

THE CHALLENGES OF TEACHING PRACTICE OF UNDERGRADUATE MATHEMATICS STUDENTS*

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ARTICLE INFO	ABSTRACT
<p>Article History: Received: 20 June 2018 Accepted: 12 July 2018</p>	<p>A pedagogical formation education certificate program is a training program that enables the 4-th grade students of the mathematics department of the science and literature faculty to qualify for the teaching certificate required to become a teacher. The students of Niğde Ömer Halisdemir University mathematics department participates in the course that the education faculty have prepared. In this program, for the practice teaching course, the students spend 2 hours of theory at the faculty and 6 hours of practice in a high school in Niğde city center. The lecturer observes that the students who are carrying out the theoretical part of the course are deficient in the use of tools and materials, are inadequate in preparing the lesson plan, lack of mastery of the subject and lack of skills in using the board: teachers in the application notes that teacher candidates have difficulties in communication with high school students. The purpose of this study is to explain what the formation students think about difficulties encountered by them in the practice school. It is believed that this study will help students to develop their skills on weekly basis in an activity file that will be prepared in the form of lectures, lesson planning, classroom dominance, appropriate use of equipment.</p>
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1. INTRODUCTION

Consisting of cognitive, emotional and psychomotor skills, teaching is a profession where social skills are at the forefront. It is multi-dimensional and rich knowledge and experience (Karadüz, Eser, Şahin & İlbay, 2009). Individuals preparing for this profession must have acquired a lot of cognitive knowledge and skills before starting the profession and must have developed positive attitudes and behaviors (Karadüz, Eser, Şahin & İlbay, 2009). The individual skills of the individuals preparing for the teaching profession are shaped by undergraduate major area courses and the theoretical and practical knowledge provided in educational science courses (Karadüz, Eser, Şahin & İlbay, 2009). Coming at the forefront of the vocational education practices, Teaching Practice is the course that includes practices and activities related to the profession, that students acquire the skills and experience required in the profession pre-service and that the students develop opinions and views about the

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profession (Karadüz, Eser, Şahin & İlbay, 2009). Since Teaching Practice provides the students with the applicable knowledge and skills related to the profession, the importance should be given to the practical part of the course (Karadüz, Eser, Şahin & İlbay, 2009). In this respect, the practices of this course should be carried out without interruption, and the interactions of the teacher candidates in the learning environments should be enriched (Karadüz, Eser, Şahin & İlbay, 2009). Encountering many problems during the practices in the practice school, the teacher candidates try to determine the problems and solve them (Karadüz, Eser, Şahin & İlbay, 2009). The candidate teachers will make sense of what they learn and interpret them as they face these events and situations (Karadüz, Eser, Şahin & İlbay, 2009).

The studies conducted on this subject suggest that the practices are necessary for the development of teacher candidates' teaching skills (Karadüz, Eser, Şahin & İlbay, 2009). Some studies argue that there are important disruptions and problems during practices (Karadüz, Eser, Şahin & İlbay, 2009). Problems that arise during practice negatively affect the development of the teacher candidates (Karadüz, Eser, Şahin & İlbay, 2009). Despite these negativities, it is necessary to include practical learning while preparing the students towards the teaching profession (Karadüz, Eser, Şahin & İlbay, 2009). Positive or negative views and attitudes developed by the students in the Teaching Practice course give information about the achievement level of the course (Karadüz, Eser, Şahin & İlbay, 2009). The students' opinions about the practice are important since they reflect student achievement as well as the effectiveness level of the course (Karadüz, Eser, Şahin & İlbay, 2009). Therefore, in this study, the difficulties of the students enrolled in the pedagogical formation certificate program encounter during the Teaching Practice in the practice school they went to and the reasons behind these difficulties were determined.

2. MATERIAL AND METHODS

In this study, the qualitative research model was employed. The qualitative model was preferred because it is related to the experiences of the individuals and their interpretation of these experiences (Orhan, 2010).

2.1. Study Group

The study group of the study is made up of Mathematics students enrolled in the pedagogical formation certificate program of Niğde Ömer Halisdemir University during the 2017-2018 academic year. The related instructor had 15 students in this Mathematics group. Ten of these students participated in the study. Teacher candidates participating in the research were determined on the basis of volunteerism.

2.2. Data Collection Tool

A semi-structured interview form was used as a data collection tool in the study. In order to develop the interview questions, the related literature was reviewed and the draft form was prepared. The developed draft form was presented to a specialist in the same department as the researcher for expert opinion. Bringing an outside opinion, expert opinion is useful in seeing, reviewing and presenting ideas that are not seen by the researcher. The interview question was revised in line with the expert opinion. Then, the semi-structured interview form was administered to ten teacher candidates who were in the Math pedagogical formation certificate program. When the answers given by the teacher candidates to the question were evaluated, it was concluded that the question served its desired purpose.

In the study, the answer to the following question was sought: What were the difficulties you encountered as a teacher candidate during Teaching Practice course?

2.3. Data Collection and Analysis

Data were obtained by administering the semi-structured interview form to the volunteer teacher candidates. The obtained data were analyzed by descriptive analysis. Descriptive analysis was preferred because the conceptual structure of the data obtained in the research was previously determined and the analysis was made based on the structure (Çepni, 2014). For this purpose, the categories made in the studies of Çiçek and İnce (2005) and Karadüz, Eser, Şahin and İlbay (2009) were used.

In the study, the analysis was made in light of the descriptive analysis stages given by Yıldırım and Şimşek (2003). Accordingly, the following steps were taken in the descriptive analysis conducted in this study: A framework was formed based on the research question, the questions were read and arranged according to the framework, the data were grouped together in a meaningful and logical way and were supported with direct quotations by identifying them.

During the analysis, the teacher candidates' real names were not used. In the study, by giving quotations from the teacher candidates' views, the validity was ensured. The reliability of the study was ensured by the data being categorized by two different researchers.

3. RESULTS AND DISCUSSION

In this section of the study, the data regarding the research question is presented in tables. In the first question of the study, the teacher candidates were asked the following question: What difficulties do you encounter during the teaching part of the practice as a teacher candidate? The undergraduate mathematics teacher candidates' views regarding this question are given in Tables 1-7. Figure 1 shows the absorption spectra for ROS and EZE and their mixture in methanol.

3.1. Difficulties Teacher Candidates Face about Communication

According to the data in Table 1, the greatest difficulty for teacher candidates about communication is not being able to feel comfortable while teaching. Nine of the teacher candidates stated that they feel nervous while teaching. Some of the answers these candidates have given are as follows:

"Teaching part of the practice is very stressful for me. Because of this, I can't be comfortable." (Kübra)

"I am too excited while I teach because I am afraid I won't be able to give what I know and I won't be helpful for the students because of my inexperience." (Merve)

"I am afraid that I won't be able to teach because of feeling nervous since I am inexperienced." (Sena).

Another difficulty teacher candidates face about communication is not being able to give clear instructions and directives. Three of the teacher candidates stated that they could not give clear instructions and directives. Some of the answers these candidates have given are as follows:

"During my teaching, I encountered small difficulties in the way that I wondered how I can transfer the difficult sections to the students in an understandable way." (Sema)

Another difficulty teacher candidates face about communication is not being able to develop friendly relationships with the students. Two of the teacher candidates expressed that they could not develop friendly relationships with the students. Some of the answers these candidates have given are as follows:

"A general difficulty I encountered while teaching is that I couldn't develop many interactions with students." (Hatice)

"My relationship with the students was very limited because it was the first experience." (Kübra)

Another difficulty teacher candidates face about communication is not being able to use their tone of voice effectively. One of the teacher candidates mentioned not using her tone of voice effectively. The answer given by this candidate is as follows:

"No matter how much I try to control myself, sometimes my voice trembles." (Kübra)

The teacher candidates stated that they did not have difficulties in asking thought-provoking questions appropriate to the subject, carefully listening to the students and effectively using verbal and body language.

Table 1. Difficulties Encountered Regarding Communication

	Sercan	Ahmet	Kübra	Sema	Merve	Betül	Hatice	Sena	Sinem	Ayşe
Being comfortable while teaching	x	x	x	x	x	x	x	x		x
Establishing friendly relationships with students			x				x			
Using the voice of tone effectively			x							
Asking thought-provoking questions appropriate to the topic										
Giving understandable statements and instruction	x			x	x					
Listening to students with the interest										
Using verbal and body language effectively										

3.2. Difficulties Teacher Candidates Face about Classroom Discipline

According to the data in Table 2, the greatest difficulty for candidate teachers about classroom discipline is not being able to manage classroom discipline and control (order, discipline, authority, threat). Six of the teacher candidates mentioned that they could not manage classroom discipline, control and order. Some of the answers these candidates have given are as follows:

"While I am teaching, some of the students try to break the classroom discipline and they don't care even if they are warned." (Sena)

"However, we try to regain the control with the help of our practice teacher." (Ahmet)

"Afterwards, having students that disrupt the order the classroom makes me think that I can't control the class." (Sinem)

Table 2. Difficulties regarding Classroom Discipline

	Sercan	Ahmet	Kübra	Sema	Merve	Betül	Hatice	Sena	Sinem	Ayşe
Classroom discipline and control (order, discipline, authority, threat)		x			x	x		x	x	x

3.3. Difficulties Teacher Candidates Face about Classroom Management

According to the data in Table 3, the greatest difficulty for candidate teachers about classroom management is not being able to attract interest and attention towards the lesson. Six of the teacher candidates stated that they could not attract students' interest and attention towards the lesson. Some of the answers these candidates have given are as follows:

"We face bloodsucker students in the class. They don't listen, they are not interested. How can I get their attention?" (Betül)

"I sometimes have difficulty in attracting the classroom's attention." (Sema)

Another difficulty teacher candidates face about classroom management is not being able to ensure the continuity of the interest and attention towards the lesson and take appropriate measures against disruptions and obstacles. Five of the teacher candidates stated that they could not ensure the continuity of the interest and attention towards the lesson and take appropriate measures against disruptions and obstacles. Some of the answers these candidates have given are as follows:

"The students who don't care about the lesson make me nervous and they prevent me from teaching effectively." (Ayşe)

"He doesn't want to listen while I teach and he tries to disrupt the class." (Sena)

Another difficulty teacher candidates face about classroom management is about getting back to the subject after a disruption. Three of the teacher candidates mentioned that they could not get back to the subject after a disruption. One of the answers given by these candidates is as follows:

"Even if I know the subject, I get distracted when someone talks and I don't know what to do at that moment." (Merve)

In classroom management, the teacher candidates expressed that they did not have difficulties in making an appropriate introduction to the lesson, using praises and enforcement, creating a democratic learning environment and preparing the students to exit.

Table 3. Difficulties regarding Classroom Management

	Sercan	Ahmet	Kübra	Sema	Merve	Betül	Hatice	Sena	Sinem	Ayşe
Making an appropriate introduction to the lesson										
Attracting interest and attention to the course				x		x	x	x	x	x
Using praise and enforcements										
Giving information and assignments about the next lesson										
Preparing students to exit the classroom										
Providing a democratic learning environment										
Ensuring the continuity of interest and motivation					x	x	x	x		x
Summarizing the lesson					x	x				x
Taking appropriate measures against interruptions and obstacles		x				x		x	x	x

3.4. Difficulties Teacher Candidates Face about Subject Matter

According to the data in Table 4, regarding subject matter, the teacher candidates expressed that they did not have difficulties in regards to basic subject matter principles and concepts, associating the basic subject matter principles and concepts with logical consistency, using verbal and body language (figure, diagram, graph, formula, etc.) required by the subject and associating the subject matter with other subjects.

Table 4. Difficulties regarding Subject Area

	Sercan	Ahmet	Kübra	Sema	Merve	Betül	Hatice	Sena	Sinem	Ayşe
Knowing the basic principles and concepts related to the subject										
Associating to relate basic principles and concepts in the context to logical consistency										
Using verbal and visual language (figure, diagram, graphic, formula etc.)										
Associating the topic with other topics in the field										

3.5. Difficulties Teacher Candidates Face about Subject Matter Education

According to the data in Table 5, the greatest difficulty for candidate teachers about subject matter education is not being able to give appropriate and adequate answers to the questions asked by students. Three of the teacher candidates stated that they could not give appropriate and adequate answers to the questions asked by students. Some of the answers these candidates have given are as follows:

“While I teach, I listen to students’ questions and try to I answer the questions in their minds.” (Hatice)

“Not to be able to answer when asked a question.” (Sena)

The teacher candidates stated that they did not have difficulties about educational approaches, methods and techniques, using instructional technologies, identifying the concepts that were previously learned incorrectly and enduring the security of the learning environment.

Table 5. Difficulties Regarding Subject Matter Education

	Sercan	Ahmet	Kübra	Sema	Merve	Betül	Hatice	Sena	Sinem	Ayşe
Knowing approaches, methods and techniques related to teaching										
Using instructional technologies										
Giving appropriate and adequate answers to student questions				x			x	x		
Identifying students’ misdeveloped concepts										
Ensuring the security of the learning environment										

3.6. Difficulties Teacher Candidates Face about the Planning of the Teaching Process

According to the data in Table 6, the greatest difficulty for candidate teachers about the planning of the teaching process is about lesson planning. Two of the teacher candidates mentioned that they could not give appropriate and adequate answers to student questions. The teacher candidates expressed that they did not have difficulties in writing the lesson plan clearly and organized, stating the goals and desired behaviors clearly, determining methods and techniques appropriate to the desired behaviors and associating the subject with the previous and later lessons.

Table 6. Difficulties Regarding the Planning Teaching Process

	Sercann	Ahmet	Kübra	Sema	Merve	Betül	Hatice	Sena	Sinem	Ayşe
Preparing the lesson plan	x		x							
Writing the lesson plan clearly and regularly										
Stating the goal and target behaviors clearly										
Determining appropriate methods and techniques for target behaviors										
Associating the lesson with the previous and next lessons										

3.7. Difficulties Teacher Candidates Face about the Educational Process

According to the data in Table 7, the greatest difficulty for candidate teachers about the educational process is not being able to use the time effectively. One of the teacher candidates stated that she could not use the time effectively. The teacher candidates expressed that they did not have difficulties in using various teaching methods and techniques appropriately, summarizing and giving appropriate feedbacks, using teaching materials appropriately according to class level, evaluating the achievement level of desired behaviors, organizing activities for effective participation of students and teaching according to individual differences.

Table 7. Difficulties Regarding the Teaching Process

	Sercan	Ahmet	Kübra	Sema	Merve	Betül	Hatice	Sena	Sinem	Ayşe
Using various teaching methods and techniques appropriately										
Summarizing and giving appropriate feedback										
Using instructional equipment and materials appropriate to the class level										
Assessing the level of attainment of target behaviors										
Using time efficiently						x				
Organizing events for active participation of students										
Continuing education according to individual differences										

4. CONCLUSIONS

In this study, the views of teacher candidates who are 4 thy-year students of the faculty of arts and sciences and who are also enrolled in the pedagogical formation certificate program on the difficulties of the Teaching Practice course were determined. The difficulties of the Mathematics teacher candidates were categorized into seven groups: communication, classroom discipline, classroom management, subject area, subject matter education, planning of the teaching process and teaching process.

The greatest difficulty the teacher candidates face about communication is not being able to feel comfortable while teaching. Nine of the candidates stated that they were nervous while teaching because of this. According to Çetintaş and Genç (2005), for teacher candidates to experience a productive process of lesson planning, teaching and evaluation, they need to know the students, individual differences and they need to establish a healthy relationship with the students. For this reason, the practice teacher introducing the teacher candidates to the students during the first class and stating that they have the same authority as himself or herself will also positively affect the attitude of the students towards the candidates. Karadüz et al. (2009) concluded that the qualifications of teacher candidates in communication are developed with the Teaching Practice. Teacher candidates will improve their communication with the students and their own communication skills over time. Therefore, it is believed that mathematics teacher candidates will be able to overcome this difficulty over time. According to Karadüz et al. (2009), in order for the teacher candidates to establish friendly relationships with the students, out-of-class environments should be created for them to interact face-to-face with the students. They should also act by learning the students' level and characteristics. These would contribute to building friendly relationships.

The greatest difficulty for candidate teachers about classroom discipline is not being able to manage classroom discipline and control (order, discipline, authority, threat). Six of the teacher candidates expressed that they could not manage classroom discipline, control and order. Baştürk (2009) stated that half of the teacher candidates had hesitations before teaching

such as not being able to control the classroom, being the nervous and quavering voice. Çiçek and İnce (2005) asked the physical education teacher candidates to write a key word summarizing their expectations from the Teaching Practice course, what they liked and what they did not like about the course, the people whom they got their support from and what they experienced every week, and why they chose this Word keyword using a couple of sentences. In Çiçek and İnce's (2005) study, students stated classroom discipline and control, and classroom management is the things they liked the least by the end of the course. According to Baştürk (2009), before teaching half of the teacher candidates had hesitations like not being able to control the classroom, being the nervous and quavering voice. These difficulties were reduced by the end of the term. It is stated that inexperienced teachers who have just started their profession have difficulties in class management and discipline during their first years. It can be said that the support given by the practice teachers to the candidates is important.

The greatest difficulty for candidate teachers about classroom management is not being able to attract students' interest and attention towards the lesson. Six of the teacher candidates stated that they could not attract students' interest and attention towards the lesson. Not being able to take appropriate measures against disruptions and obstacles (five students) and not being able to ensure the continuity of students' interest and attention towards the lesson (five students) are the other difficulties mathematics teacher candidates face regarding classroom management. The teacher candidates stated that they did not have difficulties in making an appropriate introduction to the lesson, using praises and enforcement, creating a democratic learning environment and preparing the students to exit. The difficulties that candidate teachers face in regards to classroom management are actually related to competencies that are not sufficiently developed during Teaching Practice. According to Karadüz et al. (2009), who reached the conclusion that Teaching Practice did not improve the classroom management competencies of the teacher candidates, practice teachers' desire to class control in their own hands, sudden interventions during the class and not trusting the teacher candidate cause this situation. Karadüz et al. (2009) argue that the teacher candidates to be given enough incentives and the guidance teachers should not be too intrusive by providing external control. Therefore, these difficulties faced by the teacher candidates will continue until cooperation between the teacher candidate and the practice teacher developed.

In regards to subject matter, the teacher candidates stated that they did not have any difficulties. The results show that teacher candidates did not have difficulties in knowing basic subject matter principles and concepts, associating the basic subject matter principles and concepts with logical consistency, using verbal and body language (figure, diagram, graph, formula, etc.) required by the subject and associating the subject matter with other subjects. This shows that candidates' theoretical knowledge is complete. Other than subject matter, teacher candidates are struggling in the communication, classroom discipline, classroom management, subject matter education, planning of the teaching process and educational process.

Regarding subject matter education, the greatest difficulty for candidate teachers is not being able to give appropriate and adequate answers to student questions. Three of the teacher candidates mentioned that they could not give appropriate and adequate answers to student questions. The candidates stated that they did not have difficulties with educational approaches, methods and techniques, using instructional technologies, identifying the concepts that were previously learned incorrectly and enduring the security of the learning environment. In their study, Akpınar et al. (2012) found that the social studies teacher candidates described themselves as both competent and incompetent in the selection and use of methods and techniques. This incompetency was attributed to the students' attitudes such as anxiety about not being appointed because of KPSS, inexperience, coming unprepared to

class and indifference. Akpınar et al. (2012) also stated that social science teacher candidates could not use modern teaching methods such as drama and cooperative learning. The reason for this is their worry about losing classroom control and the easiness of using traditional methods. Even though they seem to be reluctant from time to time, teacher candidates were found to use instructional technologies such as projection and to prepare and use materials, especially worksheets, in accordance with the curriculum, objectives and student level (Akpınar, Çolak & Yiğit, 2012). Therefore, mathematics teacher candidates not having difficulty in using different methods can be attributed to the courses they have taken during pedagogical formation program. Their ease of using instructional technologies can be attributed to their technology education both during and before their undergraduate education.

In regards to planning of the teaching process, the greatest difficulty for candidate teachers is about lesson planning. Two of the teacher candidates stated that they could not give appropriate and adequate answers to student questions. The teacher candidates expressed that they did not have difficulties in writing the lesson plan clearly and organized, stating the goals and desired behaviors clearly, determining methods and techniques appropriate to the desired behaviors and associating the subject with the previous and later lessons. Teacher candidates' difficulties regarding the planning of the teaching process can be determined and eliminated by giving them the opportunity to practice more during the Special Teaching Methods course before they start their Teaching Practice (Akpınar, Çolak & Yiğit, 2012). To be able to eliminate the difficulty of "not giving appropriate and adequate answers to student questions", students should be able to practice the question-answer method more during the Special Teaching Methods course.

Regarding the educational process, the greatest difficulty for candidate teachers is not being able to use the time effectively. One of the teacher candidates mentioned that she could not use the time effectively. On the other hand, the teacher candidates stated that they did not have difficulties in areas such as using various teaching methods and techniques appropriately, summarizing and giving appropriate feedbacks, using teaching materials, evaluation, ensuring student participation and individual differences. The main reason why teacher candidates have difficulties in some areas is that they only have six hours a week in the practice school. This is mentioned by both of the teacher candidates' practice teachers who are working in the Niğde high schools where the teacher candidates went to for practice. When the hours of practice are limited to only six hours, the teacher candidates graduate without experiencing different aspects of the school atmosphere, such as classroom management, material use, practicing different teaching methods, evaluation, and cooperating with the school. (Akpınar et al., 2012). Increasing the number of practice hours and candidates attending to various activities (such as subject group meetings, administrative matters) at the practice school will make the Teaching Practice course more efficient (Akpınar, Çolak & Yiğit, 2012).

REFERENCES

- AKPINAR, M., ÇOLAK, K., YİĞİT, E. Ö., 2012, Social Studies in the context of the Teaching Practice Course The opinions of the practitioners towards the competencies of the teacher candidates, M.U. Atatürk Education Faculty Journal of Educational Sciences, 36, 41-67.
- BAŞTÜRK, S., 2009, Investigation of Teaching Practice Course According to Teacher Candidates' Opinions, Elementary Education Online, 8(2), 439-456, [Online]: <http://ilkogretim-online.org.tr>
- BİBER, A. Ç., TUNA, A., 2015, Pedagogical Formation Education Field Mathematics Department Graduates Teacher Candidates' Views on Teaching Practice, Başkent University Journal of Education, 2 (2), 131-140.
- ÇETİNTAŞ, B. ve GENÇ, A., 2005, Opinions of German Teacher Candidates on Teacher Practice Lessons, Hacettepe University Journal of Education (H. U. Journal of Education) 29: 75-84.
- ÇİÇEK, Ş. ve İNCE, M., L., 2005, Teacher Candidates' Views on the Teaching Practice Process, Journal of Sports Sciences Hacettepe J. of Sport Sciences, 16 (3), 146-155.
- KARADÜZ, A., ESER, Y., ŞAHİN, C. ve İLBAY, A. B., 2009, The Effectiveness Level of Teaching Practice According to the Opinions of the Last Grade Students of the Faculty of Education, Mustafa Kemal University Journal of Social Sciences Institute, 6 (11), 442-455.
- ORHAN, K., 2010, Scientific Research Methods, Lord Matbaacılık, İstanbul, 53-73.
- YILDIRIM, A. ve ŞİMŞEK, H., 2003, Qualitative research methods in the social sciences, Seçkin Publishing, Ankara.

