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MODESTUM

The solo pantomime in the pandemic: Distance postgraduate education in the department of mathematics education during COVID-19

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ARTICLE INFO	ABSTRACT
Received: 18 Mar. 2022 Accepted: 15 Nov. 2022	Turkey experiences distance education at the master's and doctorate degrees for the first time. This study aims to reveal the essence of the distance education experiences of mathematics teachers who continue their postgraduate education with distance education due to the COVID-19 pandemic. This study was carried out using the phenomenological research design with six mathematics teachers who continue their postgraduate education at a state university in the Central Anatolia Region in the 2019-2020 academic year. Of the participants selected by the criterion sampling, three were master's degree students and three were doctoral degree students. Research data were collected using semi-structured interview forms designed in line with expert opinions. The interviews were conducted online via video call on the WhatsApp application due to the COVID-19 pandemic. The experiences of the participants were identified with the phenomenon of "solo pantomime". Participants had positive experiences such as easy access, possibility of review, improvement in technological pedagogical content knowledge, and negative experiences such as communication and connection problems, the irregularity in the schedule, inadequacy of the lesson hours, and focusing problems regarding synchronized distance education. Distance graduate education is also considered quite suitable for mathematics education courses, but insufficient for mathematics field courses. It is also understood that some participants had plans to make radical changes in their thesis topics. Participants avoid long-term experimental studies or studies that can be conducted with a large sample, and they tend towards studies that can be carried out with document analysis or small groups and had problems with their supervisors.

Keywords: COVID-19, distance education, doctoral student, graduate student, mathematics education |

INTRODUCTION

COVID-19, which was first seen in Wuhan, China and became a pandemic, was also seen in Turkey in early 2020 (T. R. Ministry of Health, 2020). To prevent the pandemic, on March 18, 2020, Higher Education Institution (YOK) decided to stop face-to-face education activities at the associate, undergraduate, and postgraduate levels throughout the country in the spring term of the 2019-2020 academic year and the educational activities continued in the form of distance education (YOK, 2020). In the studies carried out with teacher candidates during the COVID-19 pandemic period in the literature, some negative results have been reported, such as the fact that distance education has a negative effect on the socialization of students (Aksogan, 2020), distance education is not suitable for every course (Shim & Lee, 2020), it is difficult to communicate in distance education (Karatepe et al., 2020); students have a negative attitude towards distance education (Yolcu, 2020), they have motivational problems (Hebebci et al., 2020) and technical difficulties (Karakus et al., 2020). However, it is possible to reach positive results such as the fact that the lessons are independent of time and place (Ardic, 2021), students have the opportunity to listen to the lessons again (Sakarya & Zahal, 2020), and that they are economical (Piskin Tunc & Akinci, 2020). However, in addition to the nature and requirements of graduate education (Izmirli et al., 2019), it is clear that graduate students differ from undergraduate education due to their age and experience (Rodwell & Neumann, 2008). Studies show that only half of the PhD students can complete the program they are enrolled in (Bourke et al., 2004; Elgar & Klein, 2004; Golde, 2005). It is understood that the rate of those who complete their program within four years is much less than this (Taylor & Beasley, 2005). According to Rodwell and Neumann (2008), the rate of timely doctoral completions and graduations of part-time postgraduate students from the programs they are enrolled in is lower than full-time students. Factors such as the fact that part-time students are usually older than full-time students, they have a family to support, and a full-time job cause this situation (Rodwell & Neumann, 2008).

A survey of working adults in Turkey showed that working women spend an average of three hours and 31 minutes on housework a day, while it is 46 minutes for men (Turkish Statistical Institute, 2015). The foundation of Turkish values is the belief that women's primary roles are being wives and mothers (Dedeoglu, 2012). For instance, Bakici and Aydin's (2020) study examining the role of patriarchy in the work and life balance of female employees, underlined that women have to take on housework despite working in a job as a result of the patriarchal understanding. According to Hunter and Leahey (2010), parenting and having young children are also factors that inhibit the research productivity and academic careers of female academics. On the other hand, in the study conducted by Belkis (2016) on female academicians, the participants stated that their domestic responsibilities increased with becoming a mother and accordingly their academic studies were disrupted. Aiston and Jung (2015) also reached results that support this situation. Recent research reveals that women have difficulty bearing the burden of childcare responsibilities during the pandemic (Del Boca et al., 2020; Manzo & Minello, 2020).

Due to the increase in interest in postgraduate education (Cekerol & Bozkaya, 2010; McCallin & Nayar, 2012) and the majority of postgraduate students being part-time students (Emilsson & Johnsson, 2007), there was a shift from traditional learning to blended learning in postgraduate education activities before the pandemic (Sheingold et al., 2013). It is known that many postgraduate programs abroad are taught with face-to-face or blended learning (Izmirli et al., 2019; Roumell & Bolliger, 2017). In Turkey, distance education activities are limited to associate degree, undergraduate and non-thesis master's programs, excluding master's and doctoral programs with thesis (Izmirli et al., 2019). This causes them to prefer master's and/or doctoral programs with thesis through formal education, instead of taking non-thesis master's education through distance education in Turkey (Ekinci, 2017). However, due to the obligations of the current situation, all universities in Turkey have switched to distance education with the decision of YOK (2020). Turkey experiences distance education at the master and doctoral degrees for the first time.

In the distance education process, the roles of faculty members and supervisors have changed, as well as students (Fedynich et al., 2015; Karatepe et al., 2020; Kumar et al., 2013). In postgraduate programs, students are required to collaborate closely with their supervisors to produce academic products like theses, articles, and papers (Bakioglu & Gurdal, 2011; Columbaro, 2009). In the distance education process, supervisors have the role of guidance, support, and quality control as well as the supervisory role (De Beer & Mason, 2009). This makes it inevitable for postgraduate students in distance education to reshape their relationships with their supervisors.

During the distance education process, postgraduate students cannot adequately understand the nature of postgraduate education and what is expected from them, and they cannot realize this understanding process as quickly as students who take face-to-face education (Browne-Ferrigno & Muth, 2012; Kumar & Dawson, 2012). Distance postgraduate students think that distance education can be an important alternative to face-to-face education (Akgun et al., 2010). In consideration of the results in the literature, it is understood that postgraduate students experience a feeling of isolation during the distance education processes (Nor et al., 2012), their interaction and communication with the lecturer and their friends are not at the desired level (Rourke & Kanuka, 2012), the infrastructures used in distance education are insufficient (Akgun et al., 2010) and they have some problems with their supervisors (Roumell & Bolliger, 2017). Increasing the social presence of students in the distance education process will reduce the feelings of isolation and dissatisfaction they experience, and thus, the outputs of distance education will become a higher quality (Mayne & Wu, 2011). Taking measures to improve their relationships with supervisors and faculty members (Iriberri & Leroy, 2009; Kumar et al., 2011) and improving the technical infrastructure (Akgun et al., 2010) may also be useful for increasing the quality of distance postgraduate education.

Aim of the Study

In the literature review, some studies were reflecting the perspectives of lecturers and students on associate's and undergraduate degrees as well as non-thesis master's programs carried out with distance education. However, no study was seen on graduate education, especially in the department of mathematics education, and on postgraduate education during the pandemic. Turkey experiences distance education at the master's and doctorate degrees for the first time. It is believed that the data and results to be obtained in this study will contribute to the development of postgraduate education programs in the department of mathematics education and the improvement of existing programs during the pandemic. For this purpose, the questions below were asked to be answered:

1. What are the experiences of mathematics teachers who continue their postgraduate education in the department of mathematics education regarding distance postgraduate education courses?
2. What are the experiences of mathematics teachers who continue their postgraduate education in the department of mathematics education regarding postgraduate education during the pandemic?

METHOD

Research Design

This study was carried out using the phenomenological research design to reveal the essence of the distance education experiences of mathematics teachers who continue their postgraduate education with distance education due to the COVID-19 pandemic. The phenomenological study aims to reveal the common meaning of the lived experiences (Patton, 1990). This study has tried to reveal what kind of experience it is for mathematics teachers who are studying at the doctorate and master's level in the field of mathematics education to continue their education with synchronous distance education and the essence of these experiences.

Study Group

Studies with the phenomenology method use people who have directly experienced the researched phenomenon and can transfer and reflect these experiences as data sources (Bas & Akturan, 2013; Yildirim & Simsek, 2013). Therefore, the criterion sampling method, one of the purposive sampling types, was used when choosing the participants. In criterion sampling, in addition to the criteria determined by the researchers, a predetermined list of criteria can also be used (Yildirim & Simsek, 2013). Two main criteria were used in the selection of the participants in the study. The first criterion is that the participants are continuing their postgraduate education in the mathematics education program, and the second is that they are still in the course period and take the courses with the synchronized distance education method. Six participants who met the mentioned criteria for the study were selected on a voluntary basis. According to Sanders (1982), the number of individuals in the study group should be limited to at least three and at most six for a phenomenological study. The only way to reach the necessary information can be through intensive interviews. This study was carried out with six mathematics teachers who continue their postgraduate education at a state university in the Central Anatolia Region in the 2019-2020 academic year. Of the participants selected by the criterion sampling, three were master's degree students and three were doctoral degree students. Detailed information about the participants is given in **Table 1**.

Table 1. Codes assigned to participants and some sociodemographic characteristics of participants

Graduate education level	Name	Gender	Age	Professional experience (year)	Family status
Master	Ali	Male	23	2	Single (no kids)
	Esra	Female	22	1	Single (no kids)
	Merve	Female	26	4	Married (no kids)
PhD	Nazli	Female	35	12	Married (she has a four-year-old daughter)
	Asya	Female	26	2	Single (no kids)
	Ahmet	Male	32	9	Married (he has two sons aged five and six)

According to **Table 1**, it is understood that four of the participants are female and two are male, while three are married and three are single. Only Nazli and Ahmet coded participants have children. While the participant with the code Nazli was the primary caregiver of the child, the participant with the code Ahmet stated that his wife was the primary caregiver. It is understood that the professional experience of the participants varies between one and 12 years and the average age is 27.3. Detailed data on the distance courses taken by the participants are presented in **Table 2**.

Table 2. Details of the courses taken distance by the participants

	Courses	CT	NoS	CD	Master			PhD		
					Ali	Esra	Merve	Nazli	Asya	Ahmet
MFC	Linear algebra applications	S	8	3×30	x	x	x			
	Group theory and its teaching	S	5	3×30					x	x
	Advanced calculus and its teaching	S	10	3×30		x	x			
	Non-Euclidean geometry and its teaching	S	7	3×30	x					
	Algebraic concepts and its teaching	S	5	3×30				x		x
MEC	Theories in mathematics education	S	11	3×30	x	x	x			
	Geogebra and applications	S	20	3×30	x	x				
	Mathematical modeling	S	6	3×30				x	x	x
	New approaches in mathematics education	S	6	3×30				x	x	x
	Statistical data analysis & SPSS applications in mathematics education	S	14	3×30	x		x			
	Researchs in mathematics education	S	6	3×30				x	x	x
Total					5	4	4	4	4	5

Note. MFC: Mathematics field courses; MEC: Mathematics education courses; CT: Course type; S: Synchronous; NoS: Number of students; & CD: Course duration (minute)

When the data in **Table 2** is examined, it is understood that all of the courses taken by the participants were with the synchronous distance education method. When the numbers of the distance synchronous courses taken by the participants are examined, it is seen that the participant who took the least courses took four courses, and the participant who took the most courses took five courses. It is seen that all of the participants took at least two mathematics field courses. In addition, the course duration of the participants was reduced from 50 minutes before the pandemic to 30 minutes during the distance education process. But in both cases, they took three lessons per week.

Data Collection Tools and Data Collection

Semi-structured interviews are used as the leading data collection tools in a phenomenological study. In this way, experiences and meanings regarding phenomena are examined using interaction, flexibility, and probing opportunities (Yildirim & Simsek, 2013). Generally, face-to-face meetings are preferred, but in order to reach the participants, it may also be preferable to conduct interviews via telephone, e-mail, or social media (Guler et al., 2013). The semi-structured interviews were conducted online via video call on the WhatsApp application in June 2020 due to the COVID-19 pandemic.

The data of the research were collected through a semi-structured interview form designed by the researchers. The literature was examined while designing the interview form and the form was developed in line with the opinions of two mathematics education experts. The interview form is structured in two parts. The first part is structured to obtain demographic data on the participants. The participants were asked which courses they took, and data such as the number of students attending the courses and the course durations were obtained from the university where the study was conducted. The second part is considering the

aims and sub-objectives of the research, questions about the courses, lecturers, technological infrastructure, relations with their supervisors, its effects on their social life and the changes they will implement in the thesis topics were included in the semi-structured interview form based on the experiences of participants taking distance postgraduate courses in mathematics education. Before the form was finalized, a pilot interview was conducted with a teacher taking a doctoral study in mathematics education. As a result of the pilot interview, the order of some questions was changed, and the form was finalized. The questions in the second part of the interview form are presented below.

1. What are the positive and negative situations you have experienced in terms of distance education courses during the pandemic process?

2. According to your experience, when you compare distance education and traditional education processes, what can you say about the positive and negative aspects and limitations of both?

3. Could you share your experiences with the distance education process in terms of mathematics courses and mathematics education courses and faculty members? Please explain and give reasons.

4. Do you feel that you have more responsibility in the distance education process? Please explain.

5. If this process continues, do you have a change plan about the subject and method you want to work on for your thesis after the end of your courses? Please explain.

6. Has your relationship and communication with your supervisor changed during the distance education process? Please explain.

7. What were the effects of the distance education process on your psychology, family, and social life? Please explain and give reasons.

In this study, the multiple interview method was used in order to reveal the personal experiences of the participants in detail. Two interviews of approximately 30 minutes were conducted with each participant. Approximately the first 10 minutes of the first interviews are in the form of a conversation about daily life to strengthen the communication between the interviewer and the participant and make the participant feel comfortable. The second interview aimed to enable the participants to express themselves more easily and detail the experiences they talked about in the first interview. The participants were asked questions at the end that would enable them to remember, think and describe their experiences, and in this way, it was ensured that the data collection process was carried out effectively.

Data Analysis

Phenomenological studies have unique analysis processes. In this study, first, the audio recordings of the interviews were transcribed using an Office program to reveal the essence of their experience in taking synchronous postgraduate courses in mathematics education and made ready for analysis. After this step, each of the texts obtained was read by the two researchers and a holistic view was aimed to be obtained. Then, the transcribed texts were analyzed, and the structure of the participants' experiences was aimed to be reached. The analysis process was carried out in four stages recommended by Giorgi (2009). These four stages are "bracketing" (suspension of the researcher's all knowledge, thoughts, attitudes, values and prejudices about the phenomenon being studied during the analysis process), "phenomenological reduction" (determining the basic features or meaning units of the experience obtained during interviews), "imaginative variation" (revealing the structural themes of the phenomenon from the meaning units obtained in the phenomenological reduction stage) and "synthesis of meaning and the essence" (revealing general and specific themes and creating a synthesized essence). This analysis process, which was carried out by two researchers via e-mail, lasted for about two weeks and the researchers reached a common decision by discussing the evaluation differences. Then, an expert researcher controlled what data the themes were based on and how they were created.

Validity, Reliability, and Ethical Principles of the Study

To ensure the validity of the research, the researchers set aside their knowledge, thoughts, values, and prejudices about the phenomenon examined during the analysis process as much as possible. The researchers tried to focus on the participants' experiences regarding the examined phenomenon, read the collected data many times until they were internalized and quoted the participants' statements exactly. During the reporting stage, a code name was assigned to each participant. The data collection tool of the research was created as a result of expert opinions and pilot interviews. Also, detailed explanations were given to the participants about the research and necessary permissions were obtained for the audio recordings. The consistency rate between researchers and the expert was found to be 87% according to the Miles and Huberman (1994) formula. In order to increase the validity of the study, participant confirmation (Lincoln & Guba, 1985) was also obtained. The research report was sent by e-mail to two randomly selected participants from the study group and they were asked to evaluate the report. As a result of the feedback provided by the participants, it was understood that the report was appropriate. Also, scientific ethics rules were carefully applied in this study and necessary ethics committee reports were obtained.

RESULTS

The Solo Pantomime

In this study, experiences that were the subject of the study were identified with the "solo pantomime" phenomenon. The reason for using the term "solo" is the participants' beliefs like most of the responsibility belongs to them due to distance education, and they continue their education by self-motivating and making more effort. With the expression of "pantomime", it
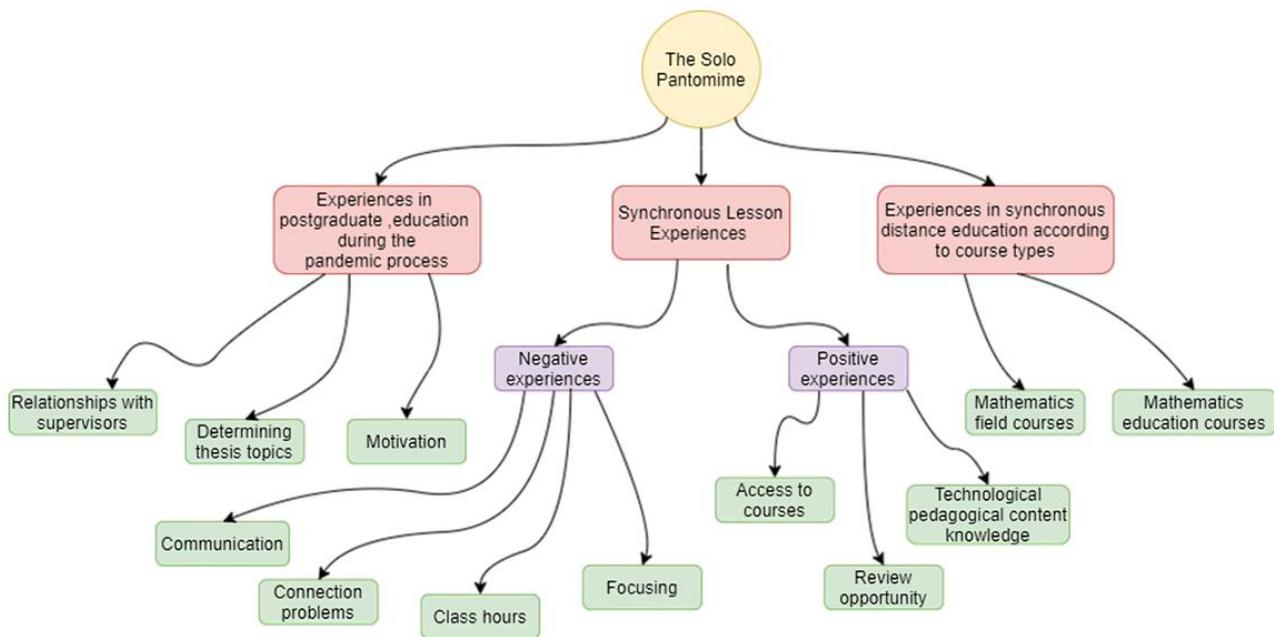
Figure 1. Experiences of distance postgraduate education in mathematics education during the pandemic process (Source: Authors' own elaboration)

is emphasized that in synchronous distance education, they interact less with their lecturers, classmates, and supervisors compared to face-to-face education. Because the meaning of Pantomime is the expression of ideas without words (Gerber & de Wroblewsky, 1985). Also, several reasons caused the researchers to identify the experiences of the participants with the "solo pantomime" phenomenon. Among these are the fact that synchronous distance lessons are independent of the place, the connection problems they had to solve on their own, changes in relationships with supervisors due to the pandemic, avoiding practical and experimental studies while determining the thesis topic, and the motivation problems they experienced towards postgraduate education in this process. In **Figure 1**, the themes obtained as a result of the research and the sub-themes regarding these themes are included.

Synchronous Lesson Experiences

The experiences of the participants regarding the synchronous teaching of the courses at the postgraduate level were gathered under two sub-themes. These sub-themes were coded as positive experiences and negative experiences.

Positive experiences

As a result of the semi-structured interviews with mathematics teachers who had to continue their postgraduate education with synchronous distance education due to the pandemic, it is understood that their positive experiences towards synchronous distance education are relatively less than their negative experiences. Based on the analysis of the interviews, positive experiences regarding synchronous distance education were classified under the sub-themes of "access to courses", "review opportunity" and "technological pedagogical content knowledge". All participants explained their positive experiences as the fact that distance lessons are given independently of the place, they can isolate themselves during the pandemic process, and the convenience they experience in "accessing lessons". Some of the exact quotes from the participants are, as follows:

> "… I did not have road problems every week. I used to come from 350 km away, now I could go to the next room and attend the classes" (Ahmet).

> "Being able to take the courses whenever we want, not having road problems and being away from traffic were the positive aspects. Also, the process was very convenient for me economically" (Esra).

> "It is very comfortable to attend classes from home and is safe during the process. This allowed us to focus on the lessons better …" (Asya).

As can be seen from the quotations, some participants had to travel long distances to get to their universities before distance education. However, thanks to distance education, they were able to attend classes at home. With distance education being independent of place, they were relieved economically by eliminating long journeys and traffic problems. They also stated that they felt safer at home due to the pandemic. A few of the participants explained their positive experiences as the "review opportunity" because they can access the records of the courses given through the system. The experiences of the participants regarding the review opportunity they obtained with distance education are, as follows:

"… it is very nice that the courses are recorded. While studying or doing homework, listening to the lesson again asynchronously allowed us to do it completely. I was able to listen to the points that I thought were important again" (Merve).

Some participants stated that they improved their technological pedagogical content knowledge through online courses they attended. The participants stated that online courses helped them develop their "technological pedagogical content knowledge" with the following sentences:

"… I am happy to be able to use the dynamic geometry software we learned in the lessons in my lessons. Even though we are in the role of students here, we are also teachers, and I can easily use this software in the distance lessons I teach" (Ali).

"… some of my lecturers in the lessons became role models for my live lessons. I can use the methods and digital materials they use in my lessons" (Nazli).

The expressions of the participants showed that their technological pedagogical content knowledge improved thanks to tools such as dynamic geometry applications, and they also took the lecturers of the courses they had taken as role models for distance education. Considering that they are also actively teaching, it is quite understandable that the participants stated that they would use the technological tools and distance education methods they learned in the lessons in their own lessons.

Negative experiences

Considering the negative experiences of the participants, the "communication" problems with their classmates and course lecturers stand out. All of the participants experienced that they could not get enough efficiency from the lessons due to the communication problems they experienced. Some exact quotations from the statements of the participants about this experience are, as follows:

"During this time, we did not have the opportunity to share our experiences and knowledge with my friends between classes" (Ali).

"… I had to wait for the appropriate time to ask questions in the lessons, and because the lesson hours were quite short, I could not establish a healthy communication with my classmates or with the lecturers" (Asya).

"… you can talk to the lecturer outside of the classroom, you can get ideas, as well as your classmates, I think it is very important to learn different ideas" (Ahmet).

As can be seen, there are difficulties in communicating and interacting healthily with both the lecturer and classmates in the lessons taught in the virtual environment. The inadequacy of course durations is one of the main reasons for this situation, and another important reason is that they cannot talk to their friends and lecturers and exchange ideas because they cannot be on the university campus. This causes them to feel isolated during the lesson. On the other hand, some of the participants stated that they experienced "connection problems" for various reasons while attending online courses. The participants' experiences with connection problems are, as follows:

"I asked the lecturer a question. Then the internet cut off because of the bad connection. During that time, the lecturer asked me about my question, but I was not there …" (Asya).

"Due to the problems I had with the computer, I could not share the screen during the online lesson. My presentation got ruined" (Nazli).

As can be understood from the opinions of the participants, some of the connection problems experienced by the participants were caused by their technological equipment, and the problems experienced due to the platforms where the courses were taught also caused these troubles. Also, some of the participants stated that they were disturbed by the irregularity and inadequacy in the "class hours" during this process. According to their experiences, the participants stated the difficulties they experienced due to the irregular and inadequate class hours with the following sentences:

"Class hours were very messy and there were times when there were classes five days a week. It was not clear whether there will be classes on public holidays or not. Classes were sometimes cancelled, and we were informed at short notice. Also, we were in the month of Ramadan; there were people from various cities of Turkey who were attending classes and for at least one person, the class coincided with the iftar time, so better planning could have been done. The reduction in course hours was also a big negativity for me" (Merve).

"Although the course was defined in the system on May 1, the holiday break on that date caused us to wait for the course for a long time" (Esra).

"… one lesson in the morning, one lesson in the afternoon, one lesson in the evening, sometimes the lessons take the whole day, and I cannot find the opportunity for anything else, which can be annoying. Class hours are also inadequate. Therefore, I get the feeling that a lot of things are given superficial" (Ahmet).

Based on the expressions of the participants, it is understood that they experienced difficulties due to the scattered course hours and the fact that there were classes five days a week. The user with the code Ahmet stated that he could not find time for other activities due to the scattered course hours. Also, it is understood from the expressions of the participants that the course hours are quite inadequate and therefore the courses cannot be covered adequately. According to the expressions of the participant, it is understood that they constantly hesitated about whether there would be classes on public holidays, and they waited in front of the computer. It is seen that there were misfortunes such as the fact that some classes coincided with the iftar hours in the month of Ramadan, and he believed that better planning should have been done.

Half of the participants stated that they had a "focus problem" in online courses. The participants expressed their experiences of focusing problems during distance lessons with the following sentences:

"It was good to be able to attend classes from home, but it was very difficult to focus. When my child came to the door and looked at me, I could not focus on the lesson" (Nazli).

"… the connection is lost during the lesson, even if the connection comes back, the integrity of the subject gets broken. Communication in classes is also very poor. It was sometimes very difficult to keep my attention and perception active" (Ali).

According to the statements of the participants, the reasons for the focus problem they experienced include attending classes from home, having to take care of their families at the same time, connection problems and attending classes without the supervision of a lecturer as in face-to-face education. Particularly, it is seen that the participant coded Nazli was happy to attend classes from home, but she had problems focusing on her lessons due to the needs of her child, and therefore she had to choose between being a mother and being a student.

Experiences in Postgraduate Education During the Pandemic

Most of the participants stated that they had some problems in their "relationships with their supervisors" during the pandemic process. It is understood that the main reason for these problems is their inability to communicate face to face. Exact quotations from the participants regarding the difficulties they experienced in their relationship with their supervisors are, as follows:

"… face-to-face communication with my supervisor was more beneficial. Although we communicated in the distance education process, I can say that it was relatively less good than traditional education" (Esra).

"Of course, we used to meet with the supervisor every week in face-to-face education and it was increasing our motivation. But unfortunately, it did not have the same effect in distance education" (Nazli).

"We continued the process via phone calls and text messages. I think only remote communication is not enough with my supervisor as well" (Merve).

The expressions of the participants show that while some of the participants communicated face-to-face with their supervisors, their motivation increased, and their communication was better. Although they established this communication via phone calls and messages during the pandemic, it is understood that they did not see this situation as adequate. On the other hand, some participants who stated that they communicated more easily with their supervisors during this process.

"… we can talk on the phone more often because we do not have the chance to meet face-to-face" (Ahmet).

"… when I had the opportunity to meet with my teacher face to face, I could not call so often, but during this period, I can easily call and get the necessary information and advice" (Asya).

Other participants stated that they could not meet with their supervisors frequently during the face-to-face education process, but they were able to communicate more frequently through phone calls during the distance education process, so that they could reach their supervisors whenever they needed. It is clear that some participants had plans to make radical changes in the "thesis topics" they would determine in case the pandemic would continue. Some of the statements of the participants who are concerned that it will be difficult to carry out practical and experimental studies during the pandemic process are, as follows:

"The thesis I wanted to write was on scale development and the practice process may be delayed due to the pandemic. I plan to move in to document review" (Ali).

"I was thinking of running an experimental study in my thesis, and I am confident that if this disease continues to spread like this, I will not be able to create an ideal number of experimental or control groups" (Nazli).

"… in that case, I can only conduct a large-scale meta-analysis or meta-synthesis" (Asya).

It is understood from the expressions of the participants that they avoided thesis topics based on experimental or field studies that require a large study group, instead they preferred studies that they could carry out from their homes such as document review, meta-analysis, and meta-synthesis. Also, all of the participants stated that they had a "motivation" problem in this process.

Two of the participants stated that their research was delayed due to the pandemic. It is understood that the quarantine and mood changes during the pandemic process also cause motivation problems.

> "I am worried about whether the article I am writing alone will finish. The fact that we have less than three weeks left, and we still have not developed a scale worries me about how the assignment will end …" (Asya).

> "Even though I have a lot of time, I have problems with desire, interest, and motivation. In other words, I reduced my responsibilities by taking advantage of the inadequacies of distance education" (Ali).

It is understood from the expressions of the participants that they could not complete their non-thesis studies and homework and they were worried about this situation. It is also understood that they could not fulfill their responsibilities because they could not be motivated even though they had enough time.

Experiences in Synchronous Distance Education According to Course Types

Participants believe that synchronous distance courses are not suitable for every course. As can be seen in **Table 2**, the courses were assessed under two categories (mathematics field courses [pure mathematics courses] and mathematics education courses). Considering the synchronous distance education "mathematics field courses" according to their experiences, the participants believe that it is not appropriate to conduct distance education in these mathematics field courses due to the course materials used by the course lecturers and the nature of the mathematics. Some of the exact quotes from the participants are, as follows:

> "While the field courses are already difficult to understand in the face to face education, I think it is more difficult in distance" (Asya).

> "It is definitely difficult to take field courses online. Our lecturer teaches the field courses by showing only a PDF file without writing, but we could have done this with the help of a book" (Nazli).

> "Distance education causes problems in teaching numerical lessons. It is possible to follow the lecturer step by step while showing a proof, we can only follow the voice of the teacher in the proofs explained via PDF" (Merve).

The common opinion of the participants is that it is not appropriate to teach the "mathematics field courses (pure mathematics courses)" with synchronous distance education, since they are abstract, based on processing and proof by their nature. It is understood that students had difficulties in following the lessons because lecturers prepared these lessons in advance, or they told them through pdf files that they used ready-made. On the other hand, teaching "mathematics education courses" is quite appropriate as synchronous distance education due to the verbal nature of these courses in line of the experiences of the participants. The participants expressed their experiences with the teaching of mathematics education courses with synchronous distance education, as follows:

> "I think that mathematics education courses are more suitable for distance education. In education lessons, microphones can be turned on and communication can be achieved, although it is not as much as the classroom environment" (Merve).

> "… according to me, mathematics education courses were more productive in this process. It was very satisfying to be able to discuss an article with the lecturer" (Nazli).

> "We used dynamic geometry software on computer to model a mathematical problem. I immediately shared this data with the lecturer and my friends, and I could get almost as much efficiency from face-to-face lessons" (Ahmet).

The main reason for this situation is stated by the participants as the fact that a discussion environment can be created to some extent in these mathematics education courses, which are mostly taught verbally, and the suitability of the course materials to the nature of the lessons. Also, they stated that they were able to share the results they got by using various applications such as dynamic geometry applications with their classmates and teachers using screen sharing.

DISCUSSION AND CONCLUSION

According to the results of this study, the distance education experiences of the participants have been identified with the "solo pantomime" phenomenon. The expression "solo" is used because the burden of distance education is mainly on the student despite the convenience they have in transportation and lesson preparation stages, they have to solve internet connection problems on their own, they have to find a solution for the motivation problems they have in education, and they avoid practical and experimental studies while determining thesis topic. Pantomime, in other words, nonverbal play or mime art, is the expression of ideas without words (Gerber & de Wroblewsky, 1985). With this expression, it is aimed to express the lack of communication in the distance education process and the problems experienced in the relationships with the supervisor. Also, the word "mime" is of Greek origin, "mimeisthai", meaning to imitate or represent (Gerber & de Wroblewsky, 1985). In this way, it was emphasized that the participants perceive distance postgraduate education as a method that imitates face-to-face postgraduate education but cannot fully achieve it due to the different paradigms.

According to the results of the study, it is understood that the participants have more negative experiences towards synchronous distance education. One of the main problems experienced by the participants was the "communication" problems they had with their classmates and lecturers in synchronized distance lessons. According to the participants, the conversations and discussions in the lessons could not be carried out fluently, they could not share their experiences and ideas with their classmates and ask enough questions to the lecturers. As a consequence, the participants had difficulty in having healthy communication and interaction with both lecturers and classmates in the virtual environment. This situation causes the participants to feel isolated in the lessons. Similar results have been reached out in the studies of Akgun et al. (2010), Aksogan (2020), Karatepe et al. (2020), Mayne and Wu (2011), Nor et al. (2012), and Rourke and Kanuka (2012). It can be said that this situation is one of the main disadvantages of distance education.

Another negative experience of the participants in synchronized distance education was due to the connection problems they experienced for various reasons. Another negative experience of the participants in synchronized distance education was due to the connection problems they experienced for various reasons. These problems are caused by their own technological equipment, as well as the platforms where the courses are taught. This result is consistent with the results of Izmirli et al. (2019), Karakus et al. (2020), and Karatepe et al. (2020). In order to improve this situation, it is necessary to provide the necessary technical and pedagogical education to the faculty members and students (Gulbahar & Karatas, 2016; Izmirli & Kirmaci, 2017), and to find solutions to the technical problems experienced through the UZEMs (distance education centers) within the universities (Karatepe et al., 2020). In line with these results, it would not be wrong to say that as a result of the sudden transition to distance education due to the pandemic, the measures taken to meet the needs quickly were inadequate and this situation negatively affected the experiences of the participants.

The results of the study show that some of the participants were disturbed by the irregularity in the schedule and inadequacy of the lesson hours in the synchronized distance education. The fact that the lessons are spread over the whole day and the whole week, the lesson hours are constantly changing, and the uncertainty caused by this situation are important reasons for the negative experiences. As can be understood from the demographic characteristics of the participants in the study group, all of the participants are actively teaching, and they are part-time students. Also, half of the participants are married. It is seen that the participants could not spare enough time for themselves and their families due to these reasons. Among the participants of the study, there were only two participants, a man and a woman, who had children. While the female participant (Nazli) defined herself as a primary caregiver, the male participant (Ahmet) defined his wife as a primary caregiver. The male participant stated that he did not have time for other activities due to the scattered course hours; however, the female participant stated that she could not focus on her lessons due to his child and had to choose between being a mother and being a student. While the male participant did not express that he could not take care of his children, it is quite remarkable that this was the main problem for the female participant. It can be said that the reason for this situation is that the primary roles assigned to women in Turkey are being wives and mothers (Dedoglu, 2012) and that women have to take on housework even though they work a job (Bakici & Aydin, 2020). Also, Hunter and Leahey (2010) stated that parenting and having young children are among the factors that inhibit the research productivity and academic careers of female academics, and Aiston and Jung (2015), Belkis (2016), and Henderson et al. (2020) are consistent with the result that the academic studies of female academics who are mothers are disrupted due to the increase in their domestic responsibilities. Although at first glance this result contradicts the fact that it is independent of time and place, which is one of the most important advantages of distance education, it is obvious that the problems in planning and practice caused this experience due to the rapid transition to distance education during the pandemic process. In the literature, there are studies supporting this situation that distance education doctoral students have difficulty in keeping a balance between their jobs, families, and schools (Akojie et al., 2019). Also, it is clear that online courses have shorter course hours than face-to-face courses, which is another important reason for these negative experiences.

According to the results of the study, it was seen that one of the negative experiences of the participants regarding synchronized distance education was the focusing problem on lessons. It is seen that the reasons for these experiences are communication problems experienced in synchronous distance lessons, the fact that they have to attend classes from home and take care of their families at the same time, connection problems, and lack of lecturer supervision on contrary to face-to-face education. In the literature, there are similar results that communication is poorer in online lessons than in face-to-face lessons (Nor et al., 2012), the majority of the burden is on students, they have to provide self-control (Akgun et al., 2010; Civril et al., 2018), and frequent connection problems (Izmirli et al., 2019). Also, similar to this study, Karatepe et al. (2020) and Kirmaci and Acar (2018) state that students have problems focusing on synchronized distance lessons. In the light of these results, it is observed that the negative experiences towards synchronous distance lessons are communication problems, connection problems, inadequate lesson hours and focusing problems on lessons.

It is understood that easy access to lessons was the main experience among the participants' positive experiences of synchronized distance education. It is seen that the source of this experience is that, thanks to distance education, they can attend classes independently of the place, without traffic and road problems, without wasting time during transportation and in a more economical way. Likewise, it is seen in the literature that one of the most important advantages of distance education is that it can be carried out independently of the location (Akgun et al., 2010; Akojie et al., 2019; Amaro & Mason, 2019; Ardic, 2021), without transportation problems and loss of time in transportation (Izmirli et al., 2019), and in a more economically advantageous way (Amaro & Mason, 2019; Piskin Tunc & Akinci, 2020). It is known that this situation is one of the important reasons for the popularity of distance education in the pre-pandemic period. The social isolation, which was considered negative under normal circumstances (Akgun et al., 2010; Akojie et al., 2019; Amaro & Mason, 2019; Izmirli et al., 2019), is perceived as a positive experience by the participants due to health concerns in the current pandemic situation.

According to the results of the study, another positive experience of the participants regarding synchronized distance education is that they had the opportunity to access their lesson recordings through the system and thus review them. The

participants have the opportunity to review the topics that they fall behind and do not understand, regardless of time and place. In the literature, it is possible to find many studies supporting this result (Akgun et al., 2010; Akojie et al., 2019; Amaro & Mason, 2019; Ardic, 2021; Izmirli et al., 2019; Sakarya & Zahal, 2020). Also, the participants stated that they improved their technological pedagogical content knowledge through online courses. Dynamic geometry software especially learned in master's courses and used by lecturers, the programs they used while preparing the presentations and the indirect contributions of this process to the presentation preparation skills made significant contributions to the technological pedagogical content knowledge of the participants. According to the views of the participants, the lecturers who provided technology-supported lectures became role models for the participants and the participants were very willing to use these practices they learned in their lessons. According to Erdogan and Sahin (2010), technological pedagogical content knowledge is an important predictor of the success of pre-service mathematics teachers. It is understood that this experience will contribute positively to both the academic life of the participants and their teaching profession.

Based on the experience of the participants, it is possible to say that synchronized distance education is not suitable for every course. Participants think that some courses are not suitable for distance education, especially considering their experiences in mathematics field courses, due to both the course materials used by the lecturers and the style and nature of the course. For this reason, more extensive use of technology in distance mathematics courses may be beneficial. On the other hand, according to the experiences of the participants, it is quite appropriate to teach mathematics education courses as synchronous distance education. It is seen that the reasons for these experiences are the fact that a discussion environment can be created to some extent in these lessons, which are mostly taught verbally, and the suitability of the course materials to the nature of the lessons. Ersen and Yumak (2021), Karatepe et al. (2020), and Shim and Lee (2020) reached results that support this finding in their studies.

When the experiences of the participants regarding postgraduate education during the pandemic period are examined, it is understood that there are participants who have negative experiences in their relationships with their supervisors. It is seen that the main reason for the difficulties experienced by these participants is that although they were able to meet with their supervisors every week during the pre-pandemic period, they could not find the opportunity for this during the pandemic process and had to communicate via telephone and e-mail. These methods are not as effective as face-to-face communication. Izmirli et al. (2019) and Roumell and Bolliger (2017) reached similar results in their studies. On the other hand, some participants stated that they communicated more easily with their supervisors during this process. They stated that they were able to communicate with their supervisors more frequently during this process and that they were afraid to disturb their supervisors so often by phone and e-mail during the face-to-face education period, but they could do this more easily during the distance education process. It is understood that the participants have different experiences about their relationships with their supervisors in the distance education process. The reason for this situation can be the behaviors and attitudes of different supervisors towards students. According to Columbaro (2009) and Kumar et al. (2013), the role of supervisors in distance education should also be re-evaluated. The roles of thesis supervisors have turned into different ways in distance education (Roumell & Bolliger, 2017). According to De Beer and Mason (2009), supervisors have a role of guidance, support, and quality control in addition to the role of consultancy in the distance education process. Also, all of the participants experienced a "motivation" problem in this process. Similar results were reached by Hebebci et al. (2020) and Karatepe et al. (2020). Some of the participants stated that their research was delayed due to the pandemic. It is observed that the quarantine and mood changes during the pandemic process also cause motivation problems. Kumar and Johnson (2019) stated that since the master-apprentice relationship, an important part of face-to-face doctoral education, cannot be achieved in distance doctoral education, students cannot develop their research skills sufficiently. For these reasons, supervisors should make more time for their students, pursue a balance between their educational life and work and family life (Akojie et al., 2019), and help them understand the nature of postgraduate education and expectations from them (Browne-Ferrigno & Muth, 2012; Kumar & Dawson, 2012).

As a result of the study, it is understood that some participants had plans to make radical changes in the thesis topics they would determine in case the pandemic would continue. Participants who are concerned that it will be difficult to conduct experimental, practice-based, or scale development studies during the pandemic period believe that they will have difficulty finding participants for their studies. It is evident from the statements of these participants that they will tend to studies that require more document analysis due to their concerns. However, participants who plan theses that require no participants or can be carried out with a small number of participants such as interviews and document analysis, stated that they would continue to work on the thesis topics they have determined. However, Tereci and Bindak (2019) stated their study on postgraduate theses in the field of mathematics education in Turkey between 2010 and 2017, that approximately 10% of master's theses and approximately 5% of doctoral theses were carried out with document review. The fact that participants avoid long-term experimental studies or studies that can be conducted with a large number of participants during the pandemic, and they tend towards thesis studies that can be carried out with document analysis differs from the tendencies in the literature, however considering the period we are in, it seems quite reasonable.

The results of the study should be considered within the limitations. The demographic characteristics of the participants of the study, the distance education activities and methods applied during the time of the study and conducting the study during the pandemic period are the limitations of the study. The validity of this study can be increased by conducting it in different countries, regions, and cultures. As a result of the findings and limitations of the study, some suggestions have been developed for researchers, educators, and policymakers.

The phenomenon of distance postgraduate education can be examined in the light of the experiences of academicians who provide distance education and/or consultancy in the field of mathematics education. Also, similar studies can be conducted in other postgraduate education fields. Such studies can be beneficial both for the development of the literature and for increasing the quality of the current distance education activities.

Academicians, who are thesis supervisors in the field of mathematics education, should be able to adapt to the new roles that distance education has assigned to them, and with these roles, they should be able to understand and solve the problems experienced by their students. As a negative result of distance education, the supervisor and the student cannot meet face to face, and this causes the master-apprentice relationship to not be adequately established. Adequate care is essential so that students who lack the constant guidance of a mentor can develop their research skills. Also, it is very important to provide the necessary psychological support for students in need during the current pandemic period. The right psychological support should also be provided, especially for students who have children. It is obvious that being forced to choose between their careers and their families will negatively affect the academic careers of students. There must be childcare responsibilities and solutions for mothers and all primary caregivers, and approaches must be found to compensate for the systematic injustice that has occurred to these individuals. For instance, daycare centers and nurseries typically offer childcare services during the day. However, with distance education, lessons can be held at late hours, and childcare services that are available at late hours will also be beneficial for primary caregivers in this situation. Furthermore, teachers in this situation face no positive discrimination as defined by regulations in schools. Positive discrimination, enforced by flexible working arrangements or less class hours, may be advantageous for them.

The academicians who teach mathematics courses must use methods and techniques that will increase the efficiency of the courses. It is believed that using technology-supported materials in the lessons would be beneficial. Providing the necessary technical and pedagogical training for distance education activities to academicians, who provide postgraduate education, supervisors and students can be very useful.

Although it started with a sudden decision as a result of an undesirable situation such as a pandemic and the needs caused by this situation, it is thought that distance master's with thesis and doctorate education should be developed. While preparing the timelines for the lessons, it is very important to complete the preparation and plan it better so that enough time is left for students and their families. It is also recommended to strengthen the systems and infrastructures that provide distance education and keep them up to date. Also, necessary technical assistance should be provided through the UZEMs of the universities when required. Curriculums should be planned considering the needs and requirements of students.

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