An Educator's Response to COVID-19: Preservice Teachers' Perspectives on Flipped Distance Education

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Abstract

With the COVID-19 pandemic, students and instructors had to carry out lessons with distance education practices, and this sudden change made it a necessity to reorganize educational processes under the conditions of the pandemic. This study sought to make an undergraduate course more effective by designing the distance education course based on the flipped learning model. In this qualitative study, a phenomenological approach was used, and 53 preservice elementary school teachers' views on the flipped distance education course were investigated. Exploration of student errors during in-class activities, encouragement of active student participation, and compatibility to individual student differences was listed as positive aspects of the flipped distance education. On the other hand, the difficulties pre-service elementary school teachers encountered in obtaining information, their concerns about attending the class or discussing the homework in front of their peers, and the issues experienced during in-class communication were identified as the negative features of this approach. Moreover, the preservice elementary school teachers needed easily accessible information resources about the course content, a stable internet connection, appropriate technological equipment, and extension of the course time to effectively perform in the flipped distance education course. As a result, the flipped teaching model emerged as an effective approach to increase the efficiency of distance education courses, especially during the COVID-19 crisis.

Keywords: COVID-19, distance education, flipped education, preservice elementary school teachers

Introduction

The global COVID-19 pandemic in 2020 triggered sudden and unexpected crises in many areas such as health, economy, and education, and the decisions that had to be taken to limit the spread of the virus and reduce its negative effects have affected the habitual way of life globally. Countries have had to suspend face-to-face education to reduce the spread of the COVID-19 virus and have tried to provide distance education opportunities to ensure continuity in education (Can, 2020). Before the COVID-19 pandemic in many countries, distance education was usually offered at the level of associate, bachelors, and master's programs (Akdemir, 2011); with the pandemic, efforts have been made to make the education system conditions work effectively by using technological equipment on a global scale and providing distance education opportunities for all age levels. This sudden transition towards distance education forced instructors to prepare and offer distance education courses and led them to seek effective distance learning opportunities. With this study, an undergraduate course that was given face to face before COVID -19 was adapted to distance education with a flipped teaching model, and the opinions of preservice elementary school teachers (PSETs) about this course were examined.

Literature Review

Studies on distance education reveal that students prefer to use written materials rather than distance education course videos (Can, 2020). In this context, the oral presentation of information directly by the instructor in distance education courses loses its efficiency, and the necessity of creating an approach that puts the student in the center arises. Current educational principles advocate knowledge creation with the cooperation of teachers and students (Singh, 2014) and recommend increasing students' motivation and performance towards the lesson by using developing educational technologies and supporting their beliefs about autonomy (Smit et al., 2014). Traditional education approaches are limited in meeting the individual needs of students (Özbay & Sarıca, 2019) and trigger a desire for change in distance education courses (Ferreri & O'Connor, 2013). As emphasized by Bishop and Verleger (2013) an educational system where students can access the content individually and adjust their own study time and speed has become more desirable. Considering these developments in education, it is not surprising that the use of the flipped learning model, which supports active learning and helps to create extra time for in-class activities (Haak et al., 2011) and gives students more control over their own learning processes in outdoor activities (Kim et al., 2014), has increased in undergraduate programs (Hao, 2016).

The flipped learning model can simply be defined as the replacement of information provided to students at home and at school (Lage et al., 2000). In other words, the flipped learning approach was designed on the principle of students' reaching the subject-related concepts through extracurricular activities and applying homework or projects that include student-centered practices in the classroom, rather than learning the concepts of the course through classroom presentations and doing their homework at home (Torun & Dargut, 2015). With the flipped learning model, the acquisition of knowledge is mostly transformed from a group action into an individual action, while the process of applying knowledge to student-centered activities turns into a group action (Hayırsever & Orhan, 2018). In this approach, the role of the teacher is not to be a direct source of information, but to guide and support the students in organizing their own learning processes (Lopes & Soares, 2018). In the courses where the flipped teaching approach is applied, while the basic level information is obtained outside of the classroom by the students with online video presentations, in-class applications that make

the student active and require high-level mental skills are used during the course (Kim et al., 2014). Thus, with the application of the flipped teaching approach, actions that require relatively low cognitive skills such as listening, understanding, giving examples are transferred outside the classroom, and time is created for the teacher-guided implementation of classroom activities that require high-level skills such as applying, analyzing and evaluating (Hayırsever & Orhan, 2018).

Numerous studies in the literature explain the positive effects of the flipped learning model on students and the educational process (Köse & Yüzüak, 2020; Özbay & Sarıca, 2019). The literature on flipped learning reveals that the flipped teaching model increases the participation (Kaya, 2018) and positive attitudes of students towards courses (Tekin, 2018), creates an active learning environment (Pierce & Fox, 2012), and it affects the educational process positively by supporting student permanence (Turan & Göktaş, 2015). In addition, the flipped learning model positively affects student achievement (Güç, 2017; Kalafat, 2019; Kırmızıoğlu, 2018), anxiety (Özdemir, 2016) and motivation (Abeysekera & Dawson, 2015) and develops problem-solving skills (Kim et al., 2014). O'Flaherty and Phillips (2015) stated that the flipped learning model offers students the opportunity to learn at their own pace, access educational materials whenever they want, and use lesson time for more efficient activities. With flipped learning, students gained more control over their own learning processes and achieved an individualized learning experience. Also, the flipped learning model can support students' communication skills by encouraging collaborative learning with metacognitive activities carried out in the classroom (Millard, 2012).

Some negative situations also arise during educational practices with the flipped teaching model. The acquisition of information about the courses outside the classroom and the management of this process is mostly under the control of the students, making it difficult to understand to what extent the desired information is acquired or how the desired homework is done (Aydın & Demirer, 2015). In fact, not fully understood content and not fully prepared homework can reduce the efficiency of planned metacognitive activities in the course. Accessing the information provided for out-of-class activities requires an internet connection and electronic equipment such as computers and tablets, and students' inability to have that equipment can negatively affect the efficiency and flow of the course (Hayırsever & Orhan, 2018). Lastly, in order for the flipped teaching system to be implemented effectively, instructors need to prepare materials suitable for this teaching approach; this process takes a lot of time and effort (Milman, 2012).

The flipped teaching model can easily be associated with distance education applications, as it delegates some of the responsibility for acquiring knowledge to the student and carries the teaching out of the classroom. In general, distance education is defined as a process in which instructors and students are physically in different environments (Akdemir, 2011). This approach, which aims to eliminate the time and space limitations between the teacher and the learner, uses technology effectively according to the requirements of education (Bozkurt, 2017) and offers flexible education opportunities for individuals of all ages (Ağaoğlu et al., 2002). In other words, distance education is an educational approach in which space and time limitations are minimized, educational materials are easily prepared using equipment such as computers, tablets, and phones, and the instructor and learner can access the desired information at any time by using internet access (Yamamoto & Altun, 2020). Distance education practices, like many educational approaches, have positive and negative effects on educational processes. The positive aspects of distance education applications can be listed as the sharing of information globally without time limitation, rapid evaluations and feedback on student projects, and

providing access to courses for a large number of students at the same time, while potential communication problems between teachers and students, problems students with limited individual working skills experience, and high infrastructure costs that can be listed as negative features (Dinçer, 2016).

Method

Research Design

This qualitative study used phenomenological approach, which aims to investigate the opinions of PSETs regarding the flipped distance education course. According to Yıldırım and Şimsek (2016), the phenomenological approach is based on investigating the events experienced by people in-depth with different perspectives. In this context, the positive and negative experiences of pre-service teachers and the requirements to participate in the flipped distance education course were examined.

Study Group

The convenience sampling method, one of the purposeful sampling types, was used to create the study group (Yıldırım & Şimşek, 2016). Participants of the study were selected among the PSETs who enrolled in a flipped distance education course at the undergraduate level offered in a teacher training institution in Turkey. Although the PSETs enrolled in this course to complete the program they registered for, participation in the study was voluntary. It was carefully explained to the PSETs that their participation in the study would not affect their grades in the course in any way and 53 of 67 PSETs who enrolled in the course volunteered to participate in the study. The information about the PSETs who participated in the study was only seen by the researcher, and all names in the study were presented as pseudonyms.

Flipped Distance Education Course

Within the scope of this study, the Mathematics Teaching-I course in the undergraduate classroom teaching program was adapted based on the principles of a flipped teaching model to conduct distance education courses more effectively. The relationship of this flipped distance education course with traditional distance education and flipped education models are presented in Table 1.

Table 1: The relationship between the adapted flipped course model and traditional approaches

Traditional lesson model			
Teacher / Student [In Class]			Student [Out of Class]
Presentation of information by the teacher	Listening to information by the student	Conducting educational activities around information	Reinforcing knowledge through homework
Flipped lesson model			
Student [Out of Class]		Teacher / Student [In Class]	
Research about the content knowledge	Comprehension of the desired information	Conducting educational activities about the information	Reinforcing knowledge through activities

<table>
<tr><th colspan="5">Flipped distance education course model (Weeks 1-7)</th></tr>
<tr><td colspan="2">Teacher / Student [In Class]</td><td colspan="2">Student [Out of Class]</td><td>Teacher / Student [In Class]</td></tr>
<tr><td>Presentation of basic content knowledge</td><td>Examining and discussing the homework</td><td>Research about the content knowledge</td><td>Homework preparation</td><td>Reinforcing knowledge through student homework</td></tr>
<tr><th colspan="5">Flipped distance education course model (Weeks 9-14)</th></tr>
<tr><td colspan="2">Student [Out of Class]</td><td colspan="3">Teacher / Student [In Class]</td></tr>
<tr><td colspan="2">Research about the content knowledge</td><td>Preparation of mathematics lesson plans</td><td colspan="2">Reinforcing the knowledge through the lesson plans prepared by the students</td></tr>
</table>

Data Gathering and Analysis

The risk of contamination of the COVID-19 virus was considered while conducting the study; the entire data collection process was carried out using Google Forms to avoid posing a transmission risk. An online questionnaire was created, and volunteer participants were asked to answer open-ended questions in the online questionnaire form. The questionnaire form consisted of six open-ended questions such as 'What are the problems you encountered during the flipped distance education course?', 'Can you explain with examples what you need during the flipped distance education course?' Participant consent forms were also sent to volunteers online, and only the data of the participants who completed the consent form in the study were included.

The phenomenological approach was used to investigate the experiences of PSETs for the flipped distance education course, and the opinions expressed by the PSETs were analyzed using the content analysis method. In the first stage, 15% of the obtained data was examined, the main and sub-themes were determined, and the codebook was created by associating the themes. Afterward, all of the data was analyzed in accordance with this content analysis codebook. During the analysis of the data, the qualitative analysis principles suggested by Lincoln and Guba (1985) were followed. The themes in the booklet have been reviewed and the necessary changes have been made. For this purpose, new codes or themes that emerged during data analysis were included in the codebook; the codes and themes that were initially added but lost their meaning during data analysis were removed from the codebook (Lincoln & Guba, 1985). For instance, some themes regarding the differences between regular distance education and flipped distance education were extracted from the codebook, since these themes were very similar with positive effects of flipped distance education.

Findings

This study aims to examine the opinions of the PSETs about a flipped distance education course. When the answers of the participants were examined, being able to correct student mistakes in the lesson, ensuring active student participation, and supporting individual differences were among the positive features of the flipped education. Difficulties encountered in learning information individually, concerns about in-class performance or homework, and problems of in-class communication draw attention as the negative features of this educational approach. The PSETs also stated that they need easily accessible information and resources, reliable internet infrastructure, technological equipment, and extension of the course time in order to perform effective flipped distance education. The themes that emerged within the scope of the study are summarized in Table 2.

Table 2: PSETs' opinions about the flipped distance education course

Theme	Sub-theme	PSETs
Positive Effects	Exploring student mistakes within the course	Rana, Hüma, Tarkan
	Active student participation	Meltem, Nesrin,
	Promoting individual differences	Salih, Hüma, Efe
Negative Effects	Difficulties in learning information individually	Alpay, Tarkan, Asiye
	Concerns about in-class performance or homework	Umut, Canan, Özkan
	Problems encountered in in-class communication	Melisa, Kemal, Suna
Requirements	Information and resource needs	Özcan, Nesrin, Kadir
	Internet infrastructure and technological equipment	Fatma, Özcan, Sema
	Extension of the course time	Umut, Sercan, Selin

Positive Effects

The PSETs often expressed their positive opinions about the flipped distance education course. They stated that the subject was understood more effectively because they had the opportunity to talk about student errors in flipped distance education courses, the information learned was long-lasting because they were active during assignments or in-class discussions, and the ability to freely access lecture video presentations supports the individual learning differences. In the following quotation, Rana states that feedback on students' mistakes is one of the advantages of a flipped distance education course.

> *The theoretical part of the course is learned by the student outside the school, so students have the opportunity to practice in the lesson. Since the implementation part is carried out in the classroom, the teacher can help them in the areas that he sees wrong, need to be corrected, and the students have difficulty.*

Similarly, Hüma noted that the examination of the homework they produced by the PSETs in the flipped teaching lesson helped them realize their mistakes.

> *The fact that we are active in the lessons through the web has positively affected us by enabling us to talk about our questions. Since not only teachers but also students examine and discuss the homework, we can see our shortcomings and recognize and correct the problems.*

In another example, Tarkan explains the positive effect of teaching the lesson through the plans the students created in the following quote:

> *Particularly in the application part, attending the lesson with the application made by the student and explaining the mistakes made in the applications makes it easier to understand.*

PSETs were stated that the increase in student participation was another positive effect of the flipped distance education courses on education. In the following example, Meltem explains how focusing on the homework prepared by students in in-class practices affects their attitude towards the lesson with the following sentences:

> *I definitely focus more on the math lesson than the other lessons. Since I know that I have homework and duty at the end. I listen carefully to the teacher and*

> *try not to miss what is being told. While doing my homework, I sort of repeat the lessons we taught that week, so the topics are well understood for me.*

In another example, Nesrin expresses how her preparation for flipped distance education courses affected her with the following sentences:

> *Considering that a lesson is 40 minutes, the information we can learn is limited. However, in flipped education, we learn the subject because we examine and investigate extensively; and we learn the important parts of the subject during the lesson. I think the information is more permanent because we have an active learning time.*

In the next example, Fatih describes the role of the prospective teachers in the flipped distance education courses with the following quote:

> *In this learning method, the student is active. Thus, it makes learning more permanent. It offers students the opportunity to practice. Students who learn the subject beforehand reinforce the subject by practicing. Thus, the subject is learned both theoretically and practically.*

Participants also stated that they have more control over the learning process with the flipped educational practices and being able to manage this process to their individual differences is an advantage. In the following quotation, Salih explains how being able to reach presentations on the subject whenever they need helps students who have individual differences:

> *Students try to learn the same subjects in the same period of time in other classroom methods. While some students can get information faster, some students may need more time. In this case, problems arise due to individual speed. But in the flipped education, students can stop, rewind, and re-watch the videos prepared on the topic at any time. By planning the subject according to his/her learning time, the student learns more easily.*

Hüma explains the advantages of recording lecture presentations and being able to watch them at any time, with the following sentences:

> *Course topics in flipped learning are pre-recorded and presented to us digitally. Thus, we can study and learn subjects at our own pace with our learning style. In a system with such flexibility, knowledge becomes more permanent because we learn more with our efforts.*

Efe also explained how students' individual differences were supported through flipped distance education with the following sentences:

> *In the flipped teaching method, individual differences are more prominent. Some students may not understand the subject when the teacher tells in traditional narration, but since the subject described in the flipped teaching method has been recorded before, students can watch the video again where they do not understand. It is also easy in terms of being portable. It is always at hand. Students can reach the lessons 24/7.*

Negative Effects

Students and educators described various problems in the flipped distance education course, as in many courses given by distance education. The difficulties they encountered while searching and finding the information in the course by themselves, the anxiety caused by showing the prepared homework to the whole class, and the in-class communication problems identified as negative situations that emerged in the flipped distance education courses. For example, Alpay points out his concerns about delegating the responsibility of the learning process in the following quote:

> *I think that leaving the students alone while learning the subject and asking them to understand will decrease the efficiency of learning. It can be difficult for students to learn the lesson on their own and to participate in classwork as they learn. Since the student is responsible for the learning activities, the complete learning of the lesson may not take place.*

Similarly, Tarkan states that he has difficulty understanding which concepts are important in the following sentences:

> *It is a really difficult process to research and to learn a new subject. Understanding takes time as well as effort. Although the practices in the course are very useful for learning, it seems that something is still missing when we cannot predict the essential parts that need to be learned.*

Asiye, on the other hand, expresses the problems students may experience while accessing the necessary information with the following quote:

> *The students coming to the class without watching the lecture videos may not enough to comprehend the subject even if they participate in the in-class activities. Since students cannot ask for something they do not understand while watching the lecture videos outside the classroom, there is a possibility of misinformation.*

Participants reported that they experienced anxiety while taking an active role in the course and expressing their ideas or sharing their homework with their peers. In the following example, Umut explained how this anxiety affected his in-class performance as follows:

> *At first, I was very nervous while attending the class. The thought that it would be my turn soon, I would not be able to explain and be disgraced, was reducing the efficiency of the lesson. But when I attended the class several times, I got rid of this panic situation.*

Canan expressed her concern that her homework could be seen by her peers in the following quote:

> *Since it was not a method we often encounter, it was different at first; I worried about whether I did it wrong or whether they were making fun of it because all our friends could see the homework we did.*

Similarly, Özkan expressed the pressure on which the presentation process of the assignments was created on him:

> *During the lesson, as the homework is presented, I wonder if I did it wrong, what kind of feedback will I get if I did it wrong, and I wait in stress and anxiety.*

Since the students and the instructor are more active in the flipped education lessons, problems related to in-class communication have emerged. For example, Melisa explained how her being able to attend the course only via message due to technological impossibilities affects her views towards the course in the following quote:

> *We are not on equal terms. The system is working over the internet, which is also a problem in terms of connection. I can't feel like I'm attending class. We have communication problems because we write our questions.*

Similarly, Kemal exemplifies that problems with internet connection affect in-class communication and reduce the efficiency of the course with the following sentences:

> *There may be technical difficulties due to distance education. Students may not be able to immediately ask the subjects they are stuck with. Since not everyone can connect with the same internet speed and does not have the same infrastructure, the quality of the course can be reduced.*

Suna, on the other hand, expresses her views on the necessity of the teacher to effectively manage in-class communication as follows:

> *The teacher needs to be a good guide in the classroom. The teacher should be involved in classroom activities and make short explanations where necessary. Since the students do not know exactly what is right and what is wrong, the teacher must have a leading position in the classroom.*

Requirements

When the requirements of the flipped distance education courses were examined, three main themes have emerged. Participants stated that they needed resources suitable for flipped education, technological equipment, and a stable internet connection to prepare the assignments effectively and present them in the classroom. Also, it was emphasized that the duration of the lessons should be extended in order to examine more homework. For example, Özcan stated that he would like to constantly access resources and training:

> *I need the information to be accessed at any time. For example, I would like to be able to access the resources offered to us by the teacher in time so that we can repeat at home what we have learned in the distance education courses prepared with the flipped teaching method.*

Nesrin expressed the information pollution in the sources on the internet and the need for a reliable textbook with the following sentences:

> *A reliable resource is definitely what I need most for effective teaching in the flipped teaching method. There is a lot of information and articles on the internet. Opinions and articles on the subject are given differently on each website. But if we had a sourcebook, the information will more accurate and reliable.*

Similarly, Kadir explained his need for a source containing examples related to the subject to reinforce the theoretical issues presented during the course with the following quote:

> *I need plenty of examples. The examples given during or after the lesson are an effective way for me to reinforce the subject. Sometimes I wonder whether I understood the thing correctly. A good example helps me answer the questions in my mind.*

Participants frequently emphasized that they needed not only online resources but also technological equipment to be able to listen and participate orally in theoretical lectures and to prepare their homework within the scope of flipped learning. For example, Fatma explains the negative effects of an unstable internet connection on student motivation with the following sentences:

> *Good internet infrastructure is required. Internet is required to participate in live classes, to get and understand the information before the lesson. Students who do not have an internet connection or have an unstable low-speed connection may have difficulties participating in class. Students who have such problems may not be able to focus on the lesson because they are worried about connection.*

In the following quotation, Özcan explains how a lack of technological equipment can negatively affect student attendance:

> *Due to technical problems (speakers, internet infrastructure, etc.), students may not be able to transfer the content of the homework they have. For example, we could not turn on the speaker in our homework on the theory of multiple intelligences, and I prepared it according to the form I would verbally present. When I could not speak up, I could not fully convey what I wanted to tell in the homework.*

Similarly, Sema expresses the negative effects of disruptions caused by technological equipment and internet connection on the education process with the following quote:

> *Since teachers and students should be active in flipped teaching, the connection problems we experience on the internet sometimes affect the flow. For example, after the teacher explains the subject, the students study it, repeat it and prepare a presentation. The presentation of the students must also be carried out during the lesson time. When there is a connection problem, we cannot participate. While the students try to join, the teacher tries to solve the problem.*

Participants often stated that the lesson duration was insufficient in terms of the activities to be done. For example, Umut expressed his views regarding not being able to allocate sufficient time for theoretical knowledge in the following quote:

> *During the lesson, we sometimes cannot understand the subject because we process the subject very quickly. Sometimes we find it difficult to do homework because we don't understand. Increasing the number or duration of the lessons may be a solution for better understanding.*

Selin, on the other hand, stated her opinions about not being able to provide feedback to all students in the following quote:

> *There is a need for fewer student numbers in the classroom [67 students were enrolled]. Thus, all students' work can be examined, and their mistakes can be said one by one. In the crowded classroom, the teacher cannot give feedback on all students' homework. This may upset the student whose homework is not examined.*

Similarly, Sercan explained his views on not being able to devote enough time to the examination of homework with the following sentences:

> *It is good for me to first explain the subject on the digital platform and then reinforce the subject with homework and examine the deficiencies in the next lesson, but sometimes we cannot discuss every single homework due to the insufficient amount of time and a large number of students.*

Discussion

Many undergraduate programs began distance education in 2020 to minimize the spread of the COVID-19 pandemic and to protect the health of students and teachers. In this study, an undergraduate level distance education course was rearranged according to the flipped learning method, and the opinions of the PSETs regarding the course were examined.

Hayırsever and Orhan (2018) described one of the requirements for the implementation of the flipped teaching model as the creation of educational culture and stated that with this method, students' active participation is provided by allocating more time to activities in the classroom due to the acquisition of some of the information outside the classroom. In our study, participants stated that the flipped distance education course facilitated active participation in the lesson. Similarly, Karadeniz (2015) emphasized the importance of reflecting knowledge during flipped learning practices and stated that providing opportunities for transferring the information intended to be taught using in-class activities is a necessity for effective teaching. Active student participation increased with in-class applications with high-level activities implemented with the flipped teaching model, and students were allowed to reflect on the knowledge they obtained outside the classroom. Also, educational activities should be organized in a way to correct improper learning that may occur during research, homework, and projects that students have done outside of the classroom with the flipped teaching model (Torun & Dargut, 2015). The teacher candidates stated that examining their homework during the lessons provides an opportunity to notice their mistakes. Finally, teacher candidates defined it as a positive feature that they could access information whenever they wanted with the flipped teaching model, so they could organize the learning process in a way and frequency that they preferred and stated that this approach supports students' individual study preferences (O'Flaherty & Phillips, 2015).

Aydın and Demirer (2015) noted that the acquisition of basic information about the course by students outside the classroom may weaken the instructor's control over the educational process and can reduce the efficiency in education. Similarly, the pre-service teachers who participated in our study stated that they had difficulties while obtaining information about the subject or trying to find a reliable and purposeful source of information. They defined one of the negative aspects of the flipped learning model as the obligation of accessing information.

Also, the necessity of electronic equipment such as computers and tablets for researching information in the course, preparing homework, or listening to the lesson within the scope of distance education, may decrease the efficiency of the course (Hayırsever & Orhan, 2018). It was observed that some of the PSETs' attitudes towards this lesson were negatively affected since they did not have a microphone or a stable internet connection. Also, participants emphasized that not being able to use electronic equipment or software properly or unstable internet connections during the lesson negatively affected classroom communication and reduced the effectiveness of the course. Lage et al. (2000) stated that approaches that affect conventional educational process dynamics, such as flipped teaching, can cause anxiety in students. Similarly, PSETs participating in our study stated that they were anxious while actively participating in the lesson or sharing their homework with their peers in this unfamiliar system that emerged with flipped teaching.

One of the effective ways to minimize the negativities about flipped distance education will be to determine the requirements for the course in advance and to take measures. Karadeniz (2015) emphasized that not all students will have the same opportunities while preparing the flipped distance education courses and stated that in-class and especially out-of-class activities should be organized carefully. Many PSETs who participated in the study stated that they needed appropriate and reliable resources to complete their assignments. In this context, while applying the flipped education model, educators should take into account that the information in external sources cannot always be accurate and suitable for the purpose, and they should prepare materials proper for the flipped teaching for the essential information that students need to acquire and the projects and assignments they need to prepare (Milman, 2012). Also, some of the PSETs stated that they could not attend the course because they did not have microphones, and some had problems during the lesson because of the lack of stable internet connections. To minimize these problems, it should be taken into consideration that students may not have the technological equipment and software required by the flipped distance education courses. Thus, in-class and extracurricular activities should be organized flexibly by considering these negativities. Finally, PSETs stated that the number of students enrolled in the course was high, and the duration of the lessons should be extended. Since the in-class teaching methods applied in flipped classrooms focus on metacognitive skills and can take considerable time, the class population should also be carefully determined when planning flipped distance learning courses. Also, students should be given enough time to apply the information they have acquired outside of the classroom.

Recommendations

Considering that active participation in the lesson lies behind the ability of students to reflect, ask questions, make predictions, evaluate and build relationships between information during the lesson (Hockings et al., 2008), it is considered that flipped distance education courses may be more effective than traditional distance education courses. There are a limited number of studies investigating the effect of distance education courses prepared with a flipped teaching model on student achievement. In this context, examining the effects of flipped distance education courses on student achievement at various education levels could support literature. Karadağ and Yücel (2020) noted that only 63% of the students had internet connections while 66% had computers or tablets in 2020. Due to the conditions of COVID -19, distance education started suddenly, and the extent to which instructors and students have the technological equipment and internet infrastructure required by distance education could not be adequately controlled. Some of the PSETs who participated in this study also stated problems regarding equipment and internet connection quality. Investigation of the extent to which instructors,

students, and educational institutions have the technological equipment and internet infrastructure required to fulfill the distance education requirements on a global scale will provide important information for the more effective implementation of distance education courses to be applied during the COVID -19 pandemic and in the future.

Conclusion

With the COVID-19 Pandemic, habits accepted as normal in life had to be changed, and face-to-face education was suspended on a global scale to reduce the spread of the pandemic. During the pandemic, distance education opportunities were tried to be used to ensure the continuity of education, and educators seek ways of providing effective teaching or evaluation under distance education conditions (Can, 2020; Kuzu, 2020). However, a few of these pre-service teachers had trouble finding proper equipment or programs to participate in-class activities. Since it might have affected those pre-service students' perspectives about flipped distance education, lack of appropriate equipment was the main limitation of this study.

Most of the PSETs welcomed the flipped distance education course designed within the scope of this study. Positive opinions about the flipped distance education course were not only stated by the PSETs who participated in this study, but similar results were also obtained in studies conducted in undergraduate-level economics, engineering, and health courses (Critz & Knight, 2013; Karabulut - Ilgu et al., 2018; Roach, 2014). Considering that Karadağ and Yücel (2020) stated that the experiences gained during the COVID-19 pandemic process will affect the distance education culture, it will not be surprising that the flipped distance education model will be used more frequently in undergraduate-level courses.

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