

Examination of Pre-Service Teachers' Experiences on Distance Education in the Covid-19 Pandemic Period: A Longitudinal Research

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ABSTRACT

This longitudinal research was conducted in Girne American University, Faculty of Education during the pandemic process by means of a qualitative multiple case study with semi-structured questions through online forms with a purposefully selected study group of 143 undergraduates between 2020-2022 academic years. The two phase research had 75 participants in the first phase and 68 in the second one. The interview questions were first applied to a randomly selected pilot group consisted of 13 participants that are exempted from the research. Content analysis was utilized in the data set in order to have a deep understanding of the findings. Findings revealed that most of the students did not have an online education experience before, but their competency levels were stated to be positive and they are quite satisfied from the distance education applications. Internet quality is found to be the major obstacle, Zoom to be the most used platform. Evaluation and communication problems are found to be at the center of negative attitudes. Even if there are both positive and negative attitudes towards the future preferences, a combination of face to face and online sessions seem to be accepted by the participants.

Keywords: *Distance education, online learning, pre-service teachers, qualitative research*

INTRODUCTION

After the Covid-19 outbreak, which deeply affected the lives of millions that started in Wuhan City of Hubei Province of China to the rest of the world, was declared a pandemic by the World Health Organization on March 11, 2020 (Kiok et al., 2021; Shingal, 2020; WHO, 2020) forcing us to leave our classrooms, offices and campuses. According to UNESCO, more than 1.6 billion students, as of 90% of the world student rates (Gençoğlu & Çiftçi, 2021, p. 1650) and young people around the world have been affected by the closure of educational institutions due to the pandemic (UNESCO, 2020a). The closure of educational institutions, although it is stated that the effect of school closure measures in coping with the epidemic is not yet known (Uscher-Pines et al., 2018; Viner et al., 2020), regional or countrywide school closure measures have been taken in 192 countries affecting not only students, teachers and families forcing them to stay at home (Grek & Landri, 2020), but also had far-reaching economic and social consequences (Setiawan & Iasha, 2020). The field of education also had its share due to the compulsory change from traditional classrooms to virtual ones, in terms of distance education, as an effect of the pandemic.

Distance education term stands for the teaching and learning activities that the suppliers and receivers of the educational objectives are physically far away from each other in which the process occurs in different settings which are backed up with technological tools and applications, time and space flexibility are provided, and interaction is established (Banar & Firat, 2015; Moore & Kearsley, 2012; Özüdoğru, 2021) Distance education's history dates back to 1700s by a teacher named Calep Phillips, who gave an advertisement in Boston Gazette about a correspondence course in which weekly learning programs will be sent to students living outside the region they live in underlining that there would be no change in the quality of the courses (Ceviz, Tektaş, Basmacı & Tektaş, 2021; Siemens, Gašević & Dawson, 2015). Unfortunately, correspondence study could not have an effect until the 19th century, due to the improvements in the postal system in the US. Later in 1840s, the process continued with letter teaching (Moore & Kearsley, 2005), followed by the British Broadcasting Corporation's (BBC) educational radio training and distance education for schools in 1920. The distance education phenomenon continued in the 1960s with the support of the BBC, higher education-level radio and TV broadcasts and lecturing sessions were on the run (Bates, 2015).

In our era, distance education turned out to be web-based educational activities with the help of developing internet technologies and computers (Newby, Stepich, Lehman & Russell, 2006). The increased usage of mobile devices in our lives, having the opportunity to access the internet from anywhere and the ability to do computerized operations has been effective more than ever (Chóliz et al., 2016). This status of improvement brought a new term as “Digital Literacy” (OECD, 2018, 2019; Zilka, 2021), which is also regarded as “21st century skills”, meaning to reach the desired information, evaluating, processing and integrating it by using various digital tools within the awareness of limitations, challenges and benefits of it. The limitations of technology integration is not a ‘hot topic’ that has been always under inspection and Ertmer (1999) identified these limitations (barriers) in two groups as internals, the ones related to equipment, education, access, time and technical support; and externals as pedagogy, belief and personal preferences of teachers. In the field of education, digital literacy phenomenon gains different requirements and competencies for both students, academics and the administrative staff. UNESCO’s (2011) diverse specifications of these academic competencies are; information and communication technology use in education, curriculum and assessment, pedagogy, organization and management, and individual development which are believed to have a positive effect when the required features are well conducted by expertise.

Blended and online courses were ingrained in the curriculum of educational institutions before the pandemic (Seaman et al., 2018; Soffer & Cohen, 2019; Zilka et al., 2019) but the new crisis initiated new approaches and applications of online learning and launched the process of total distance learning (Kwong et al., 2020). Once regarded as supplementary and ignored online instructional tools in the traditional education, are now on stage with their leading roles at all levels of educational institutions (primary, secondary, undergraduate & graduate) and schools world-wide (Batmang et al., 2021, p. 449). China with more than 270 million students shifted to online platforms supplying free of charge primary and secondary level learning opportunities, France activated home-class application nationwide, America’s first step from online shift in higher education level conducted by Washington university with 50 thousand students and British authorities predicted to be far from effect for its higher education system by internalizing social immunity approach during the pandemic (Saygı, 2021; Yamamoto & Altun, 2020; Yılmaz et al., 2020). Australia and Romaina (in addition to national tv broadcast), both used Google Drive/ Microsoft Teams of distance education, German teachers mailed homeworks and assignments to their students (Reimers & Schleicher, 2020), and Finland preferred to keep schools open by means of flexible learning environments and applications guided by the National Education Agency (Gençoğlu & Çiftçi, 2020). Meanwhile, Ministry of Turkish Education conducted on air (synchronized and non-synchronized) education via state television and higher education institutions also shifted to online instruction in all fields which already had some considerable technical competence, experience, software and hardware that were in use for variety purposes since the declaration of the Council of Higher Education (YOK), giving the opportunity to institutions to conduct online sessions for common/service courses in 2013 (Kuzu, 2020), which then come forth due to the pandemic. Following the announcement made by YOK in 2020 March out of 189 universities in Turkey, a fast shift to distance education on 23 March 2020 started with 121 (64%) universities, followed by 41 (21.6%) on 30 March 2020, and 25 (13.2%) on 6 April 2020 (Dikmen & Bahçeci, 2020). In the Turkish Republic of Northern Cyprus (TRNC), the first case of COVID-19 was identified on February 25th, 2020, after which the number of confirmed cases increased steadily forcing educational changes to be adapted rapidly at all levels of the education system.

It is believed that distance education is an effective model like the traditional one which also gives some educational the opportunities, new instructional techniques, creates contribution to adult education and additional set of challenges with feedback and curriculum implementation (GuriRosenblit, 2005; Hill, 2021; Simonson, Schlosser, & Orellana, 2011). Scholars state that distance education and online learning has the potential to be considered not only an alternative and supportive element of traditional education, but also as a major basis of educational operations and the “digitalization in education” must keep the pace and should be supported (Altunel, 2020; Ogbonnaya, Awoniyi & Matabane, 2020; Telli & Altun, 2020). Scholars approach to the requirements of distance education are examined from different viewpoints. Ormrod (2016) states four principles as; competence, excitement, self-determination and connectedness, where some researchers mention that distance education is consisted of four elements as institutional, communicative, auidial and physical-stating the separation in distance education (Simonson, Smaldino, Albright & Zvacek, 2008). The mutual and instant interaction is highly crucial in order to supply and sustain learning in a virtual environment with student satisfaction, which reveals a higher level of engagement in learning activities (Cidral et al., 2018; Wu et al., 2010; Veletsianos, 2010) which have some unique specialties from the traditional classroom due to the motivation, satisfaction and interaction of the students (Bignoux & Sund, 2018).

Scholars state that no considerable difference was detected between the traditional and virtual class in terms of student satisfaction when designed and supplied properly (Adam et al., 2012; Clark, 2007), and there is some

proof that participation in distance education can also lead to higher academic success (Kurucay & Inan, 2017). At this point, student motivation and participation stand as the fundamental factor to have a positive effect on academic achievement. The motivation to take part in virtual activities highly connected with participation, which is believed to have three dimensions as; cognitive participation (the effort), emotional (to the peers and teachers) and behavioural participation (the attention to learn) (Jung & Jeongmin, 2018). These virtues are strictly connected with the teacher competence (technical and instructional), student readiness (academic and technical), and finally technical structure (the internet quality) which stands as the major concern as found in research conducted during and post covid period in many countries (Kulal & Nayak, 2020; Lau, Yang & Dasgupta, 2020; Özdoğan & Berkant, 2020; Sahu, 2020; Wang, 2020). Many research findings state that interaction in distance education activates student engagement, which positively affects satisfaction (Kim & Kim, 2021) and academic self-efficacy, as the most predictive factor of students' satisfaction (Shen et al., 2013; She et al., 2021).

Academic focus is affected by students' attitudes towards the shift from traditional classroom to virtual ones via distance education and a variety of approaches are measured by scholars that pre-service teachers generally have positive attitudes so that distance education is found to be advantageous, providing flexibility and convenience (Kiok, et al., 2021; Muthuprasad, Aiswarya, Aditya & Girish, 2021). Negative attitudes were due to the technical obstacles in synchronized course sessions, ineffective content and application for some specific domains like nursing, tourism, sport sciences which have more practical course content in their instructional agenda (Karatepe, Küçükgençay & Peker, 2020; Sarıtaş & Barutçu, 2020) that are problematic to conduct session via Zoom, which is found to be the most frequently used applications in distance education to replace conventional face-to-face classes (Ni et al., 2020; Harefa & Sihombing, 2022). These attitudes also differ regarding the gender of the students and males reported as the major group that finds distance education more practical and effective than females (Buluk & Eşitti, 2021; Greier et al. 2020; Yu, 2021) whereas there are some counter approaches on behalf of the females (Korlat et al., 2021). Measurement and assessment procedures also tend to have diverse approaches both stating positive sides of the assignments and homeworks (Görgülü Arı & Kanat Hayır, 2020) and negative sides of software used and the anxiety that rises because of the lack of the competence or technical suitability to use the Moodle for the exams (Reime, Harris, Aksnes, & Mikkelsen 2008). These sorts of obstacles found to have a negative effect on students' psychology as they create the feeling of isolation due to the access and lack of communication with their peers and teachers (Horspol & Lange, 2012; Özyürek, Begde, Yavuz & Özkan, 2016; Serçemeli & Kurnaz, 2020; Kuzu, 2020; Morcillo, 2020). Maybe due to the effect of this feeling of isolation, research findings also assert that students tend to see the traditional classroom more convenient for teaching and learning activities rather than the virtual ones due to the complex and diverse variables that can have an effect on the latter one (Richardson, Maeda, Lv & Caskurlu 2017; Ozaydın, Ozkara & Cakir, 2018; Batmang, et al., 2021).

PURPOSE OF THE RESEARCH

TRNC higher education institutions also activated their systems as of March 11, 2020, when the traditional education was suspended and schools were temporarily closed, in order to supply required specifications that the departments and the students will be in need during this unexpected occasion. It took a while to adapt to online education during the pandemic period and different online education applications were conducted on different platforms and a common ground was tried to be found, according to the needs of the students and the facilities of the educational institutions. This situation made us understand that there is a need for new applications and methods not only in course management, but also in course planning and evaluation procedures. Bringing the approaches and applications used in face-to-face education to virtual classrooms were questioned due to the competence of producing desired instructional outcomes. In order to keep the pulse in the field of education on this subject, many studies have been carried out on Covid after the pandemic revealing the reflections of this process within different dimensions. Now, three years passed since we learned to live with the pandemic with our new technical and educational experiences and outcomes throughout this process, that stands as the core objective of this longitudinal research which focuses on undergraduates' experiences of online education during the pandemic, who were enrolled in the Girne American University (GAU), the Faculty of Education between 2020-2023 academic years, located in TRNC. This research attempts to investigate how students' approaches and experiences have changed over the pandemic period with the following research questions;

1. What are the experiences of pre-service teachers' distance education before pandemic?
2. What are the experiences of pre-service teachers related to virtual class sessions before pandemic?
3. What are the devices that pre-service teachers prefer to follow the distance education during pandemic?
4. What kind of software tools do the pre-service teachers prefer on distance education?
5. What are the pre-service teachers' views on accessibility to the course content?
6. What are the pre-service teachers' views on announcements during distance education?
7. What are the experiences of pre-service teachers related to course materials uploaded to the system?

8. What are the pre-service teachers' views on attending live course sessions?
9. What are the pre-service teachers' views on recorded course sessions?
10. What do pre-service teachers think about online assessments?
11. What do pre-service teachers think about the effectiveness of distance education?
12. What are the pre-service teachers' experiences related to communication?
13. What are the pre-service teachers' experiences related to software systems during distance education?
14. What kind of technical issues pre-service teachers have been through?
15. What are the pre-service teachers' views on positive aspects of distance education?
16. What are the pre-service teachers' views on negative aspects of distance education?
17. What are the pre-service teachers' future preferences of educational model in the new academic year?
18. What opinion changes may occur in distance education during and post-COVID -19 pandemic?

METHODOLOGY

This section is devoted to the explanation of the research model, study group, data collection tool, data analysis and the reliability of the research.

Research Design

In this research, it is aimed to reveal the change in the thoughts of pre-service teachers about distance education carried out during the Covid-19 pandemic process over time by using the qualitative research method. It is a process based on the holistic examination of individuals' meanings towards a social problem or phenomenon through the analysis of a specific context of its reality (Yıldırım & Şimşek, 2013). Likewise, Strauss & Corbin (1998) describe qualitative research as a “type of research that produces findings not arrived at by statistical procedures or other means of quantification. A multiple case study approach was utilized in this research since it allows to understand the differences and the similarities between the cases (Baxter & Jack, 2008; Stake, 1995).

Ethics Committee approval was taken on 22.11.2022 with the 5/22-128 file number and informed consent form was presented to the participants of the study.

Population and Study Group

The participants of the research consisted of two study groups. The population is between 700 to 800 undergraduates in both years of the research. The first study group was formed by the students studying at the GAU in the spring semester of the 2019-2020 academic year, and the second study group was formed by the students studying at the same university in the spring semester of the 2020-2021 academic year. The first group comprised of 75 pre-service students and the second group comprised of 68 students to make a total of 143 pre-service teachers. Amongst the purposeful sampling methods, typical case sampling was used in the research, which allows building up an outline about what is normal for a critical phenomenon (McCombes, 2019). All the pre-service teachers followed online education (synchronously and asynchronously) throughout the pandemic process; in this case the pre-service teachers in the two study groups are typical of their experiences. All participants were above 18 years old who consented to participate in the study and completed a semi-structured interview form. The demographic information about the pre-service teachers who participated in the research is given in the Table 1 below.

Table1: Participants of the research

Factor	Frequencies	
	Phase 1	Phase 2
Gender		
Male	25	20
Female	50	48
Department		
English Language Teaching (ELT)	35	32
Primary School Teaching (PST)	3	26
Pre-school Education (PRE)	30	-
Turkish Language Teaching (TLT)	4	8
Psychological Counselling and Guidance (PCG)	1	-
Computer and Instructional Techno. Education (CIT)	2	3
Total	75	68

Table 1 presents the participants of the research with total 143 students in two phases. Females found to be the majority participant group, as well as the ELT and PRE department students in the first phase of the research. In the second phase, the majority were ELT and PST and no PRE and CG students took part.

Pilot testing

A pilot test is believed to assist the researchers with the refinement of research questions in determining possible flaws, limitations, or other weaknesses within the research design and will allow the researchers to make necessary revisions prior to the implementation of the study (Kvale, 2007; Turner, 2010). Depending on this, this research data collection tool was applied to randomly select 13 participants, which are kept separate from the study group as a pilot test and the data obtained was analysed, and necessary adjustments were applied to the research questions.

Data Collection and Analysis

The researchers collected data through online Google forms in Spring 2020 and 2021 at the end of the semester. The content analysis technique was applied to the data sets which is a technique for replicable and valid inferences from texts in the contexts (Krippendorff, 2004) that systematically describes and specifies a phenomenon (Downe-wambolt, 1992). In order to conduct data analysis, the researchers used Creswell’s (2005) six steps for qualitative data analysis and interpretation as; organizing the data, reading the data, coding, generating the categories and then themes, and finally interpreting the data obtained. In order to supply trustworthiness the researchers applied investigator triangulation (Denzin, 1978; Patton, 1980; Onwuegbuzie, 2002) by cross analyzing the data sets and peer reviewed the coding and categorizing process. For reliability analysis, Miles & Huberman’s (1994) formula $[G=A \div (A+B) \times 100]$ as; “G: Reliability coefficient, A: Number of subjects/terms on which consensus is reached, B: shows the number of topics/terms on which there is no consensus” was applied to the data set and for all the results the reliability level is measured to be more than 0.97 which can be regarded as a high level of reliability (Patton, 2002).

RESULTS

The results are organized in tables and represented by the research questions that were leading the current research. In order to convey the experiences of the Faculty of Education students regarding distance education during the pandemic process. Although there are many similarities between the experiences of the students in the first year of the pandemic period and what they experienced in the following year, considerable differences were also encountered. The results of the research are presented in the following sections as; the experiences before the pandemic, the experiences during pandemic, and the future expectations.

The Experiences of Pre-Service Teachers’ Distance Education before Pandemic

In order to explore the pre-service teachers’ previous distance learning experiences the researchers asked if they had any experience before the pandemic. Most of the pre-service teachers, both in Phase 1 and Phase 2 stated that they had no experiences. Those who stated that they had experiences was limited by asynchronous lessons such as National History, Turkish Language and Computer Skills named as service courses. Table 2 states that, in Phase 1, the majority (n=61) of the pre-service teachers did not have online education experience before the pandemic and 11 of them mentioned their experiences and three of them stated that they only had asynchronous online sessions. In Phase 2, almost the same number of pre-service teachers indicated that they did not attend any online education process before the pandemic. The first question summarizes that online education stands to be a ‘foreigner’ to many students. The reliability level is measured as 1.00.

Table 2: Previous online experiences

Opinions	Frequencies	
	Phase 1	Phase 2
Yes	11	9
No	61	59
Partially (asynchronous courses during freshman period)	3	-
Total	75	68

A pre-service teacher from the ELT department from Phase 1 stated her opinion about service courses’ as a summarization of others as; “Yes, I was only taking National History course online, however, it was not online education just lecture notes on the Moodle” [PST4-P1].

The research questioned the pre-service teachers’ experiences about virtual classrooms. Table 3 indicated pre-service teachers’ competences on online learning. Pre-service teachers were asked to state their competencies in

virtual classes, in Phase 1, 67 of them and in Phase 2 60 of them stated positive competencies related to the virtual classes and only 5 and 4 respectively mentioned that they have difficulties.

Table 3: Competencies of the virtual class

Opinions	Frequencies	
	Phase 1	Phase 2
Yes	67	60
No	5	4
Partially	3	4
Total	75	68

Regarding the results reflected in Table 3, it is possible to state that the majority of participants reflected a considerable competency level during distance education in both phases of the research. This could possibly interpreted as a positive virtue in terms of the readiness status of the participants to technological alterations caused by pandemic as an external stimuli to reflect their competencies which can be seen as a reflection of their digital literacy status.

The Experiences of Pre-Service Teachers’ Distance Education during Pandemic

The aim of this research was to fold an evidence from pre-service teachers taking online courses at the pandemic to determine their perceptions on teaching-learning process, including devices preferences, types of virtual tools, access to Learning Management Systems (LMS), announcements, learning materials, attending live sessions, tracking recorded videos, online evaluation, effectiveness of online sessions, communication, software systems, technical problems, and pros and cons of online learning.

Opinions of pre-service teachers on the tools that they were chosen to follow the online lessons during the pandemic are given in Table 4.

Table 4: Device preference for online education

Opinions	Frequencies	
	Phase 1	Phase 2
Mobile phone	15	10
Personal Computer (PC)	11	15
Both mobile and PC	49	43
Total	75	68

The responses helped us to find out that many students (n=49) generally use mobiles and personal computers at the same time to engage in the online activities (courses and etc.) in Phase 1 and the great majority in Phase 2 (n = 43) also used both mobile phone and PCs to follow the online education and some prefer to get online via mobiles (n=15) and some with PCs (n=11) in Phase 1 and in Phase 2 only 15 student stated that used PC to follow the lessons. It is possible to state that this finding also backs up the status of the participants’ competencies to use technological devices.

The students were also asked the type of virtual tool that were used to follow the lessons. It was found out that students were mostly able to use Zoom (n=45). They also get involved in moodle activities (n=13) and some use both (n=17). In Phase 1, the majority (n=45) indicated that they used Zoom to follow the lessons, but as stated in Table 5, in Phase 2 most of the students stated that both Zoom and moodle used to follow the content of the lessons.

Table 5: Types of the virtual tools

Opinions	Frequencies	
	Phase 1	Phase 2
Zoom	45	15
Moodle	13	19
Both Zoom and Moodle	17	34
Total	75	68

Even if it is widely used (worldwide) some students found Zoom more problematic to use rather than their institutions’ moodle and a male participant from the CIT department stated their experiences of these two

different applications through the two phases by saying; *“For example, it is difficult in Zoom, but it is easier than what we do on Moodle, at least we can listen to the lesson again and again”* [PST4-P2].

This research helped us to understand how the pre-service teachers access to LMS was actually happened. As shown in Table 6, in Phase 1 generally take steps to reach the online course content (n= 69) whereas some (n= 14) do not even try to reach or fall behind due to some unexpected obstacles (n= 2). The same results were also obtained from Phase 2, during the online education, pre-service teachers generally (n=64) did not have difficulties reaching the course content, whereas some of them (n=6) mentioned that they do not have access, and the situation depends on the net connection as stated by some (n=4) pre-service teachers.

Table 6: Access to LMS

Opinions	Frequencies	
	Phase 1	Phase 2
Easy access	69	64
No access	14	6
Partially (due to connection problems)	2	4
Total	75	68

Two participants from different departments and phases said; *“The course content is easily accessible”* [PST25-P2], and *“If the Internet connection is good, yes I can reach it”* [PST12-P1] underlining that the major obstacle in distance education and application of its features are strictly connected with internet quality which allows access to the course content. This issue stands as a fundamental obstacle that has a negative effect on implementation of distance education features at all levels of national education systems.

Pre-service teachers were asked if they receive enough announcements related to courses or other academic or administrative issues. As presented in Table 7, in Phase 1 it was seen that the majority (n= 43) of the participants mentioned that they do, a considerable amount (n=24) of them stated that they do not, and some (n=8) mentioned that these announcement issues depend on instructors' attitudes. In Phase 2, the majority (n = 48) indicated that they quite satisfied about the announcements related to courses and regulations. However, six students stated that some obstacles, such as technical issues, prevent them to follow the announcements on time.

Table 7: The Announcements during distance education

Opinions	Frequencies	
	Phase 1	Phase 2
Quite Satisfied	43	48
Not Satisfied	24	14
Partially (depends on net connection, technical issues, instructor)	8	6
Total	75	68

It is possible to mention that participants' opinions about the announcements during the pandemic in the two phases had a little amount, but positive change in the three degrees of satisfaction. A participant from Phase 1 said; *“Yes, communication groups that students establish among themselves are especially helpful”* [PST23-P1] whereas the other criticized by saying; *“I believe it could be done more clearly”* [PST12-P1]. We can see that in Phase 2 there are more positive responses as; *“I think it's enough.”* [PST3-P2] and recommendation mentioned by a male ELT student as; *“I think it will be very good if the latest updates are sent from mobile phones”* [PST47-P2].

As Table 8 shows under the theme course materials in distance education the results are gathered in 3 categories, namely *“answers students` needs, not answers students` need and partially answer students` needs.”* In Phase 1, even if the majority of the pre-service teachers mentioned that they can find materials for the courses a close number of them stated that do not have materials for their courses, and some mentioned that this case depends on the course content or the instructors' approaches. On the contrary, in Phase 2, most of the students stated that the materials did not answer the students need since they are not effective and efficient. The rest, also stated the lack of exercise questions and course books and unavailability to do practice made them to not get the real benefits from the online lessons. However, the third category was decreased in Phase 2 which in the second year of pandemic less students stated that course materials partially answer students` needs.

Table 8: Materials in online lessons

Theme	Category	Codes	Frequencies	
			Phase 1	Phase 2
Course materials in online lesson	Answer students' needs	Lecture notes	32	23
		Presentations	5	10
	Do not answer students' needs	Not effective	21	34
		Not efficient	5	10
		Lack of blackboard	3	-
		No practice	2	5
		Lack of attention to the lesson/ distraction	2	8
		Get bored	2	8
		Limited access to hardcopy resources	2	5
		Lack of exercise questions	3	7
		Lack of materials	2	4
		Lack of lecture notes	1	5
	Lack of course book	2	3	
Partially answer students' needs		16	4	
Total			75	68

Table 8 is the first table prepared with the codes, categories and themes, due to the content analysis, which involves 13 different codes (in Phase 1) taken from participant responses stating the satisfaction levels of the participants related to the course materials. There are some counter-ideas about this topic, but the major opinion is found to be satisfactory in Phase 1 but in Phase 2 the situation has changed. Participants said; “*No. It is not as effective as face-to-face education. Participation is low. We can't do any hands-on stuff*” [PST8-P1]. And this approach is backed up with a pre-school education department female student, in which materials are of vital importance due to the age groups that they deal with. She said;

“Not available for some courses. Because in some lessons, the teachers only talk about the subject, and no material or lecture notes are used during or after the lesson. Since we have difficulty in taking the necessary notes during the lesson, it takes a serious amount of time to listen to the lesson recordings again later” [PST32-P1].

A pre-service teacher from ELT department expressed her opinions by saying; “*Mostly yes, sometimes I feel inadequate, sometimes it is difficult to access resources due to the pandemic. It is not possible to access all resources in an electronic environment* [PST51-P2]. The responses of the participants help us to understand that students do not find the course notes effective (specially for some departments) even if they are the major source of information for the courses they are registered.

This research is also trying to find out the attendance status of the students to the live course sessions. As shown in Table 9, in Phase 1 even if some of the pre-service teachers do not (n=28) or occasionally (n=12) attend the online courses, it was found that the majority (n=51) regularly attends the courses. In Phase 2, the availability of recorded lessons, personal issues and technical issues many students did not attend the live sessions, but the majority of students stated that they were able to attend the live sessions.

Table 9: Attending to the live course sessions

Theme	Category	Codes	Frequencies	
			Phase 1	Phase 2
Attending live sessions	Not able to attend	Recorded lessons	2	13
		Working	3	6
		Internet issues	7	4
	Attending live sessions	cell phone capacity	8	2
		Inconvenient home environment	5	5
		Personal issues	3	2

Able to attend	51	42
Occasionally	12	10
Total	75	68

In both phases, the participants mentioned positive attitudes towards participation issues in distance education courses. The rest of the responses seemed to be personal obstacles rather than general problems faced mentioned in previous result tables.

The perceptions of the pre-service teachers' on following the recorded lessons were also explored in this research. As reflected in Table 10, in Phase 1 the majority (n=32) of the pre-service teachers stated that they can reach the recorded lessons when they missed the live sessions; some stated that they only watch recorded lessons to repeat the course content particularly during exam weeks. In Phase 2 majority (n=40) have access to the recorded lessons when they missed the live lessons; and only 10 stated that they watch the recorded lessons if they need to repeat the content. However, both in Phase 1 and Phase 2 pre-service teachers mentioned that they cannot watch the recorded lessons since not all the instructors loaded the videos on Moodle, and the rest stated that they watch the recorded lessons if they have no internet problems. Two pre-service teachers mentioned that they gather information from their friends, whereas in Phase 2, three of them mentioned that they have no time to watch the recorded lessons. Twelve pre-service teachers mentioned that they do not need to watch the recorded lessons so that they regularly attend the classes. A considerable number of (n=43) pre-service teachers in both Phase1 and Phase 2 mentioned that not all of the instructors upload recorded lessons for them in order to follow the course content. One of the male students from pre-school education department mentioned his opinion about recorded courses as;

“I can say that I am only satisfied with online education because of recorded lessons. I am a student who actively participates in my classes, but sometimes I listen to what I do not understand and what we have studied during the semester before the exam week” [PST29-P1].

The same positive attitude towards the recorded course sessions with a different approach came from a female ELT department student who works and studies at the same time as; *“No. Since my workplace is a little far from my house, the lesson starts until I get home, so I listen later” [PST16-P2]*, possibly underlining that the course recording sessions could be regarded as a ‘handy’ feature to be benefited according to the needs of an individual.

Table 10: Tracking recorded video lessons

Theme	Category	Codes	Frequencies		
			Phase 1	Phase 2	
Tracking recorded video lessons	Yes	Missed lessons	32	40	
		Repeating	20	10	
		Useful in the exam week	10	1	
	No	Limited number of loaded the videos	I attended the classes	8	4
			Internet problems	7	3
			I get information from my friends	2	-
			No time to watch	-	3
	Total			75	68

And some more benefits of recorded course sessions, maybe to be considered as a future ‘beneficial’ goal to be internalized by institutions, so that it supplies academic back-up for the students that are in diverse needs and situations as exemplified by a male primary school teaching department as; *“I’m trying to follow as I can. I’m working to support the home economy due to the pandemic” [PST7-P2]*.

This research also questioned the experiences of the pre-service teachers about online evaluation. Thus, the question *“how do you feel about the online assessments?”* was asked. As shown in Table 11, two categories emerged, namely *“positive and negative”*. In Phase 1, the majority of pre-service teachers indicated that negative feelings towards online evaluation owing to no required information given on exams, not productive and various system and internet-based faults. However, in Phase 2 although the majority of pre-service teachers stated that

they have positive feelings on online evaluation, but the time issue still continues to be the most mentioned difficulties during exams.

Table 11: Online evaluation

Theme	Category	Codes	Frequencies	
			Phase 1	Phase 2
Online Evaluation	Positive	Not bad	3	12
		Economic	2	4
		Practical	3	2
		Easy to do	3	1
		Individual test taking	2	1
		Self-controlling	1	-
	Negative	Not enough information	15	2
		Not productive	10	2
		Not effective	4	2
		Cheating	2	2
		Freezing	5	2
		System error	13	7
		System collapse	7	3
		Time issues: surfing the pages, time to think, not managing time, not enough time	12	16
		Internet connection	12	11
		Quality of exam questions	5	4
		Slow system processing	4	2
		Not able to go previous question	7	2
		Lack of information on system	2	-
		Lack of electricity	3	3
Total			75	68

As reflected in Table 11, 20 different codes were generated that are gathered in two categories under one theme. The shortage of time stands for the major difficulty the pre-service teachers faced during distance education period’s online evaluation process. A female student from ELT department both stated positive and negative aspects of the online evaluation process as;

Since the exams are online, it is a problem for me that the duration of the exam is very short in order to minimize cheating. As a student who has a hard time keeping my attention, taking the exam online and being given a very limited time can sometimes lead to negative results. What I can say positively is that I can work comfortably in my own home and attend exams when the time comes. Not going to school from one place to another in order to take the exam saves time for me and at the same time allows me to take the exam more energetically” [PST42-P2].

It is possible to state that, the efforts to prevent cheating or other undesired occasions during exams are also found to be effective elements of student satisfaction from online evaluation. The compulsory sequential exam questions mentioned to be one of these applications by a female pre-school education department student by saying; *“I can log in as long as there is no system and internet connection problem. However, there is one annoying situation which the system doesn’t allow you to return to the previous questions in exams” [PST52-P2]*, which can possibly create anxiety and possible academic failure as underlined by a student as; *“On the negative side, I’m having a time problem, time is very limited and I can make wrong while answering quickly” [PST35-P2]*. Counter ideas about this issue was also pronounced as it was found to be practical; *“While I don’t think it is as effective as face-to-face education, but it’s not a bad way of follow lessons under these circumstances. More economical and practical than physical exams” [PST5-P1]*. Moreover, the internet quality again comes up to stage when the word comes to evaluation, and one student clarified the issue as; *“... the loading of the exam questions depends on the internet speed, sometimes the time is not enough” [PST10-P1]*.

One other focus of this research is the pre-service teachers' experiences on the effectiveness of distance education. As Table 12 indicated, both in Phase 1 and Phase 2 the majority of the students believe the online

lessons are not effective due to the reliability issues in exams, the lack of interaction between teachers and students, and poor internet quality.

Table 12: Effectiveness of the online lessons

Theme	Category	Codes	Frequencies	
			Phase 1	Phase 2
Effectiveness of online lessons	Effective	Recorded lessons	10	5
		Repeating lessons	8	3
		Cozy learning environment	7	3
		Economic	5	6
		Practically	4	3
		Productive	5	2
	Not effective	Time	7	5
		Difficult to follow	10	2
		Lots of homework	8	3
		Cheating on exams	9	7
		No one-to-one communication	7	3
		No active participation	5	3
		Internet connection issues	5	4
		No eye contact with the instructor	6	1
		Not able to do practice	4	2
		Not able to concentrate	4	2
Total			75	68

As Table 12 specified unfortunately, the majority (n=33) of the pre-service teachers mentioned that they certainly do not find online education effective, whereas some (n=15) find it rather fully or partially (n=6) effective. Some find it not effective as face to face (n=8) and some compared it with having nothing (n=3). The rest of the pre-service teachers stated their negative opinions as online education is not effective due to the technical problems (n=5) and their negative effects on attention (n= 3) and it is not sufficient for every course (n=1). Participants' approached to the effectiveness of online lessons vary according to the personal beliefs. A female student from Turkish Language department in Phase 1 underlined the engagement and satisfaction status, which is found to be an important aspect or the distance education world-wide, by saying;

If the student does not try to learn, I cannot say that it is very effective. Because we can experience disconnection due to internet problems, disconnection or internet problems caused by the teacher. In this case, the topic is divided; it takes time to repeat, etc. We cannot make eye contact with the teacher; we have difficulties in doing the practicum lessons. These inevitably reduce the impact and understanding of the lesson [PST14-P1].

Another female student from ELT department underlining the benefit of the recorded sessions as;

Yes, I find it effective. Especially sharing content is very useful and recording the lessons is very useful for us to listen and understand the lesson over and over again. In face-to-face education, we unfortunately do not have the chance to listen to the lesson again" [PST23-P2].

On the contrary, a female student from pre-school education department mentions that nothing compared to the traditional classroom environment by saying; *"No, I do not think. No classroom atmosphere, low attendance. Our ability to attend classes depends on whether we have internet or not" [PST19-P2].*

Pre-service teachers were asked to reflect their opinions related to communication issues with the instructors during the online education. In Phase 1, the majority stated that they do not (n=31) have problems, whereas a similar number of pre-service teachers stated that they had communication problems (n=22) during this period. Table 13 shows two categories under theme communication problems, namely *healthy communication* and *insufficient communication* involving nine codes. The codes of insufficient communication are generated as; no

question-answer sessions (n=5), system issues (n=5), late email returns and no assistance on exams. In Phase 2, the codes quick response (n=20), e-mail (n=8), and e-learning (n=6) are the ones under the *healthy communication* category, whereas the codes of the *insufficient communication* category are no reply or late reply to e-mails (n=5), system issues (n=7) and no assistance on exams (n=3).

Table 13: Communication problems with the instructors

Theme	Category	Codes	Frequencies	
			Phase 1	Phase 2
Communication Problems	Healthy Communication	Quick response	15	20
		WhatsApp	6	4
		E-mail	5	8
		E-learning	4	6
	Insufficient Communication	No email returns	8	3
		Late email returns	2	2
		No QA sessions	5	2
		System issues	5	7
		No assistance on exams	2	3
		Total		75

Table 13 represents the satisfaction status of the participants regarding the mutual communicative issues of both the lecturers and the students. They seem quite satisfied when both phases are examined. A female Turkish Language teaching department mentioned her satisfaction as; “No, I did not have any problem in terms of communication. We can reach our teachers via email and we get feedback from all of them as soon as possible” [PST2-P1], and backed up by a female Primary-school Teaching department student by saying; “Generally, I don't. But some of our teachers do not use their e-mail addresses actively” [PST47-P1] and by a male Pre-school Education student whose response could possibly regarded as a proof that the communication issue depends on the lecturers’ attitudes as formerly mentioned by other participants as; “I have never experienced it. I always had the chance to reach him from the group he founded via WhatsApp” [PST9-P2].

During the distance education period, the first semester Zoom application was used at the university, where the research was conducted, for online synchronized courses and e-learning Moodle was the basis for the file sharing and the exam application platform for the students. Depending on this, the pre-service teachers were asked to reflect their experiences about these systems and the majority in Phase 1 mentioned positive (n=39) opinions about Zoom and Moodle when it is compared to negative (n=28) opinions about Zoom and Moodle. As seen in Table 14, in Phase 2, under the positive aspects the codes practical and easy access, clear and understandable, resources and recorded videos are emerging from the pre-service teachers’ response. Besides, *needs to be developed, exam issues, system collapse* and *system issues* are emerging codes under the negative aspects category.

Table 14: Software systems during online education

Theme	Category	Codes	Frequencies	
			Phase 1	Phase 2
Experiences on the Moodle	Positive aspects	Recorded lesson videos	-	3
		Resources	1	2
		Clear and understandable	5	3
		Blackboard better than Zoom	13	1
		Practical and easy to access	20	6
		Instructors	-	2
		Negative aspects	The lesser evil	3
	Needs to be more effective		5	5
	Needs to be developed		2	3
	Exam issues		3	2
	System collapse		2	2

	System issues	5	2
	Zoom	5	2
	Distraction for the course content/activities	3	-
Total		75	68

Table 14 indicates 14 codes that are generated in two categories under one theme. One pre-service teacher mentioned her satisfaction as; *“All systems work very well. Students who really want to follow the lessons can get a good education as long as they don't have internet problems”* [PST11-P2] who is backed up by her peer as; *Although the system currently used by our school (GAU) is a good system in terms of processing the lessons and listening to the recordings again, it was bad to experience problems in the exams and the system is down sometimes. But I think Moodle is more useful than the Zoom which was used in the first pandemic period. Because it is a better system for accessing both the lecture notes and the recorded live lessons that I could not attend”* [PST32-P2].

Even if Zoom is found to be the most used digital platform during the pandemic, the participants of the research stated their preferences of the shift from Zoom to the other platform in Phase 2. One pre-service teacher in the English Language Teaching department summarized the issue as; *“I used the e-learning system and Zoom. E-Learning is easier and faster to follow and access from the Zoom application. For Zoom, there is a constant code login, which is annoying”* [PST27-P1].

To answer the research question *‘What kind of technical issues pre-service teachers have been through?’*, the researchers questioned the sort of technical problems that pre-service teachers faced up online education during pandemic. Under the theme of *technical problems*, three categories were emerged, namely *the internet, LMS and hardware*. As shown in Table 15, in Phase 1, most of the pre-service teachers stated that they had various technical problems mostly related with internet connection. The codes are; no internet connection, slow internet connection and the quality of connection. Even more, some of them stated that they did not have a computer to follow the live lessons and to reach the course content. Those who have no problems with an internet or hardware they stated some technical problems with LMS such as systems update and collapse made them frustrated when they spent time on the site Moodle. Considerable high number of pre-service teachers mentioned that there are insufficient timing procedures in online exams. In Phase 2, almost the same codes emerged from the study, but some codes are mentioned less in the second year of a pandemic, such as the timing issues of the exams and systems failures and updates that out the students into a difficult situation.

Table 15: Technical problems during online education

Theme	Category	Codes	Frequencies	
			Phase 1	Phase 2
Technical Problems	Internet	Slow internet connection	15	8
		No internet connection	18	10
		Freezing screen	10	2
		Quality of connection	5	5
	LMS	Time limitation of exams	10	5
		System Collapse	5	2
		System updates	5	1
	Hardware	Lack of computer	11	8
		Microphone issues	8	5
		Electricity cut off	9	8
Total		75	68	

The technical problems stated by the participants are gathered in three categories with 10 different codes under one theme in Table 15 stating that the technical problems of the participants are generally internet quality in the first line, followed by hardware problems and the ones related to the LMS applications. This issue is summarized by a male participant from the Primary School Department as; *“There are minor problems related to the net connection. Generally speaking, if there is no Internet problem, there will be no problem”* [PST47-P2], backed up by his peer from the same department as; *“Yes, I do, sometimes the teachers and students may have technical internet problems”* [PST52-P1].

This research also tried to put forth the positive aspects of online education during pandemic. Under this theme, as shown in Table 16, four categories were emerged, namely “*economical, timely, practical and none.*” In Phase 1, the pre-service teachers were positive about the continuity of the courses (n=23) without going to school (n=10) and spend more time with the family (n=7) and reducing the life costs (n=9). Moreover, assignments were preferred by some (n=9) pre-service teachers, likewise the online exams so that they were believed to lower the distraction (n= 5) by the external stimuli. Some (n=7) were positive enough to have online education rather than having nothing but some stated no (n=7) positive opinions at all. In Phase 2, some of the codes were diminished even not mentioned such as continuity of the course and assignment rather than exams. The codes such as reduced travel and rent costs are the ones still mentioned by the pre-service teachers. Besides, the codes recorded lessons-able to repeat and comfortable learning environment are mostly mentioned under the category of practical. Since in the second year of pandemic the LMS system allows students to watch the recorded lesson videos.

Table 16: Positive aspects of online education

Theme	Category	Codes	Frequencies	
			Phase 1	Phase 2
Positive experiences	Economical	Continuity of the courses	23	-
		Travel costs, rent expenses reduced	9	10
		Better than nothing	7	-
	Time	Non-stop education	-	2
		Spend more time with the family	7	8
	Practical	Assignments rather than exams	9	-
		No distraction during online exams	5	-
		Recorded lessons-able to repeating	-	7
		Comfortable learning environment	-	14
		No need to go to school	10	-
		Easy access	-	7
	None		7	3
	Total			75

Apart from the economic benefits mostly stated by the participants in both phases of the research, recorded course sessions were found to be the most beneficial aspect of the distance education process and a female pre-service teachers from ELT department clarified the situation as; “*In my opinion, the only and perhaps the most positive aspect is that we have access to the recorded video lessons when we miss classes or want to repeat them*” [PST57-P2], who is supported by her peer as;

It makes me very happy that we have the chance to listen the recorded lectures over and over again at any time. It is very good to be able to reach the lessons, especially when taking notes and stop it at the point I do not understand. These are quite positive aspects when we are away from face-to-face education [PST27-P2].

Participant 15 from Phase I, made us understand that a motivated student will be happy to take part in activities, conduct research, and update her skills by means of the applications of distance education and said; “*It allowed us to do more research and examination in the lessons. It has been beneficial for me in writing essays, examining them, reaching the content, and the literature review. I realized how valuable and important face-to-face lessons are*” [PST15-P1].

When the word comes to negative aspects of online education this research also tried to put forth the negative aspects of online education during pandemic. Under this theme, four categories were emerged, namely *assessment, health issues, teaching and learning* and *technical issues*. As Table 17 indicated, in Phase 1 lots of homework and system failure during exams were the codes mostly mentioned. The majority stated that internet connection problems (n=16), the increase in homework assignments (n= 13), the lack of efficiency in general (n=16) and system failure in exams (n=11). The distraction (n=9) for the course content and electricity cut offs (n= 8) was regarded as the negative sides of online education as well as the lack of communication with the lecturers (n=3) and falling behind the normal schedule of the course (n=3). However, in Phase 2 lots of homework only mentioned by one pre-service teacher, but the system failure in exams was found to be the most mentioned code. For the category teaching and learning pre-service teachers believe that the online education is

insufficient and ineffective. In Phase 2, in technical obstacles category internet connection problems and system collapse are mentioned by a majority of the pre-service teachers similar to Phase 1.

Table 17: Negative aspects of online education

Theme	Category	Codes	Frequencies				
			Phase 1	Phase 2			
Disadvantages of Online Education / Negative experiences	Assessment	Lack of online assistance during exam	-	3			
		Exam duration	1	2			
		Difficult questions	-	3			
		Lots of homework	13	1			
		System failure in exams	11	6			
	Health issues	Posture	-	2			
		Eyestrain	-	2			
		No interaction	2	2			
	Teaching-learning	Not real classroom environment	Not effective	-	2		
			Not efficiency	-	10		
			Not efficiency	12	6		
			Unfair learning environment	-	2		
			Lack of concentration	-	2		
			Lack of practicum	-	2		
			Lack of communication with the lecturers and the administrators	3	-		
			Fall back of normal schedule/content of the courses	3	-		
			Distraction for the course content/activities	9	-		
			Technical obstacles	Lack of accessibility	Lack of accessibility	-	2
					Lack of connection tools	-	2
					Internet connection	16	10
	System Collapse	-			6		
	Electricity cut offs	8			4		
Total			75	68			

Unfortunately, negative aspects of distance education were more pronounced by the participants of this research according to the Table 17 which reflects 22 codes in four categories under one theme. One participant from ELT department clarified this situation as;

I think that the retention, impact and understanding of the courses given are less than face-to-face education. The number of effective and productive courses was very little. It is a pity that there are people who do not have an internet connection, the opportunity to participate in online education and the problems in this regard cannot be overcome. The difference between the opportunities that the students have has been understood more and it is a sad that these opportunities are not provided to those students” [PST24-P2].

This participant was supported by her peer as; “Courses are completed without anyone knowing or learning anything. While receiving face-to-face training, applied lessons were rare, and now even theoretical lessons are not efficient” [PST37-P1] making understand that face to face interaction tend to be regarded as vital for educational success and sustaining equality of opportunities.

The Future Expectations

In order to answer the following question, ‘What are the pre-service teachers’ future preferences of educational model in the new academic year?’ researcher asked to pre-service teachers’ preferences of educational model for the upcoming academic semester. As shown in Table 18 majority of the students in both Phases are preferred face-to-face education. In Phase 1, most of the pre-service teachers (n=31) prefer face to face education for the upcoming academic year or a combined model of education (n=21) that their foresight came true that the hosting university announced to be hybridized during 2021-2022 academic year. Some believe that current situation must continue to depend on the health (n=14) or economic (n=9) issues. However, when compared between two

Phases, the second year of the pandemic pre-service teachers` preferences towards face-to-face was slightly decreased. For face-to face instruction the most mentioned codes were more effective, quality of education, applied lessons, effective communication and fair evaluation. On the other hand, the pre-service teachers who preferred online instruction were mentioned economic issues, working by studying, able to be multi-task, interestingly a few pre-service teachers mentioned health issues.

Table 18: Preference of education model in the upcoming semester

Theme	Category	Codes	Frequencies	
			Phase 1	Phase 2
Preferred Education Model	Online	Health issues	4	1
		Economical	8	10
		Recorded lesson	3	5
		Working	12	10
		Time effective	5	2
		Self-success	5	3
		Comfortable	8	1
		Able to multi-task	6	4
	Face-to-Face	Self-confident in classroom		
			2	1
		More effective	8	8
		Applied lessons	10	5
		More fun	2	2
		Effective communication	6	2
	Motivation	5	2	

Table 18: Preference of education model in the upcoming semester (Continued)

Theme	Category	Codes	Frequencies	
			Phase 1	Phase 2
Total	Mixed	Quality education	3	8
		Fair evaluation	8	2
		Self-responsibility	2	2
		Interaction	2	2
		Classroom atmosphere	2	2
			18	12
			75	68

The future preferences of the participants of this research are gathered in three categories with 19 codes under one theme. Participants generally mentioned that, depending on the number of the codes calculated, face to face education stands in the core beliefs for applications. A male pre-service teacher from Primary School teaching department who questions the effectiveness of distance education as;

I prefer face to face. Although three semesters have passed with online education, an efficient and correct system has not been established yet. I don't think it is right to continue like this. I would like education to be a priority in our country. I do not want to be a graduate as a teacher who is not equipped and does not even take teaching practicum courses. I can never study my department with pleasure” [PST10-P1].

On the other hand, there are participants in both phases of the research who wants to continue with online learning activities by saying; *“I prefer it to continue with online education. Instead of the energy, time and cost lost in transportation to school, getting the same information in the comfort of home makes education more efficient” [PST42-P2],* as well as the ones with ideas that education in the future must be hybridized according to their experiences that they have been through.

The Changing Views on Online Education during and post Pandemic

In this part, how the views of teacher candidates regarding online education between the first and second years of the pandemic have changed has been examined. It has been determined that pre-service teachers have almost no experience with online learning both in the first year of the pandemic and the second year. As in Phase 1, a large majority of pre-service teachers in Phase 2 were following online education from their mobile phones. However, the vast majority reported that they use both mobile phones and PCs. In Phase 1, the online-learning platform that the pre-service teachers used to follow the online lessons was mostly Zoom. Although, in the first year of the pandemic, Moodle was actively ready to be used by students and instructors as a lesson management system, in the second year of the pandemic, pre-service teachers have gained the facility to use Moodle, which was a primary lesson management system of the GAU. When compared to Phase 1, the technical problems caused by Zoom were slightly less mentioned in the second year of the pandemic. Similarly, in Phase 2, the pre-service teachers who participated in the second part of the study stated that it is considerably easier and more satisfying to receive the lesson content and the announcement.

Pre-service teachers also expressed their dissatisfaction with the course materials used in the online lessons in Phase 1. Similarly, in Phase 2, there were many pre-service teachers who specified that the materials used in online education were not more effective, inadequate and insufficient when compared to regular face-to-face education. In the first year of the pandemic, the attending and participating in live lesson sessions was mentioned by the majority of the pre-service teachers, but then again in Phase 2, recorded lesson videos were more favoured by pre-service teachers. However, the problems related to the poor Internet connection, which do not change in each phase of the study, are stated as the biggest obstacle to attend the online lessons. Results also indicated that, many of the negative views regarding online assessment mentioned by the majority of the pre-service teachers in Phase 1 were vanished in Phase 2, such as high numbers of given assignments. Nonetheless the codes such as insufficient exam duration and internet and system problems were highly mentioned by pre-service teachers. Although the pre-service teachers in Phase 2 did not express positive opinions about the effectiveness of online education, reductions were observed in many negative codes. The difficulties experienced in communicating with the instructor have changed from Phase 1 to Phase 2 in a noticeably positive way. Many pre-service teachers revealed that there is a healthier communication in Phase 2. The existence of live lesson recorded videos in the LMS is more evident in Phase 2. However, the negative views on the online lesson platforms were mentioned almost equally in both phases of the study. Many of the technical problems that the pre-service teachers mentioned in Phase 1 related to the LMS appeared slightly decreased in Phase 2. However, Internet and lesson delivery platform related problems were not changed over a year. In Phase 1 and Phase 2, it is equally stated by the pre-service teachers that online education is flexible in terms of economical and practical. In fact, in Phase 2, pre-service teachers embraced the benefits of online education more. The codes that stand out about the negative opinions of teacher candidates about Phase 1 online education are that they are not effective and there are problems with the Internet and the LMS. Giving a lot of homework in Phase 1 disappeared in Phase 2, and even the only time problem in the evaluation was the problem mentioned in both Phases.

Finally, in Phase 1, majority of the pre-service teachers favoured face-to-face education in the next academic year. However, in Phase 2, some of the pre-service teachers mentioned about the possibility of online education and even more of a hybrid education model as a combination of online learning and face-to-face learning.

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This research aimed to present the pre-service teachers' experiences and views on online education during and post pandemic period. There are some limitations of this research. First of all, it is limited due to the sample size, which is comprised of total 143 undergraduates for both phases. The data collection tool which is developed by the researchers and the findings related to the tool also stands as another limitation of the research due to the generalization of the findings. The findings of the research showed similar findings of the related studies with both distance education and Covid based studies (Wang, Hsieh, & Kung, 2023; Yılmaz, Sakarya, Gayretli, & Zahal, 2021). The current research shows that pre-service teachers' previous experiences on distance education and the virtual classrooms were only limited by asynchronous online courses. This result has been demonstrated in many studies conducted during the pandemic period (Ogbonnaya, Awoniyi, Matabane, 2020). In many universities located in Turkey and TRNC after 2013, asynchronous (or video recorded lessons) online sessions were held only for common/service courses (Kuzu, 2020). Although the online courses were ingrained in the curriculum of educational institutions before the pandemic (Seaman et al., 2018; Soffer & Cohen, 2019; Zilka et al., 2019) in most of the universities online education did not carry out in an appropriate way (UNESCO, 2020b). Pre-service teachers with a background in online education have a chance to affect their experience positively during the pandemic period (Li, Odhiambo, & Ocansey, 2023). This possibly means that the more the experience and involvement, the more the success and satisfaction will be for the students in the distance education process.

Perhaps the most important focus of this research is to compare the educational experiences of pre-service teachers regarding online education both in the pandemic period and the post-covid period. First of all, as it has been exposed in many studies in which the pre-service teachers indicated that they mostly prefer mobile phones to access the contents of the courses (Amaoh & Naah, 2020). In Phase 1, pre-service teachers mostly used Zoom to follow online lessons for compulsory reasons, but the problems with this platform were pronounced by them more often. For instance, after a certain period of time the online lesson was interrupted due to the limited Zoom free of charge sessions which lasts in 40 minutes. In fact, there are many studies that already support this finding (de Oliveira Dias, Lopes, & Teles, 2020) that it can be sometimes problematic to conduct session via Zoom, even if it is found to be the most frequently used applications in distance education to replace conventional face-to-face classes (Harefa & Sihombing, 2022; Ni et al., 2020). However, in the second year of the pandemic, it can be said that there has been a serious decrease on the negative opinions expressed regarding distance education with more effective use of LMS. This finding is in line with scholars' research stating that distance education has no difference from the traditional one when it is conducted properly that can also lead to higher academic success (Adam et al., 2012; Clark, 2007; Kurucay & Inan, 2017).

The results obtained from pre-service teachers about teaching and learning in online education revealed that there were a variety of problems. Especially in the first period of the pandemic, many pre-service teachers who think that the announcements are sufficient have reported that this was not through the LMS, but the WhatsApp groups established by instructors (Batmang et al., 2021). In fact, the result of the research supports the use of smart phones, which is one of the advantages of online education during the pandemic period, as a source to reach the relevant information required. However, it is still discussed in the literature how effective and healthy it is to follow the lessons, communicate and even take the exams on smart phones (Wang, Hsieh, & Kung, 2023). Unlike the other studies (Barrot, Llenares, & del Rosario, 2021; Gumantan, Nugroho, & Yuliandra, 2021) this research showed that many pre-service teachers stated that the course materials in the pandemic period were not as effective and accessible as the course materials used in face-to-face education. Especially in the first year of the pandemic, there was a consensus on the insufficient course notes and contents. The majority of the pre-service teachers stated that they attended online lessons. However, in the second year of the pandemic, instead of attending online lessons they preferred to follow the recorded lesson sessions by claiming the reasons such as the lack of having comfortable home atmosphere, the inadequacy of the systems used for online lessons, and the poor quality and technical problems of the internet, and finally for some personal reasons. In fact, many pre-service teachers stated that recorded course videos are the most important benefit of online education. As Islam, Kim and Kwon (2020) showed in their study, recorded video lectures are favored to live Zoom lessons by reason of their flexibility, handiness, and instructive efficiency. In the first year of the pandemic, online assessment, which is one of the most controversial issues in online education, was carried out through assignments since the instructors were not equipped and ready for conducting online exams via software that the institutions used. Thus, the pre-service teachers reported negative opinions on the heavy workload and pile of assignments. Measurement and assessment procedures tend to have diverse approaches both stating positive sides of the assignments and homeworks (Görgülü Arı & Kanat Hayır, 2020), and negative sides of software used and the anxiety that rises because of the lack of the competence or technical suitability to use the moodle for the exams (Reime, Harris, Aksnes, & Mikkelsen 2008). This finding of the research is consistent with Batmang, Sultan, Azis, & Gunawan (2021). Furthermore, in the second year of the pandemic, the pre-service teachers expressed their views that online evaluation could actually be more attractive and useful if the duration of the exams is extended. However, as many studies (Dendir & Maxwell, 2020; Erguvan, 2021) questioned the validity and reliability of the online exams, and some pre-service teachers mentioned that it may be objectionable since online education can provide suitable environments for cheating.

In spite of the existence of studies that show online education has effective outcomes during Covid-19 pandemic (Asgharzadehbonab, Akkeleş & Özder, 2022; Lampropoulos & Admiraal, 2023), in this research most of the pre-service teachers stated that online education is not beneficial for them. As an example, contrary to the findings of the research, which was conducted by Asgharzadehbonab, Akkeleş and Özder (2022) in TRNC, the majority of the pre-service teachers expressed positive views on the effectiveness of online education. However, just as the previous studies which conducted by Kiok et al. (2021) and Muthuprasad, Aiswarya, Aditya and Girish (2021), a considerable number of pre-service teachers stated that the online education provides a comfortable learning environment by saving time and money and actually this can be considered as a positive aspect compared to face-to-face education. Likewise the previous research, male participants' of this research stated more positive opinions regarding the distance education applications (Buluk & Eşitti, 2021; Greier et al. 2020; Yu, 2021).

Unfortunately, there are also negative attitudes of pre-service teachers regarding distance education and one of them is the technical problems that they experienced (Buluk & Eşitti, 2020). Pre-service teachers who

participated in this research also reported negative opinions about online education, due to the low internet quality, inadequacy of course management system, and some hardware problems. This result is in line with previous research in which the technical structure (the internet quality), which stands as the major concern that was found in research conducted during and post Covid period in many countries (Kulal & Nayak, 2020; Lau, Yang & Dasgupta, 2020; Sahu, 2020; Özdoğan & Berkant, 2020; Wang, 2020). In addition, as Jin (2023) stated in her study, some pre-service teachers confronted different struggles while conducting teaching practicum courses in online education. This finding is in line with the studies conducted during the pandemic period (Karatepe, Küçükgençay & Peker, 2020; Sarıtaş & Barutçu, 2020).

Finally, unlike the other studies (Altunel, 2020; Ogbonnaya, Awoniyi & Matabane, 2020; Telli & Altun, 2020) this research revealed that the majority of the pre-service teachers are not willing to continue to use the online education as a main course delivery system in the future. However, many pre-service teachers agreed on the possibility of using distance education as a hybrid mode to support the face-to-face learning.

The overall findings of this research clarify that undergraduates of our era have a conspicuously competent digital literacy level so that they have adapted themselves to the fast shift of the traditional classroom to the virtual one due to the pandemic considerably well. Even if this could be interpreted as a positive aspect, the technical obstacles seem to decrease their motivation and satisfaction levels, which also have a negative effect on the psychology of the students as stated in previous research findings. This means that individuals' well-being, psychologically, academically and technologically, related to educational change cannot be enough when the technological infrastructure of the institution or even the city they live in have a negative effect on students' both attitudes to distance education and their academic success. Depending on this, it is possible to state that institutions must take sensitive precautions in order to supply a qualified and effective distance education harmonized with qualified educational software and instructional approaches that must fit the departmental requirements and necessities to build up skilled generations that our era needs. In order to examine these requirements, obtain opinions and to make comparisons the research on these subjects must be examined specifically by conducting qualitative document analysis to gather research findings and create a deep understanding of the needs.

Lecturing a specific subject meets the desired outcomes when the participation of the students is supplied, which has direct connections with the satisfaction level of the students, that is affected by the course materials uploaded and the mutual communication supplied by the lecturers. In order to sustain motivation of the students, not only the lecturers, but also the administrators of the institutions must focus on this issue by remembering that it has strict bounds with attitudes towards the distant courses that can help to reach the desired educational outcomes to be assessed properly by decreasing the undesired assessment failures. Assessment and evaluation issues were mentioned to be fundamental problems that the students faced during the pandemic and many researches were conducted focusing on this topic. Limited time during exams to prevent cheating and compulsory sequential exam questions were mentioned to decrease the academic success while it increases the anxiety and motivation levels of the students. More research must be conducted in quantitative manner to gather the previous research findings on this topic in meta-analysis model to understand the effects of assessment failures effect on students which must be also explained by qualitative focus group interviews designed as grounded theory to create a tick description of the assessment failures in distance education process to prevent undesirable effects on students future lives both academically and psychologically.

Even if there are diverse responses related to future considerations of distance education, by means of this research it is possible to understand that not only technical procedures but also approaches of lecturers' to distance education in terms of communicative and instructional skills, material preparation and presentation, time management and awareness of the effects of these issues on students' psychological status and state of mind must be a priority for educational departments at all levels of the national educational system so that all of them were affected because of the pandemic. The only way to reach an enriched date to examine these cases, explanatory mixed methodologies must be conducted at different levels of education.

UNESCO (2020b) clarified the major risks of the pandemic, which must be put under examination as childcare of working parents, drop out levels and lack of nutrition provided in schools for lower income layers in the society, the academic gap that is created due to technical infrastructure and personal stand backs because of low level of technical (software, hardware and ability to use) competencies. This research brings insight to educational requirement for implementing distance education with a variety of variables to be examined and considered so that the case of the pandemic affected all layers of the society with a wide range of effects as mentioned by many scholars. In order to get over this diverse scale of 'needs' and 'musts', so that all layers of the societies worldwide were affected because of the consequences of the pandemic, it is possible to state that all

layers of the society must be prepared to involve in practices and applications of educational operations as well as educational institutions and the related personnel. It must be kept in mind that the Director-General of the World Health Organization mentioned in Geneva that countries must still strengthen response to the disease and prepare for future pandemics and other threats.

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