted a meta-synthesis study on mental images concerning the concept of "teacher" in Turkey and reported that the teaching profession was associated with such concepts as guide, light, sun, and compass. Our participants also associated the teaching profession with similar concepts. Karataş (2010) reported that pre-service teachers thought that teachers should be patient, tolerant, hardworking, self-improving, intellectual and innovative educators who can communicate well with students, make them love learning, and use different learning-teaching approaches properly.

Participants' perceptions of the concept of "student" were classified under the themes of "school," "teacher," "test," "family," "play," "sentimentality," "home," "nature," "brain" "neighborhood," "school report," "full of life," "social pressure," and "human," suggesting that they used numerous mental images to address the concept of "student" as a whole. The most important of these were "teacher," "play," "friend," and "creativity." The most important thing to note is that participants related the concepts of "student" and "teacher" together, in other words, they perceived those two concepts as inter connected. These results are in line with those of participants' mind maps regarding the concept of "teacher." They emphasized the theme of "student" while expressing their perceptions of teachers. Moreover, they mostly referred to the themes of "molding" and "improving" when talking about their perceptions of students. They regarded students as paste to be molded or as a tabula rasa that becomes whatever you put in it. For example, Mehmet stated "That's how I see a student, I see him as paste to be molded, to be shaped. I mean, students are really like paste, when you help them develop a perspective, they can tell right from wrong, so you should mold them the way you want them to be." Similar results have been reported by previous studies. However, there has been no research on mind maps regarding the concept of "student." Most studies focus rather on mind maps regarding the concept of "teacher.". Aydın and Pehlivan (2010) reported that some pre-service teachers perceived teachers capable of producing, shaping, improving, and mending, and students as learners who are produced and shaped. Our participants associated the concept of "teacher" with parent, friend and guide while they associated the concept of "student" with seed, sapling, tree, and paste. Bozlk (2002) found that most pre-service teachers perceived themselves as passive while Inbar (1996) reported that they perceived students as a tabula rasa. Saban (2009) conducted a study on mental images and reported that pre-service teachers associated the concept of "student" most with the concepts of "raw material," "tabula rasa," and "a developing being."

Suggestions

The results suggest that micro-teaching should be used for teaching practices. The teaching practice course is offered over two terms of the senior year. However, offering the course for eight semesters with micro-teaching support can provide pre-service teachers with more opportunity to put theory into classroom practice. Moreover, micro-teaching support can help them adopt the concepts of "teacher" and "student," raise their awareness, recognize their strengths and weaknesses, develop classroom management skills, conduct the learning-teaching process effectively, create effective lesson plans, and achieve occupational and personal development. Performing micro-teaching in a real classroom environment not only increases the effectiveness of the method but also helps pre-service students gain more teaching experience. What is more, one hour of class time of micro-teaching is long enough to allow pre-service students to recognize their strengths and weaknesses. The self and peer assessment results show once again the significance of critique and feedback. Therefore, more attention should be paid to self and peer assessment about pre-service teachers' micro-teaching performance to help them with self-evaluation and development. Lastly, the results show that mind maps are of paramount significance for pre-service teachers to better understand the concepts of "teacher" and "student." It is, therefore, recommended that pre-service teachers' mind maps concerning the other factors (classroom management, teaching principles and methods, lesson plan, etc.) of the learning and teaching process be analyzed to help them recognize and better understand them. Considering that this study is limited to 13 (7 girls and 6 boys) classroom teacher candidates studying at the Department of Classroom Education, studies using larger samples can be conducted.

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