T.C.

BURSA ULUDAG UNIVERSITY

INSTITUTE OF EDUCATION SCIENCES

FOREIGN LANGUAGES EDUCATION

DEPARTMENT OF ENGLISH LANGUAGE TEACHING

A Retrospective Look Towards the Success of Online Education During COVID-19 Shutdown in the Eyes of the Teachers

MASTER'S THESIS

SEMİH ERTAN

0000-0002-8862-4998

BURSA - 2022

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BİLİMSEL ETİĞE UYGUNLUK SAYFASI

Bu çalışmadaki tüm bilgilerin akademik ve etik kurallara uygun bir şekilde elde edildiğini beyan ederim.

Semih ERTAN

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YÖNERGEYE UYGUNLUK SAYFASI

"Öğretmenlerin Gözünden Kovid-19 Sürecindeki Online Eğitimin Başarısına Yönelik, Geriye Dönük Bir Bakış" adlı Yüksek Lisans tezi, Bursa Uludağ Üniversitesi Eğitim Bilimleri Enstitüsü tez yazım kurallarına uygun olarak hazırlanmıştır.

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Öğretmenlerin Gözünden Kovid-19 Sürecindeki Online Eğitimin Başarısına Yönelik, Geriye Dönük Bir Bakış

2020-2021 yıllarında gerçekleşen pandemi sürecinde yüz yüze eğitime ara verilmiş; televizyon ile desteklenen ancak temelde bilgisayar, telefon ve tabletler üzerinden internet aracılığıyla gerçekleştirilen bir uzaktan eğitim dönemine girilmişti. Bu dönemde yapılan çalışmalar bu uzaktan, online eğitimin teknolojik cihazlara ulaşım veya internet erişimi gibi sorunları bulunmakla beraber, genel olarak tatmin edici bir başarıya ulaştığını ifade etmiştir. Bu dönemin ardından gelen 2021-2022 eğitim öğretim yılında yüz yüze eğitim yeniden başlamıştır. Bu dönemde bazı öğretmenler, önceki yüz yüze eğitim dönemlerinde karşılaşmadıklarını ifade ettikleri bazı sorunlar ifade etmişlerdir. Bu araştırmanın amacı, yüz yüze eğitim döneminde öğretmenlerin geriye dönük bakış açılarını toplamak ve uzaktan eğitime karşı olan memnuniyet düzeylerini ölçmek, uzaktan eğitimde yaşandığını düşündükleri sorunları öğrenmek, pandemi sonrası yüz yüze eğitim sürecinde karşılaştıkları ve uzaktan eğitim sürecinin bir sonucu olarak gördükleri sorunları öğrenmek, ve bu sorunların katılımcıların bulundukları bölgeye, katılımcıların yaşlarına, katılımcıların yıl bazında öğretmenlik tecrübelerine, cinsiyetlerine ve çalıştıkları okul düzeyine göre farklılıklar olup olmadığını öğrenmektir. Bu araştırma Türkiye'nin tüm bölgelerinden, araştırmanın kapsadığı tüm özellikleri farklı kombinasyonlarda taşıyan toplam 146 kişiye uygulanan 29 soruluk niceliksel bir anket ve yine farklı özellikleri taşıyan toplamda 30 kişiye uygulanan 6 soruluk niteliksel bir yapılandırılmış yazılı röportaj ile niteliksel ve niceliksel sonuçları birleştiren bir karma yöntem araştırmasıdır. Araştırmanın sonuçlarına göre öğretmenler uzaktan eğitim sürecinde öğrencilerinin cihaz ve internet açısından sorunlar yaşadıklarını ve uzaktan eğitim uygulanışında zorluklar bulunduğunu, genel olarak uzaktan eğitiminden memnun kalmadıklarını belirtmişlerdir. Ayrıca pandemi sonrası dönemde kökeninin pandemi dönemine ve uzaktan eğitime dayandığı düşünülen akademik ve davranışsal sorunlar bulunduğu öğretmenler tarafından belirtilmiştir.

Anahtar Sözcükler: *Online Eğitim, Kovid-19, Öğretmenler*

ABSTRACT

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A Retrospective Look Towards the Success of Online Education During COVID-19 Shutdowns in the Eyes of the Teachers

During the pandemic of 2020-2021 period face-to-face education was halted and a distance education period had started. Distance education was mainly conducted with computers, smartphones and tablets utilizing internet connections while being assisted by television. Research conducted during this era pointed out that while this distance education period had some problems like technological device accessibility or internet connection issues and some more, it overall achieved a satisfactory success. The next education year of 2021-2022 that followed this distance education period marked a return to face-to-face education. During this face-to-face education period, some teachers have expressed that they faced some issues that were not present in previous face-to-face education periods. Purpose of this research is to gather retrospective perspectives of teachers to assess their satisfaction regarding online education, to learn the problems they faced during distance education and to learn what kind of problems they have faced in post-pandemic face-to-face education period that they think was stemming from distance education period. It is also aimed to learn if there is a difference between problems participants expressed regarding regions they work, their ages, their experience in terms of years, their gender and school level they work at. This research was conducted by a 29-question quantitative questionnaire that was applied to 146 participants from all regions of Turkey, who had all features this research involved in different combinations, and a 6-question qualitative structured written interview form that was applied to 30 participants who again had different demographics that fit for aims of the research. Therefore, as a combination of qualitative and quantitative methods, this work is considered mixed-method research. According to results of this work, teachers have noted that there were technological issues like device availability and internet connections and overall, it was hard to conduct distance education, also teachers were not particularly satisfied of distance education. They also expressed that there were academic and behavioural problems that they think as based on distance education period and lockdowns.

Keywords: *Online Education, COVID-19, Teachers*

To my family, friends and teachers, whose support was invaluable.

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Introduction

Last year, in 2020-21 period, the world experienced a pandemic of global scale due to COVID-19 outbreak. During this time, governments around the world ordered lockdowns in order to halt the spread of the disease. Entire countries effectively ran at very basic, essential levels. Education was halted, trade was hindered.

When pandemic hit Turkey, like many other countries, standard lockdown rules were applied and education year 2019-2020 was cut short. After extending the lockdown several times the school year ended and national exams were held using the already delivered portion of the curriculum. The following year it was apparent that pandemic was going to go on for much longer than expected, and governments around the world didn't wish to aid spread of the virus by opening schools, where many learners coming into close contact might have accelerated the infection rates. With this issue at mind, governments of the world resorted to several different methods -which will be explained in detail later- to handle the issue and continue education.

TV education, Half-populated classrooms, 2-day education periods, hybrid education and -most importantly- online education methods were used during this period, with Turkey mainly relying on online synchronous (live) education.

Research conducted during this period has shown us that many stakeholders of education, like teachers, students, parents, school administrations, government officials -and more- have shown great moral support for it due to the desire to halt the disease. But on the other hand, things were far from perfect, there were many complaints about several different problems like technological issues (slow internet, learners not having computers or mobile phones etc.), suitability of home environment of learners, difficulty of adapting lessons into online platforms, communication issues raised from lack of gestures and facial expressions in online platforms; and many more issues.

Eventually, after approximately a full year of online education, lockdown period had ended mainly due to newly developed COVID-19 vaccines. A post COVID-19 world had arrived, and along with it, it was time for students to return to school for 2021-2022 period. This period was chosen as the scope of this research.

This work focuses on lingering effects that online education has left on the new face-to-face period. Most of the research done on relation between COVID and education has focused on "during-lockdown" period, specifically 2020-2021 education year. The difference of this research is that, it focuses on after-effects of COVID lockdowns and online education during the 2021-2022 education year. So far there hasn't been much examples of this kind of research in the field, and we hope that this work will provide new information regarding mass-utilization of online education and especially, its effects.

During the current education year (2021-22), many teachers working in Turkey have vocalised complaints regarding students having problems with last year's aimed objectives and some behavioural problems. This situation prompted us to start a nationwide investigation into what effects the previous year of lockdowns and online education may have left on students.

The research questions (RQs) are:

1- In retrospective, are teachers content with how the online education period turned out?
   a- Is there a difference among the teachers who work in different regions of Turkey regarding how they are with the online education period?
   b- Is there a difference among the teachers regarding how content they are with the online education period according to their ages?
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   e- Is there a difference among the teachers regarding problems the teachers have noticed in 2021-2022 according to school levels they work at?

1. Education

The most important feature distinguishing humans from other living things is their ability to think. With these features, humans have gained a significant advantage in coping with many difficulties and have become the most advanced and widespread one among living things. However, thinking is only the first step that is effective in the development and rise of humankind. Developing this "thinking" ability, working for the active use of the brain and educating themselves or training also heavily influenced our development. The development

of skills and knowledge gained, is then shared amongst humans who always had very complex social structures. This process is, overall, named education. Education may have several different aims, like transmitting knowledge, developing skills or building character traits.

As we mentioned, education itself was originated from transmission of cultural heritage, knowledge, skills and more between generations. A blacksmith training his son to continue his vocation, for example. In the modern times, education focuses on schools and is separated into subgroups like formal and informal education. Nowadays we consider the previous example of a blacksmith and his son as informal education, whereas formal education occurs within schools and state controlled. Kaldım….

Education of all forms can be defined as the desired and permanent behavioural change that occurs with life and social interactions (Ertürk, 1998). The behaviour must be permanent and in the desired direction to talk about education of a behaviour. If the desired change fades, education was not successful. The desired behaviour should be given goals and purposes according to certain predetermined principles and processes, rather than giving them haphazardly (Ereş, 2007). Schools are institutions where education is done by experts professionally. When students start school, they are open to learning. At the end of the educational process, students are expected leave school with a clear mind and satisfied regarding knowledge they grasped. Since it is not wanted to lose even an individual during the process, education needs to be permanent and desired. This also created the unfortunate side effect of steamrolled, static, inadaptive education methods to cater all individuals with a single method at first; but learner centred, adaptive methods have been on the rise. It is said that first person to explicitly name such a method (“child-centred”) was German pedagogue Friedrich Froebel in his 1826 book, Die Menschenerziehung ("The Education of Man") (Chung and Walsh, 2000).

Returning to education term itself, we see that it is harsh to make a single definition because of the dynamic structure of the concept of education, the different expectations of the parties in the education process, and the use of various methods (Yavuz, 2018, p. 26). Education enables a generation to transfer what they have learned through their experiences to the next generation. Education is considered to begin with the person's birth, covers their whole life, and is a learning process that differs between societies (Özkan, 2006, p. 29). E. Durkheim defined education as the socialization of the unsocial generation, Plato referred to it as giving humans the best maturity, and J.J. Rousseau described it as the raising of children and the art of making people (Keskinkılıç, 2006).

Education is seen as the basis of investment in people and accepted as a tool for individuals to lead a comfortable life and for societies to become developed countries, progress, and rise (Hergüner, Arslan and Dündar, 2002, 44). Knowledge itself is among the significant resources in social and economic life when considering the development processes of societies in the historical process, and is preserved and expanded through education. Today, in the light of rapidly increasing technological developments, the concept of information society has started to take place in the foreground with the ease of access to information and the removal of borders between people. Information societies have been influential in the emergence of the generation that constantly develops itself, follows current developments, produces information, and believes that the essential condition is to be knowledgeable (Mercan, 2018).

Overall, we can separate education in formal and informal varieties. In this paper formal education will be our focus.

1.1. Face-to-Face Education

Face-to-face education is the teaching method in which the teacher and the students interact with each other by meeting in a set place for a set time. The places where face-to-face education takes place are formal education institutions. In these places, teachers and students gather to be together and this is actually the single greatest advantage of such an education method. Face-to-face education is the most appropriate form of learning for those who cannot acquire the habit of learning alone or without the support of others. With rarity of proper self-reliant, autonomous learning -especially in young ages- the advantage of being together physically becomes more apparent. In addition, face-to-face education is especially suitable for lessons with applied training due to the importance of mutual communication in such classes where teacher's monitor on learners' skill development/usage is highly beneficial or simply required. Therefore, it can be said that effect of face-to-face education is crucial - especially in developing attitudes related to behaviours or acquiring behaviours that require skills. In addition, face-to-face education can be considered prominent because it contributes to socialization (which will be mentioned as one of the apparent issues of distance education later). Face-to-face education makes socialization easier for the participants, as teachers and students are in a set place for a set time **(**Karakuş, Ucuzsatar, Karacaoğlu, Esendemir and Bayraktar, 2020, p. 220). Learners also benefit from a feeling of community in face-to-face education, amplifying the learning process with motivation, peer-learning, collaboration and more. (Berry, 2019)

In traditional face-to-face education, where the teacher is at the centre, what students will learn is decided, and appropriate activities are planned. There is an expectation that students will show appropriate behaviour changes. In other words, the success of learning is thought to be shown when students show the expected behaviours. Learners acquire knowledge from tutorials and textbooks passively. They cannot control their learning. Instructors make all decisions about methods, lessons, and assessments (Ahmed 2013, p. 22).

Duckworth (2009, p. 185) argues that the instructor-centred approach hinders the educational development of students. On the other hand, Eby (2013) states that regardless of applied teaching theory in the traditional education system, education is perceived as the process of creating permanent and desired changes in individuals. Accordingly, in the conventional education understanding, people with authority shape individuals according to the decisions they make. This process had been described as a process of enslavement in a sense, and for others it was a required component of educating learners into successful, skilled citizens. The issue is still hotly debated.

As a result, the teaching activities in which the instructors can communicate with the students in the formal education institutions for a certain period by being in the same place can be expressed as face-to-face education. Face-to-face education is an effective form of education in the learning of students who do not have the habit of learning by themselves and unaided because of the necessity of the teachers and students to be together in the same place. This form of education is quite suitable for practical education since the instructors and students can communicate one-to-one in face-to-face education. It is, due to lack of technology and social nature of humankind, the oldest and most widespread form of education. Back then face-to-face education was only contested by books. With technology another way appeared, distance education.

1.2. Distance Education

Education is the process of deliberately bringing about the desired change in one's behaviour through their experience; on the other hand, teaching is a process in which the act of learning is provided in the behaviour of the person, in other words, a permanent change is achieved (Ertürk, 2017, p. 13). Public and private education institutions carry out education and teaching activities in a planned manner. As changes occurred in people's needs and technology, some education and training activities have started to be carried out as “distance education” over time. The distance education encompasses both the education and training processes. Distance education starts with course development process of an institution that

prepares learning materials for individuals (Kaya, 2019, p.14). The boundaries of traditional face-to-face education are overcome with interactive learning and communication environments in distance education. Education is not limited to classrooms only within the school, thanks to distance education (Eby 2013).

Distance education, which is preferred in the implementation phase of education and training processes and has started to take its place as a fundamental education style by moving away from being an alternative over time, is defined as an education system in which the learner and the teacher conduct their teaching-learning relations at different times and places using mail or communication technologies (Saylan, 2015). According to this definition, distance education is an execution of education and training activities with several tools in cases where the student and teacher are in different places at different or at the same time. In this respect, distance education can be used in a programmed and planned manner in in-service pieces of training, disruptions in formal education, teaching activities of universities, and lifelong education. Distance education also serves to increase the quality of education, reduce costs, and catch missed education opportunities (Elitaş, 2017, p. 85). In addition, distance education is a preferred option to ensure equality of opportunity in adverse geographical, economic, physical, and health situations where it is challenging to reach face-to-face education.

In one way it can be seen as the strengths of face-to-face education being integrated with technological developments. In other words, when teachers can return to their students instantly. In that case, distance education can be as successful as face-to-face education if an effective communication environment is created between teachers and students. In addition, if appropriate techniques and methods are used, distance education can be as effective and successful as face-to-face education (Karataş, 2003, p. 103). Today, the main reason for the rapid spread and development of distance education is determining the deficiencies and trying to improve them.

Distance education is a learning process in which learners are far from each other, teacher and any other learning sources in terms of both time and place. Learners' interaction with other components of education is based on the preferred distance education communication systems (Aydın, 2011). Eby (2013), defines distance education environments as democratic, multicultural, open, interactive, flexible, and accessible, emphasizing that they include different approaches and policies than face-to-face education activities for theory, design, and practice. Distance education environments, which benefit from information and communication technologies, offer students to access course materials whenever and wherever

they want. In this context, it can be stated that distance education adopts learner-centred practice and a constructivist approach. In distance education, education is perceived as the student's design and execution of learning activities in line with his needs, expectations, and skills. The student is responsible for learning and is at the centre of learning (Eby, 2013). Accessibility of distance education, while once was seen as an integral part to it, is now being challenged. For example, UNESCO (2020a) reported that there are 826 million people who don't have devices with internet capability. While most countries preferred online synchronous education as the main distance education method, TV and radio education was also set in place due to this issue. (Sali,2020)

Today, distance education is defined differently. The University of Wisconsin Continuing Education Group defines distance education as a planned teaching-learning model that uses the possibilities of technology to reach a separate group. Distance learning has the ability of removing borders in education. In other words, distance education offers everyone the opportunity to learn in the environment they want, without the time and place limitations (Adıyaman, 2002, p. 92). There are many definitions in the literature regarding distance education. Some of these definitions are as follows:

Distance education is a type of education that makes communication between teacher and student possible while teachers and students are in different environments during the education process. Distance education uses information and communication technologies in teaching-learning activities. (Ersoy, 2014, p. 42).

Distance education, unlikely face-to-face learning, is a type of education that allows the teacher and students to be in different environments. In distance education, teaching processes are systematically harmonious (Ayvaz, 2018).

Distance education refers to the teaching process in which teachers and students in different environments carry out their activities in the learning process with the help of educational media and communication technologies (Kılınç, 2015).

Distance education is defined as the official education method that tries to solve the problems experienced due to the inadequacy of learning materials in education and realizes this with current technologies (Bozkurt, 2017, p. 85)

Distance education is also defined as "teaching and planned learning in which teaching normally occurs in a different place from learning, requiring communication through echnologies, as well as special institutional organizations" by Moore & Kearsley (2011).

Eastmond (1998, p.33) had defined distance education as “the separation of teachers and students interacting through mediated technologies under the auspices of an institution.”

In words of McIsaac & Gunawardena (1996) distance education was defined as “structured learning in which the student and instructor are separated by time and place.” Which is the widest definition, even reading an ancient book may count as distance education by this definition, perhaps.

Distance education is a unique system that uses information and communication technologies at a high level and removes different time and place elements between teacher and student (Erfidan, 2019, p. 27).

The distance education model is a type of education that a particular centre manages and allows communication between the teacher and the students with the help of various technological tools when there is no opportunity to carry out educational activities in the classroom due to the problems in traditional education. In distance education, teachers and students can be in other settings at the same or different times. Using communication in different technologies can bring them together. This constitutes the distance education structure (Altınsoy, 2019).

According to UNESCO (2002) distance education is “any educational process in which all or most of the teaching is conducted by someone removed in space and/or time from the learner, with the effect that all or most of the communication between teachers and learners is thorough an artificial medium either electronic or print.”

Throughout this paper “distance education” will mean the distance education enhanced by technological developments (Radio or TV at least), instead of the oldest, mail-based versions – since they are hardly in operation during our current age. Of course, most of these definitions are newer definitions that are made with internet-based education in mind, but it should be noted that first iterations of distance education were mail based. First concepts of distance education, then named “correspondence courses” involved only an institution-based education where books were sent to the address of the learner, teacher and learner communicating regularly by post. (Mathieson,1971)

As it can be seen, there are many definitions in the literature regarding the concept of distance education. Focus seems to be on difference of location or environment, and also accessibility in different times. It is seen that many factors are effective in making distance education and ensuring its continuity considering the different definitions and applications

(Yeşilfidan, 2019, p. 8). Scientific discussions on the definition of distance education show that distance education consists of four components: institution-based formulation, teacher-student separation, interactive telecommunication, and sharing of voice, data and video (Simonson, Zvacek and Smaldino, 2019).

The first of the components in the definitions of distance education refers to the planning and implementation of distance education institutionally. Distance education is separated from self-study by this component. The second component, the separation of teachers and students, refers to the meeting of teachers and students via the internet, even at different times and places. It is seen that the teachers have more information about the course contents and offer distance education to the students. The interactive telecommunication component means that students have the opportunity to interact with their teachers as well as each other. Audio, data, and video sharing, which is the last component of the concept of distance education, expresses the necessity of finding materials in the education process. The materials should be among the sources that can be listened to, watched, and discussed by the teachers and students (Simonson vd., 2015).

Distance education grew to have a prominent place in the education system. Therefore, educational institutions should give due importance to the distance education models. Some researchers even claim that educational institutions will be able to continue their existence in the future by widely using the distance education model (İşman, 2008). This underlying belief is one of the main reasons of why education and training programs are frequently updated, and different techniques and methods are used in education – in addition to evolving needs and increasing demands. Understanding that education has changed in direct proportion to technology is clearer when we consider people's need for lower-cost, easily accessible and efficient education. Distance education is effective in being an alternative to traditional face-to-face education in alleviation of such needs. Especially during the Covid-19 pandemic events, distance education has become the primary option for students to continue their education as “different location” of learners and teachers -aforementioned in most of the definitions of distance education- was seen as a much better alternative to the risk of spreading the disease by gathering learners together for face-to-face education.

Today, distance education offered by different public or corporate providers to diverse learners for various purposes, and is given with the help of various communication tools. Many theorists approach distance education from a different perspective. While classifying this subject, some theorists put the student in the centre of distance education, and some focus on

the organization and functions of distance education (Ersoy, 2014). Distance education, whose theoretical foundations were laid in the 1970s, developed different theories in the following years. The important ones among the theories are as follows.

Independent Study Theory: This theory, developed by Wedemeyer, considers it a teaching-learning activity in which teachers and students realize their authority and responsibilities in separate locations, and provide communication with different techniques and methods. This theory has contributed to the establishment of consensus among educators and the creation of new distinct theories (Gökmen, Duman and Horzum, 2016, p. 29).

Industrialization Theory: Otto Peters developed this theory. According to the theory, distance education is an industrialized form of education. In other words, all of the equipment used for teaching in distance education is the evolution of industrialization. In addition, while creating the theory, Peters found that there are similarities in the production process in the field of distance education and industry, and continued his studies to define them (Özüçelik, 2019).

Autonomy Theory: Influenced by the theory of independent study developed by Wedemeyer, the autonomy dimension of the individual was trying to be brought to the fore in the autonomy theory developed by Moore. In this theory, the necessity of the student's autonomy in distance education has been revealed. It has been stated that students are individuals who can motivate themselves, know the ways to reach their goals, and measure their success when they are autonomous (Gökmen and others, 2016, p. 35).

Communication and Interaction Theory: Baath, Daniel, and Holmberg have conducted extensive studies on this theory. In his study, Baath highlighted the rigid learning materials he emphasized in distance education and stated that the communication between the teacher and the student was realized at the desired level in flexible learning models (Gökmen et al. 2016, p. 38). Daniel evaluated distance education models as activities in which students can work alone and interact with other individuals. He emphasized that the success of distance education models can only be achieved by adjusting the balance between the activities in which the students interact and the activities in which they work independently (Gökmen et al. 2016, p. 46). On the other hand, Holmberg revealed that in the communication established with new technological tools in the theory, mutual question-answers, discussions, and teamwork include showing the details in the process (Özüçelik, 2019).

When learning environments in distance education are reorganized according to the expectations, goals, and satisfaction of the stakeholders who are part of the system, it will be

possible to achieve them in line with the purpose. The process' usefulness depends on the presence of stakeholders, from teachers to students, in the system. Distance education environments have different needs compared to traditional education environments. Teachers should have an idea about the method and content of the lesson (Mercan, 2018).

In addition to students who cannot benefit from traditional education for various reasons or who consciously enroll in distance education applications, some students have encountered distance education because some of the courses are given online in formal education (i.e., the distance education was integrated into a program where face-to-face education is the norm). For students to benefit from the advantages of online education, they must be prepared for the requirements of education and have a certain level of technical knowledge (Sakal, 2017, p. 83).

Distance education models offer various opportunities for teachers, students, and educational institutions. Since the educational environment is faced with the need for change, distance education has provided excellent opportunities to increase its performance. The emergence of distance education has been realized as a strategy to meet the demands and serve several education communities. It has resolved issues in the areas of equity, access, enabling creative learning, funding, and excellence. This educational model provides students with access to information that can be applied directly to academic, social, or business dynamics in any setting **(**Ball and Crook, 1997). But during COVID lockdowns, where mass utilization of distance education became the norm; several complaints regarding its equity and accessibility was challenged, and this will be discussed in detail further in the text.

The main advantages of distance education are as follows (Kutlu and Titrek, 2021):

- Its cost is lower,
- It provides an advantage in terms of space usage,
- It is time-efficient,
- It may be possible to reach more teachers and students than usual,
- It ensures that those who cannot leave the house or those with disabilities continue their education,
- It provides an environment where sharing is easy and more for stakeholders,
- It provides various design opportunities for hearing and sight senses and causes positive effects on learning,
- It makes education more efficient,

- Student progress can be followed up during the learning process,
- Education continues uninterrupted, and at the same time, there are no time and place restrictions,
- There is one-way or mutual uninterrupted communication in the education process

In addition to the advantages of distance education, there may be individual, institutional or educational difficulties. This education model, which requires different skills and responsibilities, contains less direct interaction. Behavioural and technological difficulties may occur in distance education. These difficulties are the difference between the students' levels of retention and understanding, creating a mental model space, evaluation time, and creating a non-open-ended learning environment. Meticulous planning, acting as a facilitator and manager, controlling the teaching-learning process, following and monitoring are among the difficulties for teachers. Lack of qualified education, disappointment, ethical violations, and plagiarism are some of the possible difficulties for students. It is momentous to create comprehensive platforms within the synchronized technology framework to overcome the obstacles (El Refae, Kaba and Eletter, 2020).

1.3. History of Distance Education

In the historical development of education, there has been various difficulties in reaching the individuals for education and training activities, and in allowing the teachers to continue the education and training activities. These difficulties have been tried to be overcome in various ways depending on the conditions of the time. The development of distance education has been achieved in different ways in the world and in Turkey.

1.3.1. History of Distance Education in the World

In the historical process, developments in the education field such as technology, economy, science, and politics have also emerged from the society's situation and the people's needs. Factors such as the geographical distribution of educational institutions, the teacher-population imbalance, the difficulties in reaching educational institutions, the education and training demands of individuals, the increase in internet users with the increase in technological developments, the increasing understanding of distance education, the increase in the value of information and becoming the most substantial capital, and having same content and structure as formal education have been efficient in the emergence and spread of distance education (Elitaş, 2017, p. 86).

In the distance education phases, whose details are given in Figure 1, it is seen that the first application of distance education in the global sense was made by letter. In the Boston Newspaper on March 20, 1728, the announcement of "Shortcut Lessons" and in a Swedish newspaper in 1833, there were announcements that education would be given by letters. In 1840, Isaac Pitman gave Distance Bible education via letter in England (Kırık, 2014, p. 73). The University of Wisconsin used the concept of distance education for the first time in the catalogue published in 1982. William Lighty, director of the University of Wisconsin, included the notion of distance education in an article he wrote in 1906. (Adıyaman, 2002).

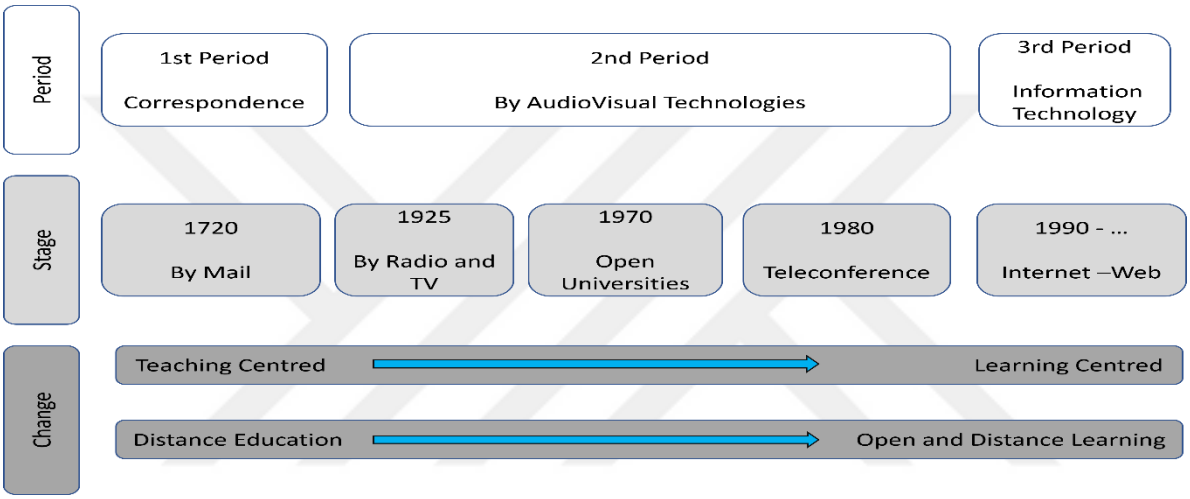


Figure 1. *Phases of Distance Education in a Global Context (Bozkurt 2016) (adapted and translated)*

It is known that; in 1923, the first educational radio broadcasts were made in the USA. Since then, they have been spreading rapidly. Radio broadcasting was used to educate children in fields such as science, transportation, and farming in the 1930s (Çoban, 2013).

The first distance education with television was implemented by the United States of America (USA). After the applications made at Iowa University between 1932 and 1937, education and training broadcasts that have given via television started to be given directly in line with education (Çoban, 2013).

When we look at the development of distance education in the global context, it is seen that distance education was given by using newspapers and letters in the 1870s, printed materials in the 1930s and 1950s, radio from the 1920s, and with the help of tools such as video and television which had the advantage of sound and image beside the radio in the 1950s and 1980s. With the introduction of the computer into people's lives between 1980 and 1995,

distance education began to be implemented through computers. The spreading of the internet and web-based education soon followed (Özbay, 2015, p. 378).

1.3.2. History of Distance Education in Turkey

Turkey is also affected by these trends in the field of distance education in the world, in varying degrees and qualities. Phases of distance education in Turkey, as seen in Figure 2;

a) First period: Discussion and suggestions

b) Second period: By correspondence

c) Third period: With visual and auditory tools

d) Fourth period: Considered an informatics-based distance education. (Bozkurt, 2017, p. 87).

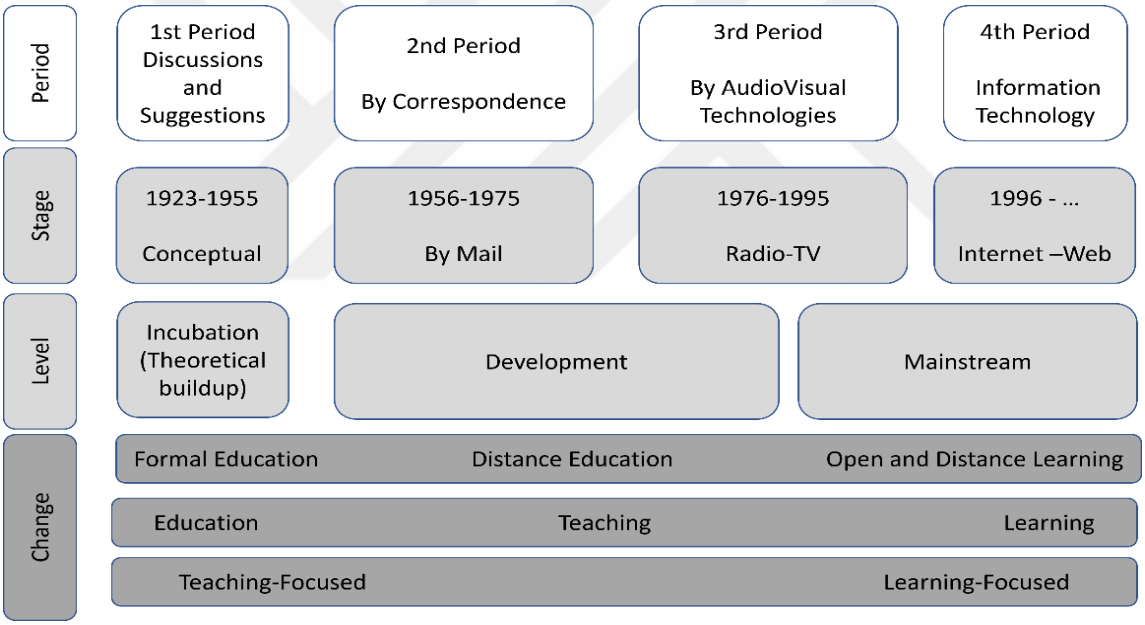


***Figure 2**. Phases of Distance Education in Turkey (Bozkurt 2017, p. 88) (adapted and translated)*

First Period in Distance Education (Discussion and Suggestions Period, 1923-1955): The first developmental stage of distance education is described as the Theorizing Stage. The acquaintance of the education system with distance education in Turkey was realized with the recommendation of the use of distance education to train teachers in the report prepared by J. Dewey. Another suggestion was made in 1927 with the application of "Education by Correspondence" for literacy education. With the adoption of the New Turkish Alphabet in 1928, literacy studies with new letters started throughout the country. The report

was prepared as a result of the examinations made by the commission between 1933 and 1934. In this report, it is recommended to open education courses by letter to improve the technical and general cultural knowledge of those living in areas where schools are not open due to economic reasons (Çallı, İşman and Torkul, 2002, p. 1).

In the national education councils, discussions were held on non-formal education and distance education until 1939. The start of educational radio programs was first realized in 1941 with the "Agricultural Calendar" subject to raise awareness of the society in the field of agriculture (Bozkurt, 2017, p. 89). Later, in 1951, the "Instructional Films Centre" was established to increase audio-visual tools. With this development, the foundation of the General Directorate of Innovation and Educational Technologies (YEĞİTEK) of the Ministry of National Education (MEB) was laid (MEB, 2018). Educational programs started to be broadcast on Istanbul radio in 1952, and the educational radio program called "Village Hour" was broadcast in 1954. Fono Open Education Institution was established in 1953 (Bozkurt, 2017, p. 90).

Second Period in Distance Education (by Correspondence, 1956-1975): In the Turkish education system, the second of the development stages of distance education is the stage of teaching by correspondence, in other words, by letter. Distance education practices were more advanced at this stage; in 1958, the "Committee for Education by Letter" was established under the Ministry of National Education, targeting distance education. The board started its activities in 1961. The establishment of the Radio Education Unit in 1962, followed by the planned educational radio broadcasts of the Turkish Radio and Television (TRT) Institution in 1964, started to popularize distance education. The developments with the establishment of the General Directorate of Letter Teaching and Technical Publications in 1966 continued with the establishment of the Television and Education Institute in 1973 within the body of Eskişehir Academy of Economic and Commercial Sciences (EITIA). As a result of the establishment of the Vocational and Technical Letter Teaching School in 1974, there have been many developments in correspondence learning. In particular, higher education through correspondence has been one of them. In the beginning, the task of carrying out higher education activities was given to the Ministry of National Education, and then the Non-formal Higher Education Institution (YAYKUR) was established. Trial Higher Teachers' School also started its activities in this period (Bozkurt, 2017, p. 95).

Third Period in Distance Education (Visual and Auditory Tools, 1976-1995): At this stage of the development process of distance education, it has been made possible to use

visual and auditory tools. Non-formal Higher Education Institution made the first educational television broadcasts in 1976. The report on open education practices was submitted to the government in 1978, and the educational radio School Radio started broadcasting in 1980. Higher education institutes were given the right to Continuing and Open education in 1981. Anadolu University was given this task in 1982. Anadolu University, which continues this duty today, established the Computer-Aided Education Unit in 1989. Distance education studies have accelerated and diversified in parallel with the development of technology. Fırat University started the "education by e-mail" applications in 1991. The Open Education High School was established in 1992, and the Distance Education Department in Anadolu Open Education Faculty was established in 1993 (Bozkurt, 2017, p. 99).

Turkish Radio and Television Institution (TRT) has a significant role in distance education studies. TRT broadcasts, in which the courses of Anadolu University Open Education Faculty were broadcast in 1982 for the first time, continued until 2008. Broadcasts were terminated that year because the TRT Law was changed and a new agreement could not be made with Anadolu University. With the agreement between TRT and Anadolu University regarding the establishment of a joint education channel in 2010, the TRT School Channel began broadcasting on January 31, 2011. Programs prepared by Anadolu University and TRT were broadcast on the channel. Later, TRT used this channel for "Lifelong Education" (Tekiner, 2016).

The first cases of the COVID-19 virus emerged in China in 2019. In Turkey, the first case was seen on March 11, 2020. Due to the rapid spread of the virus, it has been decided to suspend face-to-face education by the Ministry of National Education. As the reopening of schools is predicted to be unhealthy as a result of the increasing effects of the pandemic, studies had to be started not to interrupt education. As a result, it was decided to switch to distance education applications. With the cooperation of MEB and TRT, TRT EBA channels started test broadcasts on March 23, 2020. As of this date, distance education was started at primary, secondary, and high school levels.

Fourth Period in Distance Education (Informatics-Based- Internet- Web 1996…): In the last development phase of distance education, information-based technology and web-based systems have been included in the distance education system (Bozkurt, 2017, p. 102). Bilkent University's initiation of classes from the USA via video conference in 1996, starting distance education studies by the METU Informatics Institute, establishing the Distance Education Center (UZEM) by Istanbul Technical University (ITU), Anadolu University

turning into a Mega University (100.000+ enrolments) and such developments have had positive effects on distance education.

With the establishment of Open Primary Education in 1997, distance education expanded its scope. That year, the Internet-Based Education Asynchronous (IDE-A) project started to be implemented in METU, and the TÜBİTAK-BİLTEN UE report was published.

In 1999, *"Distance Higher Education Regulation Based on Interuniversity Communication and Information Technologies"* was published. The Council of Higher Education (YÖK) Informatics National Committee was also established in the same year. The committee aims to make recommendations to the Council of Higher Education by conducting investigations, research, and evaluation in cooperation with universities to increase and plan the effectiveness of education and training in informatics and distance education based on information and communication technologies in higher education institutions. That year, Ahmet Yesevi University started to provide distance graduate education, Fırat University began to offer online courses, and Anadolu University started to offer distance graduate education with a thesis.

In addition to The Turkish Online Journal of Distance Education, which started its publication in 2000, Sakarya University began distance education applications, and Istanbul Bilgi University Business Administration Master's program was established.

In 2001, the first internet-based associate degree programs with distance education activities at Ahmet Yesevi University, and the English Language Teaching Undergraduate Program at Anadolu University started to operate (Samur, Akgün and Duman, 2011).

The first issue of Turkey Online Educational Technologies Magazine was published in 2002. Distance Education Commission was established by YÖK in 2005. In 2006, Anadolu University started a doctoral program in distance education for the first time. In 2009, Atatürk University Distance Education Application and Research Centre and Istanbul University Open and Distance Education Faculty were established. The articles in the Omnibus Law, which is the legal basis of distance education, were adopted in 2011. Distance Education National Problems Workshop was held in 2012. Anadolu University's distance education online non-thesis master's program was launched for the first time in Turkey in 2014. The distance education dictionary opened to online users was created in 2016.

Distance education has gained a new dimension due to the Covid-19 pandemic, which started in 2019 and has been affecting the world since 2020. Online training has started to be

given with different applications, homework and follow-ups have been made, lessons have been taught via EBA, and education has begun to be carried out through online platforms. Teachers were given in-service training courses through EBA to adapt to distance education. In line with the Ministry of National Education's budget and donations, tablets have started to be distributed to disadvantaged students to participate in online education.

2. Technology and Education

Education and technology are two elements that cannot be considered separately. On the one hand, education affects technology. On the other hand, technology affects education. Technology is involved in every stage of education. Today, technology usage in the education system is an indispensable factor. While education is effective in the development of technology, the development of technology also plays a role in new transformations in education. (Bayraktar, 2015, p. 23).

In another definition, educational technology is expressed as a complex structure that produces and implements designs related to the use of methods, techniques, information, tools, and equipment and evaluates applications to find necessary solutions in the analysis and resolution of problems (Alkan, 2011). According to these definitions, it can be said that technology finds its place in each of the education system processes. The use of printers for homework and resource needs, computers in lectures, simulation techniques in the classroom, and the students' school registration system can be counted as examples. The use of technology has become almost a necessity in every field of education. In addition, using technology in education brings many conveniences, and it is stated that it plays a role in enriching the teaching process and providing positive contributions (Gegeoğlu, 2014; Çelik, 2017).

Using different methods and techniques in education in every country is influential in raising individuals who produce and develop knowledge. In our age, when access to information is cheap, easy, and without the restriction of space and time, the internet is considered to be the largest information network. In this respect, many public institutions and organizations have adapted to technology and included the internet in their education models. At the same time, in parallel with the developing technology, various innovations have emerged in the field of education. The contribution of technology to the educational process at all levels of education is a well-known fact. In this context, with technology integration into the education system, current technologies have started to take place in education and training environments, and the processes have become more manageable. Therefore, technology has become an indispensable element in the field of education (Mercan, 2018).

Technology is not only used in the education process but also used for aims of training students with technology skills because skills of technology usage has become an integral piece in the definition of qualified people currently, and this aspect is only expected to increase in the future. Societies adapt science and technology to their education systems following their educational system objectives and adopt the goal of becoming an information society with individuals who grow up with science and technology (Çepni, 2005). Different societies around the world have produced new technologies in parallel with their developments, thus expanding the boundaries of education. In the beginning, the training was made by correspondence, and with the invention of the radio, education started to be reached people at a distance. Today, education, which has spread globally with the internet and computer technology, has entered a transformation process. In this way, distance education has begun to take its place in the education system, although not as much as face-to-face education.

2.1. Learning Models in Distance Education

Technological innovations and developments show their effects in all areas of life. Today, it has become easier to access information with the help of technology. Accordingly, people have turned towards approaches to using technology for their benefit. It is obvious that developing technologies offer important opportunities in the field of education. Considering that technology is directly related to knowledge transfer, it can be described as educational support. Considering that there are many communication environments for people in different income groups, it can be said that education has spread beyond the classrooms.

Technology has been integrated into the learning process by educators, and individuals are provided with the opportunity to continue education with technological devices such as smartphones, televisions, computers, and tablets. This situation also creates new possibilities in terms of education. With the integration of technology into classrooms in face-to-face education, it has become possible to apply distance education with virtual classrooms, in addition to transforming it into modern classrooms (Özdal, 2020).

Every individual in society has equal rights in terms of benefiting from education and learning activities. In this respect, the distance education system provides an opportunity to meet the educational needs of individuals who cannot benefit from face-to-face education. Digital and technological developments closely affect the field of distance education. Online distance education aims to reduce the limits of education services to be offered to large masses and to provide equal education services to individuals with different socioeconomic statuses. The distance education system offers equal opportunities to everyone in different regions in

the field of technological opportunities and education (Alhih, Ossiannilsson and Berigel, 2017, p. 33). Table 1 shows the main examples of distance education models.

***Table 1**: Main Examples of Distance Education Models*

Distance education model	**Examples**
Models based on sound	• Broadcast: IRI • Two-way radio • Narrow broadcast: IAI (with audio tape or CDs) • Audio conference and telephone
Television-based models	• Educational and instructive television broadcast • Video • Video conference
Computer-based multimedia models	• Interactive video • CD-ROMs • Interactive multimedia • Digital video discs (DVDs/ VCDs)
Web-based models	• Communication with the computer • Access to Internet-based World Wide Web resources • Online courses (e-learning) • Virtual classrooms/schools and universities • Online conferences (webcasts and seminars)
Mobile models	• Portable media players (podcasting) • E-readers • Cell phones and smartphones • Tablets • Handheld devices

Reference: (Burns, 2011).

2.1.1 Components of Distance Education

The components of distance education can be examined in two groups: software component and hardware component. These groups and their sub-dimensions are discussed in detail below.

2.1.1.1 Software Component

While designing distance education applications, it is necessary to decide which technology to use. So long as a computer-based model is desired, it is inevitable that computer software will be in use. First of all, it is crucial to evaluate the compatibility of technologies with the distance education program - the differences between what the technology offers versus what we desire. The reason behind the importance of this is that the effectiveness and efficiency rate of distance education will decrease if it is offered with technologies that are not in harmony with each other and are contrary to the purpose of education (Balaban, 2012). Depending on the chosen technological components, and aims preferred, a suitable software base is required, through which education process will be managed overall.

Teaching Management System: Technological developments have also positively affected the teaching techniques of technology and trainers, which bring a different perspective to the field of education (Uzunboylu, Biçen and Çavuş, 2011, p. 720). The internet is preferable in education because of its technological opportunities and potential to reach more audiences. The education sector is one of the fields that is affected by technological changes heavily. The education system is going through some fundamental changes since last 10 or more years. (Çavuş, 2015, p. 873):

- The need for learning is a service that individuals may need throughout their lives. Learning need increases and diversifies over time.
- Students' demands are more flexible, easy-to-reach, and individualized learning methods.
- Students do not want to be dependent on a particular learning method.
- The fundamental need is student-based education, not teacher-based education.
- The teacher is always the person who guides the students on how to access the information instead of giving the information to the students.
- Students want more to learn at their own pace, the place and time they choose.

Educational technologies help teachers and students learn through collaborative and interactive techniques and offer various advantages. Especially through the internet, teachers are offered many tools and applications that they can use at every stage of teaching. In this

way, the efficiency and effectiveness of teaching are increased (Çavuş, 2015, p. 873). The changes mentioned above and the needs they bring can be alleviated through technology.

The rapid technology development in recent years has revealed the necessity (and demand) of using technology in education. Therefore, the need for reorganizing of the education sector arose as the needs of both the teachers and students have changed over time. Learning management systems are among the most important technological developments that can meet these evolving needs of teachers and students. The software that enables the management of learning activities over the web is considered a teaching management system. Online access of teachers, students, and administrators to learning services can be organized with the teaching management system software (Çoban, 2016). This software aims to provide information in a more planned and systematic way. There are two different popular software in the instructional management system market in Turkey. The first one of these software is an open-source software that can be shared and used by anyone for free and the other one is a licensed, in other words, commercially marketed software. The first one mentioned is named "Moodle", and it is one of the most widely used free teaching management software. Istanbul University, Middle East Technical University, Sakarya University, and many more universities in Turkey use this software in distance education programs since before COVID. The other one is "Blackboard" software, that operates with regular payments made by the universities opting to use it. This software is also used by many universities, especially Anadolu University (Balaban, 2012).

The instructional management system can be expressed as a web-based system that allows teachers and students to share materials, send and return homework, and communicate online. Such web-based systems can be used as a catalyst for self-reflection, facilitating the transition from passive learning to active learning (Herse and Lee, 2005, p. 48). A teaching management system is an integrated set of software that allows the management, reporting, monitoring, documentation, and delivery of distance learning programs or e-learning courses (Arpacı, 2017, p. 54).

An instructional management system provides a platform for creating a virtual learning environment. Some of the shared features of instructional management systems are as follows (Çavuş, 2015, p. 874):

- Guiding students toward education,
- Providing students with the ability to make interactive applications,

- Delivering information to students in different ways such as flash, PowerPoint, audio, video,
- Evaluation of students through homework and exams,
- Delivering results to students,
- Providing communication between student-teacher and student-student,
- Reporting,
- Note-taking,
- Online distribution of e-learning contents,
- Keeping track of student attendance records,
- Sharing ideas and information.

Content Management System: This software supports the management, creation, publishing, disclosure of corporate information, distribution, the lifecycle of pages on the website, and publishing and archiving of documents with easy and small tools (Eroğlu, 2018, p. 48). The basic components of a content management system can be listed as follows:

- Writing tools used in the production of content objects,
- Content repository, which enables the hosting of learning objects, assets, content sets, and other structures,
- Content placement and labelling operations to create learning objects with low-level content objects and to group learning objects in the creation of broad instructional content structures such as lectures, topics, courses,
- It is a distribution interface that includes organizing and searching learning objects to provide individualized learning experiences.

This software creates, stores, deploys and distributes personalized e-learning content in the form of learning objects. The most important goals for the users in the design of educational content are easy to learn, understandable, interactive, and have a structure that can model behaviours (Balaban, 2012). Content management systems are generally designed to meet the following needs (Brown and Fallon, 2003, p. 14):

- Generating a unique description for each of the learning objects,
- Searching, finding, and placing the required learning objects,
- Providing multiple hierarchies for storing and organizing learning objects,
- To facilitate the integration of complex course structures.

If educators cannot prepare web content or spare time for it, content can be prepared by the relevant content group. The video, audio, text, graphics, and animation production required for the course content to be given to the students are produced separately with different software. The main software that enables the rapid preparation of web contents are as follows (Balaban, 2012):

- Authorware
- Articulate Presenter
- Rapid Intake
- Elicitus
- Toolbook
- Articulate studio 09
- Webex presentation studio
- Adobe Presenter
- Adobe Captivate
- Articulate Engage
- Raptivity

Virtual Classroom: It allows communication with all kinds of video cameras in a virtual classroom, such as image, program sharing, audio, file sharing, whiteboard, window sharing, chat, and content sharing (Balaban, 2012). Virtual classrooms are the only environment where teachers and students meet in sync and communicate in the classroom. For this reason, a qualified platform should be offered for the teachers and the students in virtual classrooms, and simultaneous transmission of sounds and images to the other should be ensured. Lessons should be able to be watched by students from every server and different servers should not be needed. At the same time, for those who cannot watch the synchronous lessons or who want to watch them again, the lessons should be recorded on video, and students should be able to watch the lessons again from the archive (Eroğlu, 2018, p. 49). These systems have voice and video calls, correspondence area, screen sharing, recording and sharing, and remote desktop connection features (Eroğlu, 2018, p. 49). Also, it must be noted that teacher should form a sense of community within this virtual classroom, since such a binding feeling may not develop automatically unlike the traditional classroom. By aiding learners to feel a sense of community teacher may experience increased attendance, attention and overall performance of the lessons. (Berry, 2019)

Assessment and Evaluation: Tests and exams conducted to determine the extent to which students learn the knowledge conveyed by teachers and to evaluate the success of the distance education system are included in the scope of assessment and evaluation. There are two preferred methods for exams. The first of these methods is to put the students together at the centre and apply pen-and-paper exams the traditional way at the end of the education or semester, and the other is to take the form of online exams. In online exams, students answer questions via terminals/computers. There are systems where these methods are used together (Arat and Bakan, 2011). Apart from tests and exams, measurement and evaluation can also be done with the help of assignments and projects, transferring the explanations and contents of the studies, and collecting and evaluating the completed works (Arat and Bakan, 2011). It should be noted that recent developments, namely COVID outbreak, has forced a lot of teachers to rely on such methods of assessment and evaluation. It has been noticed by some teachers that some learners have attempted to breach academic integrity by cheating during the online exams or sending other people's works for evaluation. Against such issues, some researchers have proposed a return to classical oral exams as an alternative evaluation mechanism, through use of online communication. (Akimov and Malin, 2020)

2.1.1.2 Hardware Component

The hardware components are sub-dimensions of distance education that allow the above-mentioned software components to function, basically considered as the server, internet connection, and Firewall Switch backup. Not all methods may require all such component, since newer technologies made the procedure much more user friendly and especially server and firewall issues are nowadays solved by software companies. In short, these components are:

Server: For the installation of instructional management systems, a server with some software and databases is required. After the provision of this server, the specified teaching management system can be set up. To avoid any disruption in the system, a server should be chosen that is compatible with student capacity and can be used for a long time (Eroğlu, 2018, p. 50).

Internet Connection: The number of students should be determined, the lesson hour should be analysed following the curriculum of the day, the test should be carried out, as well as the determination of bandwidth and speed (Arslan, 2011).

Firewall Switch Backup: The Firewall Switch backup system should be able to protect against possible attacks. The specified backup software must be able to start the system 30 minutes in advance (Arslan, 2011).

Nowadays, as of 2021/2022, educators are rarely concerned with servers or firewalls. Some universities hold their own servers and firewalls, but end user is rarely aware of such issues.

2.2 Electronic Learning (E-learning)

The e-learning model in distance education has come to the fore in today's world where developments in internet-based technologies have gained momentum. E-learning has gradually spread with the effect of different tools and methods used in parallel with technological developments in distance education systems. In distance education, this learning model is carried out in the form of education based on media and electronic tools through the internet and network technologies, enabling teachers and students in different environments to come together (Karal, Cebi and Turgut, 2011, p. 276).

The e-learning process includes enabling the transfer of knowledge and skills through the network. Web-based learning including internet-based learning, computer-based learning, and online learning, makes it easier to share information with information and communication technologies (Bulutlu, 2018, p. 36). In another definition, an e-learning education system is expressed as the use of computer network technology to provide information to individuals, mainly through the internet range. In other words, it is an internet-based learning system in distance education where learning and teaching are given over the internet. (Ergin, 2017, p. 92).

Güneş (2008, p. 19) describes the e-learning system as training given with the help of digital devices to support learning. The features of the e-learning model are listed as follows (Clark and Mayer, 2016):

- E-learning includes learning objectives.
- E-learning includes lessons on CD Rom, smartphones, or the Internet.
- Media elements are used to present the content.
- E-learning can be synchronous or asynchronous.
- Appropriate teaching methods are used to promote learning.
- It encourages students to get new knowledge following the objectives.

E-learning technology has developed in recent years and has been integrated into education and training processes. This learning model includes the educational activities of individuals and groups, synchronous or asynchronous, independent or networked, online or offline, with computers or other electronic devices. In e-learning environments, online classes are carried out synchronously and asynchronously or a mixture of both. It can be said that the e-learning model has become widespread, especially in universities recently. This learning model is aimed to support and develop the education given by the institutions in the classrooms and organize the courses by reaching more students (Bilgiç, Doğan and Seferoğlu, 2011). Today, it can be said that the e-learning model in distance education has become more widespread due to the Covid-19 pandemic.

Overall, E-Learning term is either used as an umbrella term for all digitally enhanced education, or an equivalent to online education, or an equivalent to web-based education. (Moore, Dickson-Deane and Galyen, 2011) that we will discuss soon. Here in this paper, we will use E-Learning (which is derived from Electronic Learning) as any technologically enhanced education.

2.2.1 Simultaneous (Synchronous) Learning

The simultaneous e-learning model is a learning model in which teachers and students can make contact and communicate in real-time. Since this model of distance education is synchronous, teachers and students in separate settings have to come together online at the same time. In the synchronous distance education model, it is ensured that teachers and students are in communication through internet technologies. Students can ask questions interactively, find topics for discussion, and solve tests (Orhan, 2016, p. 27). In this distance education learning model, teachers and students are provided to be in real-time communication even though they are in different places. Synchronous learning is the education in which the teacher and the students can correspond, and the information can be transmitted to the target audience as soon as they are created. Telephone connection, audio and video conferences, smart classes, and live satellite broadcasts over the internet can be given as examples of synchronous learning training (Alhih et al., 2017, p. 39).

Synchronous education is considered advantageous in terms of real-time discussion and brainstorming, and it provides an environment that is closer to the face-to-face education environment and provides instant feedback. This education model is effective for students to communicate with the teacher via audio and visual through video conference-based training. Therefore, an environment close to the traditional classroom environment is created. Video

conferencing is expressed in the form of interactive and synchronous video, audio, and data transmission realized with communication lines at two or more points. Synchronous distance education connects teachers and students in different regions and reduces the cost of education. At the same time, it provides an environment where students can associate their experiences, and can allow formation of a sense of togetherness or a feeling of community if the educators command the process successfully (Karal et al., 2011, p. 281).

It is stated that synchronous distance education is very advantageous in receiving instant feedback from students, and this positively affects the academic success of students. Possibility of producing high motivation for the students through the use of intonation, body language, and facial expressions are the main reasons for the positive effects of synchronous distance education when compared against asynchronous distance education. However, there are also negative aspects of synchronous education. In particular, internet connection problems and quality deterioration in video and audio data during transfer are the most common negative aspects of synchronous education. It is stated that although written communication is a synchronous communication method instead of image and sound, it is not very successful. Using the keyboard by students prevents active participation in the lessons (Kutlu and Titrek, 2021, p. 743).

2.2.2 Asynchronous Learning

In the asynchronous learning model, unlike the synchronous learning model, teachers and students do not need to be together at the same place and time. In other words, in asynchronous education, there is no obligation for teachers and students to participate in the learning activity at the same time. The learning process is carried out at a desired place and time by the students. The asynchronous distance education model is an education model in which real-time lessons do not take place, yet the content is given to the students regularly. It is an e-learning model where teachers and students do not have to communicate in real-time. At the same time, it offers students the opportunity to complete their education in accordance with their own learning pace and on time. Teachers offer support using e-mail or other communication platforms. The asynchronous learning model is the e-learning model in which students work using their free time with the simplest definition (Karal et al., 2011, p. 84).

In asynchronous learning, there is an application in the form of a mixture of some or all types of animation, text, video, sound, and graphics, which are among the educational materials used to make learning easy and attractive. In this type of e-learning, course-related materials are presented to students via platforms that they can access whenever they want. In

asynchronous distance education, students can watch the course videos and use the materials whenever they want. Asynchronous learning provides flexibility for teachers in preparing course materials and offers students the opportunity to study whenever they want and to be comfortable at home (Özdal, 2020).

In asynchronous distance education, in which information is previously stored, students can access the information later when they need it. This learning model is often supported by media such as online forums or discussion groups, bulletin boards, and e-mail (Alhih et al., 2017, p. 2741). Fewer difficulties in internet usage are one of the advantages of conducting e-learning asynchronously. Applications that are slowing down the internet are used less or not at all in this learning model (Kutlu and Titrek, 2021, p. 748). In asynchronous learning, students do not have to respond synchronously or instantly. Students who have the opportunity to reflect on the answers can also develop their critical thinking skills. Asynchronous e-learning is a type of student-centred learning in which students can work independently at their own pace. Students feel less anxious and can reveal creative and innovative responses more calmly. In addition, if asynchronous learning is used efficiently, it can play a role in increasing the motivation of students (Özdal, 2020).

Since the interaction of teachers and students in the asynchronous distance education model takes place over e-mail, communication between teachers and students takes longer than synchronous learning. In the asynchronous distance education model, delayed feedback causes a decrease in the level of interaction and can also reduce the participation and interest of the student. Oftentimes, teachers refrain from sharing their personal instant messaging channels (WhatsApp or the like) due to large number of learners attempting to communicate can overwhelm the teacher's capacity to respond. However, this factor can cause difficulties for students who do not have self-discipline in the long term (Karal et al., 2011, p. 91). Asynchronous learning loads much on the shoulders of the learners. Self-discipline and autonomy are crucial for success of such a method. Learner has to self-motivate into continuing the course (Gazan,2020).

2.2.3 Blended (Mixed) Learning

Blended learning or mixed learning concepts are frequently used to describe learning models that combine face-to-face education with online education. Blended education is a combination of face-to-face and online interaction. It is expressed as a blended learning concept that combines e-learning elements and face-to-face education and combines the benefits of these learning types (Yaman and Graf, 2010, p. 87).

In another definition, blended learning is expressed as an education model that combines face-to-face education with teaching via computer and thus combines teaching methods (Graham, 2006). Oliver and Trigwell (2005) describe blended learning as the combination of classical learning with web-based online approaches. Blended learning environments aim to increase the qualities of online education such as competence, efficiency, and freedom of access to information at all times with minimum effort. At the same time, it aims to integrate the qualifications of face-to-face education by enabling students to interact and work with new information (Delialioğlu and Yıldırım, 2007, p. 133).

The combination of different pedagogies and teaching strategies has long been considered good application. Lessons that include more classroom interaction, case studies, simulations, student group work, and other learning activities are far from standard. The blended learning model offers an effective platform to use different pedagogies and teaching strategies and has the potential to maximize the advantages of face-to-face and online education (Benson, Anderson and Ooms, 2011, p. 143).

The blended learning model provides sufficient guidance to online learning with face-to-face education integrated into distance learning and offers accessibility and flexibility to traditional education. At the same time, it provides a suitable environment for students who live far from the educational institution or whose lesson hours overlap. They prefer blended learning because it provides flexibility for educational institutions to meet the learning needs of students (Alebaikan and Troudi, 2010, p. 49).

In the blended learning, focus is usually on blending of digital technology and face to face education. How is this done? Some options include recording lessons, sharing instructional material online, forming web-based digital classrooms where learner interactions occur, and more (Singh, 2021). So long as digital intercommunication technologies are involved, the method can be named as blended learning, to varying degrees. (Graham,2006)

2.2.4 Web-Based Learning

Human beings consciously come together to learn and share information, and due to this feature, they are distinguished from other living things. While it was a necessity to come together at the same time and place for these activities until the middle of the 19th century, later on, the transfer of information started to be carried out with letters at the beginning and then with the use of many technological tools in different environments. Although correspondence was used very early in distance education, it is still seen as useful. In the new method that has emerged today, information can be transmitted from one place to another with

the help of internet technologies. With this method, the restrictions such as place and time that existed before are removed. This method, which provides access regardless of time and place, is defined as web-based education (Turanlı, 2005, p. 27).

With web-based learning, which is a type of distance education, access to various resources, people, and experiences can be provided. This type of education is an education model similar to computer-based education, using the resources of the "world wide web (www)", which aims to teach faraway people with the internet. The world wide web provides potential connections to computers in the world and increases distance education experience opportunities. In the distance education model, it provided important opportunities for teachers and students to create virtual classrooms (Burns, 2011, p. 86).

Teachers can present information to students, produce content materials, participate in discussions, prepare tests and assignments, and manage distance education courses through environments with distance education learning management systems. Web-based learning or online learning are the fastest growing methods in distance education. Web-based learning is the result of developments in techniques and technologies in the fields of computer-based education, distance education and internet technologies (Horton, 2000, p. 2).

It has many features that make web-based learning, which is a distance education tool, attractive. Especially the absence of time and place limitations and being student-centred are the leading ones. In addition, reducing the need for face-to-face interaction and travel, providing flexible access to archive resources and experts, costing less than face-to-face education, blending distance education materials such as audio, video, multimedia with the real-time collaboration and communication features of the internet are among the features of web-based learning. Web-based learning is as effective as face-to-face training opportunities in professional development in some cases (Burns, 2011, p. 3).

Web-based learning model has harmful effects in addition to its positive impacts. Teachers have to transfer the course content, which is in traditional education form, to the online platform. However, this depends on teachers and students having technological infrastructures such as the internet and computers. The communication and interaction that exists in face-to-face education does not exist in web-based learning, and therefore, there may be difficulties in learning. At the same time, it can be a problem to measure and evaluate students' homework, course and exam follow-up, and to carry out applied courses through web-based learning (Turanlı, 2005, 29).

Overall, web-based learning is a branch of online education that focuses on materials loaded on the internet mainly, instead of face-to-face like blended or live-connection like synchronous. Web-based formats are usually asynchronous models distributed into larger, informal groups. When term “online learning” is used, it is usually related to already-available material prepared by an institution for a certain programme. When “web-based learning” is used, it always falls under scope of online learning, but the “distant educator only produces the materials, and is not further involved in the education of the students.” (Tsai & Machado, 2002)

2.2.5 Online Learning

The introduction of different methods in the learning environment with the help of information communication technology has become one of the essential elements of the teaching-learning process. In this way, the emergence of the Internet has been one of the momentous achievements. The Internet has brought about changes in many fields, from individual and professional networks to sources of information, the global economy, learning and news. With the Internet, online learning became possible. Many researchers and educators provide improvement and development of students' learning outcomes through online learning courses. In addition, demands for online learning from students have begun to increase (Castro and Tumibay, 2021).

Today, online learning has become an important matter to support the education and learning students' needs. Due to the widespread use of the internet and its effect, an important step has been taken in education. Online learning is educational or professional learning in which a course or program is taken on the web without the use of traditional methods. This type of learning refers to delivering educational materials via electronic media such as audio, video, cassette, satellite broadcasting, internet, CD, computer-based education, and video conference.

Online learning and e-learning are terms that are often used interchangeably. But there is a slight difference between the concepts. Learning through technological tools such as the internet, computers, and mobile phones is defined as e-learning, while learning only through the internet and the web is defined as online learning. In online learning, web compatible, web-based technological tools are used for educational purposes (Güneş, 2008, p. 19). With the simplest definition, online learning is learning that takes place partially or completely over the internet. Distance education has a wider meaning than online learning (Ergin, 2017, p. 93)

2.2.6 Mobile Learning

In the past, it was challenging for people to use mobile technology to learn, carry out their daily work and socialize. Today, mobile device usage has increased with the ease of internet access. Mobile technologies have become attractive because of their features, such as accessibility and ease of use. In recent years, mobile devices have spread very rapidly in the global sense. With the use of mobile technologies, the spread of personal computers has slowed down. Therefore, smartphones have become an important part of people's lives. It has been influential in people seeing mobile phones as an alternative to computers because of their similar functionalities to computers offered by mobile devices (Attewell, 2005, p. 2).

Due to the intensive use of mobile technologies and using mobile technologies at an earlier age, the use of these technologies for learning purposes increases the importance of mobile learning. Mobile learning refers to learning with a mobile device. The concept of mobile learning is characterized as multiple learning with social and content interactions through personal electronic devices. In another definition, mobile learning is defined as students accessing content anywhere and anytime with wireless internet and mobile devices. Mobile learning is a type of learning that enables the acquisition of knowledge, access to information, information management activities and experiences via individual or collaborative learning methods through digital interaction with portable devices (Crompton and Burke, 2018, p. 53).

In recent years, the use of wireless and mobile technologies as learning tools became widespread. Mobility is one of the features that makes the mobile learning platform the new education platform. There are many students prefer and enjoy mobile learning. Students use smart phones and mobile devices to access information in the learning process. The adoption of mobile learning by students and the use of mobile devices highlights mobile learning and increase its importance. Mobile learning is preferred with its advantages such as flexibility of time and place, ease of use, and ease of access to information. It provides learning opportunities that can be accessed anywhere, depending on the situation of the students. With mobile technologies, students can access course content, interact with their friends outside of the classroom, and get collaborative learning opportunities. The use of mobile devices everywhere supports students' motivation and academic success and makes learning more important. Therefore, it can be argued that the features of mobile learning tools can affect student preferences and contribute to learning performance (Göksu, 2021, p. 2).

Some teachers are uncomfortable with their technology usage, knowing that students generally have more technical competencies than themselves, and they see themselves under

threat. Teachers who use computers comfortably may feel uncomfortable with these new forms of communication because they are not very familiar with mobile technologies. The lack of a particular monitoring system in mobile learning, the technical knowledge of the students, mobile connection ownership, and the inadequacies in the applied lessons are some of the problems. In addition, students' mobile phone usage during the face-to-face lessons has a negative effect on focus and decreases performance. In this context, there may be difficulties in the use of mobile learning in teaching environments due to factors such as infrastructure, technical competence, difficulty in process management, individual abilities and skills, and sociocultural factors (Herrington and Herrington, 2007).

2.3 Technologies Used in the History of Distance Education

The concept of distance education, which emerged from the combination of technology and education, has become an alternative to traditional face-to-face education over time (Özüçelik, 2019). Distance education has emerged as a result of meeting the learning needs of teachers and students who are at different regional distances from each other. Distance education methods initially started with letters in the 1880s and increased over time due to the development of information and communication technologies. The concept of distance education was first included in the University of Wisconsin catalogue in 1892. Distance education was introduced in Germany by the German educator Otto Peters in the 1960s and 1970s. In the same period, distance education institutions in France used the name of distance education (Arslan, 2019).

Technology is essential in modern distance education. Especially recently, distance education has emerged as a technology-centred educational technology model. Since the rapid development in communication technologies such as television, satellite, and radio affect the form or structure of education, it has become necessary to develop new education programs and education models (Aslantaş, 2014, p. 23).

In the historical development of distance education, four generations have emerged in the light of technological developments. There is only one technology used in the first generation. Printed materials were used in the first generation, where there was no direct interaction between teacher and student. Teaching by letter can be given as an example of the first generation.

In the second-generation, teaching materials were designed for the student to study, but two-way communication was provided by the third person and there was a transition to

integrated multimedia in distance learning. The third person is the guide in this generation. Universities that offer distance education can be given as an example for the second generation.

The third generation in distance education has started with two-way communication environments that provide direct interaction between the distant student and the teacher. Participants in the education are individual or group students who are far away. Therefore, besides the individual environment, there are environments enriched with telecommunication systems. Large-scale universities with more than 100,000 students can be given as an example for the third generation.

The fourth generation of distance education is the flexible learning model. In this generation, where the flexible learning environment of the student is preserved, interaction can be achieved with the help of mixed presentation technologies.

Basic distance education technologies can be listed as letters, printed materials, television, radio, video tapes, computer aided education, multimedia, internet, e-mail, databases, video conferencing and satellite technologies. In Figure 3, technologies used in the historical development of distance education are listed in 5 groups.

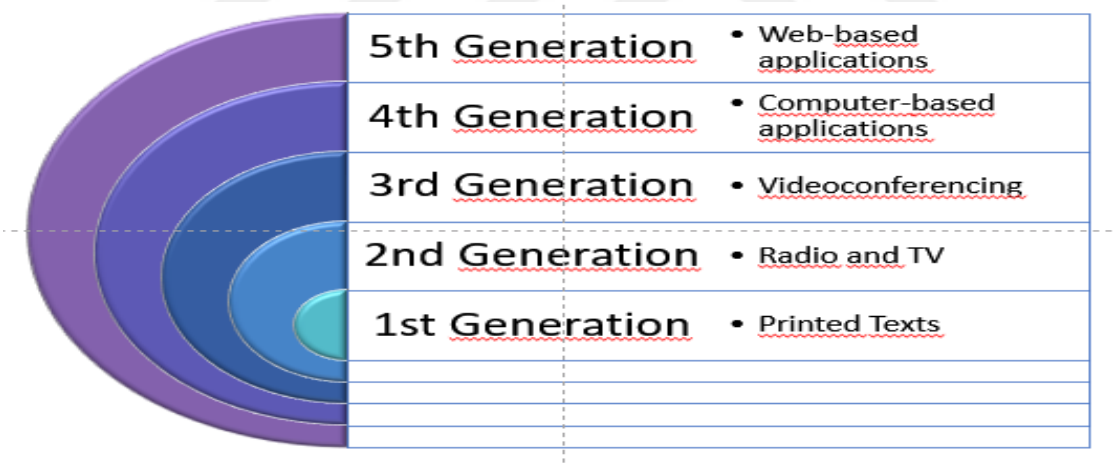


Figure 3. *Technologies Used in Distance Education (Aktaş, 2007) (adapted and translated)*

In distance education, correspondence, postal service, and other tools spread rapidly with the effect of technology (Moore, Dickson and Galyen, 2011). The distance education model is a computer-based teaching method in which teachers and students interact with some digital tools instead of face-to-face education in traditional education (Nilsson, 2021, p. 5). With the use of internet-like communication technologies in the distance education model, concepts such as online learning, e-learning, and web-based learning have emerged (Bahçekapılı, 2015).

Distance education technologies can be classified into two groups: interactive and non-interactive. Communication technologies and developments in the internet have been effective in both reducing the cost of distance education and enriching the use of interaction, synchronous and asynchronous applications, and visual materials. Communication and interaction are very important in education. When the use of distance education technologies was started, although there was no interaction in general, material interaction between the learner and the learner, the learner and the instructor increased with the effect of technology (Aslantaş, 2014, p. 24).

The history of distance education can be considered in three phases according to Williams and Pabrock (1999);

- The first phase of distance education was carried out with printed materials, videotapes, and radio broadcasts between 1860-1960.
- The second phase of distance education was carried out between 1960-1990 with computer disks for educational purposes and bidirectional video and audio broadcasts.
- The third phase of distance education has been carried out with virtual classrooms, hybrid technologies, and internet technologies since 1990 (Demir, 2014, p. 203).

3. Distance Education in the Covid-19 Period

Today, the fundamental elements of human life are shaped in parallel with technological developments. In this context, besides security, health, and service elements, education is also adapted according to technological developments. Education services are provided following the age requirements so that people are not deprived of educational activities. In line with the steps taken to meet the continuing education needs of people, distance education approaches have become one of the education applications (Garrison, 2000, p. 7). Recently, the need for distance education applications has been increasing. The main reason for this is the increasing demand for higher education, the need for frequent changes in vocational education, and the fact that many of the participants can gain practical experience through distance education (Fojtik, 2018, p. 20).

In addition, at the beginning of 2020, with the spread of the Covid-19 pandemic, education and training institutions were forced to begin distance education instead of face-to-face learning. The results of this practice differed in each region. Distance education has been

easier than expected due to the support provided in some areas and cities (Watson, 2020, p. 43). In some cities and regions, it has negatively affected students who do not have access to digital devices or reliable internet access and students from ethnic and racial groups who are disenfranchised. Therefore, the Covid-19 outbreak reveals that distance education has difficulties in addition to its advantages. (Sullivan, Hillaire, Larke and Reich, 2020, p. 305).

Due to the COVID-19 pandemic, teachers and students have been severely affected by the termination of face-to-face learning and educational activities limitation on a global scale. Educators have put online platforms on the agenda so that education can be done remotely with the help of technology to continue education activities during the pandemic period. In Turkey, some precautions were taken to maintain education during the Covid-19 period. With the rapid spread of the epidemic, face-to-face education was terminated. Then, the EBA infrastructure was strengthened to prevent any disruption in education, studies were carried out with TRT to continue education with online platforms, and training broadcasts were started (Özer, 2020a, p. 134).

The TRT EBA channel was opened, and synchronous and asynchronous training was provided to carry out distance education activities during the Covid-19 pandemic. The current interaction between the teacher and the student is one of the main factors affecting the effectiveness of the learning process. Distance education applications differ from usual learning in this respect. Distance education applications are applied in two ways: synchronous and asynchronous. It is stated that these interactions cause different effects. (Offir, Lev and Bezalel, 2008, p. 1180).

In distance education asynchronous application, students learn in their own time with teacher-guided online materials. Teachers and students are separated in terms of time and space, and there are no temporal or geographical restrictions (Murphy, Rodríguez, Manzanares and Barbour, 2011, p. 587).

Distance education synchronous application refers to teaching with an audio conference, video conference, or another method with students who are far away for some reason. Similar to classroom education compared to asynchronous distance education (Bernard et al., 2004, p. 382). Teacher and students are temporarily dependent, unlike asynchronous. Teachers and students can communicate as if they are physically together, even if they are far away. Although there are time restrictions, there are no geographical restrictions (Murphy et al., 2011, p. 585).

The asynchronous distance education application provides a web-based, multi-modal teaching opportunity that the student can review at any time (Mehrotra, Hollister and McGahey, 2001, p. 72). This distance education type allows students to access instruction, lectures, materials, and others at any time and from anywhere, compared to synchronized education. In distance education, synchronous and asynchronous communication formats can be used separately or together. While synchronous distance education refers to the environment in which communication between teachers and students provides simultaneous two-way interaction, asynchronous distance education refers to completing the tasks previously given by the teacher when connected to students. Both methods have advantages and disadvantages compared to each other (Uşun, 2006, p.40). In a study, it was reported that students prefer to learn with a synchronous system instead of an asynchronous system in distance education. In the same study, it is stated that students with high-level skills will not have difficulty learning with neither synchronous nor asynchronous systems (Offir et al., 2008, p. 1179).

3.1. The Effects of the Covid Period on Education

After the first diagnosis of Covid-19 was made on 31 December 2019, the spread of the virus accelerated due to human mobility and was declared a worldwide outbreak (pandemic) on March 11, 2020 by the World Health Organization (WHO) (WHO, 2020). Quarantine applications were implemented in the first stage to prevent the pandemic (Sarı ve Nayır, 2020, p. 959). With the implementation of this precaution, face-to-face education was suspended in each of 102 countries around the world. Because of this, nine hundred million students and their teachers could not go to school (OECD, 2020).

The quarantine, which was applied as a precautionary measure after the declaration of the Covid-19 pandemic, has rapidly changed the habits and lifestyles of individuals. It is predicted that this change may affect lives to a certain extent in the long run. With the onset of the pandemic, the transition to distance education and the opportunity to work from home are two significant changes in people's lives. In this context, it is stated that the epidemic has changed the way of doing business globally and is the beginning of a different system in which online platforms are tried in education (Yılmaz, Mutlu and Doğanay, 2020).

The Covid-19 outbreak has caused in experiencing a period of chaos in education, as in all areas of life (Sarı and Sarı, 2020, p. 49). With the emergence of the first Covid-19 case in Turkey, the government has started to take steps regarding education applications. In this context, during the pandemic, the Ministry of National Education took quick decisions in the education process management. They terminated face-to-face education and made the

transition to distance education - education has been moved to digital environments in total. The capacity of parents, students, and teachers in educational institutions has been managed correctly. Accurate steps have been taken to reduce the spread of the pandemic (Özer and Suna, 2020, p. 171). Distance education has switched without waiting, to reduce the spread of the pandemic, protect the health professionals, and maintain the minimum staff and services remotely and alternately without interruption (Özer and Suna, 2020, p. 179).

With the first Covid-19 case in Turkey, face-to-face education was suspended at primary, secondary, high school, and higher education levels, and distance education was started (Özdoğan and Berkant, 2020). EBA, which is a distance education institution established in 2012 and covers teacher-student interaction and mutual communication, has started to be used due to the Covid-19 pandemic. During the pandemic, educational broadcasts were started for the K-12 education levels through EBA, whose infrastructure was developed to ensure easy access for every student. Broadcasts were made for all classes from the 1st grade to the 12th grade level for students on EBA channels. In addition, lesson repetitions are included in the program for those who missed the courses. EBA channels provided students with recreational and educational activities for rest between classes and to reveal their skills (Başaran, Doğan, Karaoğlu and Şahin, 2020).

While Turkey, like many countries, was trying to overcome the crisis in education by switching to distance education, there were inequalities of opportunity in education. Since the execution of distance education requires access to infrastructure and technological products, there have been significant differences between regions and countries. There have been inequalities of opportunity in some regions of our country where there are some students who do not have internet infrastructure or enough technological devices such as tablets, phones, computers, and even the phone signal. Since these situations are generally proportional to the economic status of people, inequality in education and economic imbalance had been experienced together (Can, 2020).

3.2. Education Applications in the Covid-19 Period

Various precautions have been taken to continue educational activities in many countries around the world and Turkey against the Covid-19 epidemic. In this context, countries have aimed to ensure the continuation of educational activities with some techniques.

3.2.1. Education Applications in the Covid-19 Period in the World

Changes in education systems during the Covid-19 pandemic led educational institutions to online learning, distance education, flexible learning, and e-learning

applications. Centres for Disease Control and Prevention recommended implementing e-learning plans, which include digital and distance education options, during the Covid-19 pandemic to ensure individuals can continue their education (Cai and Wang, 2020, p. 532).

Education applications during the pandemic are expressed with different notions such as e-learning, distance education, home education, and online education. However, distance education is shown as the concept that best describes the current situation (Bozkurt and others, 2020, p. 2). In the report prepared by the World Bank, it is stated that different education systems are applied in educational institutions that were physically closed due to the Covid-19 pandemic (The World Bank, 2020, p. 1). From this, it can be concluded that the countries of the world applied different learning systems during the pandemic process.

With the impact of the Covid-19 virus in China, the Ministry of Education of the PRC has made it mandatory for all schools to benefit from online platforms when the new academic year begins and schools are closed. Distance education has started in educational institutions of all levels across the country. Teachers were generally asked to give lessons as recorded lesson videos (asynchronous) or live (synchronous). Distance education was carried out as internet-based and mobile-supported. In addition, distance education for students in low socioeconomic status or remote areas was continued through television. Social media has also been used to support students (Cai and Wang, 2020, p. 532).

During the Covid-19 period in Japan, students were supported through self-learning by sharing printed materials via e-mail and previously recorded video lectures on online platforms such as Google Classroom, Classi, Google Drive, and YouTube. Some educational institutions have given students interactive lessons on certain basic subjects with digitalized materials via Zoom or another synchronized communication tool to motivate students for distance learning (Shaw, Sakurai and Oikawa, 2021, p. 569).

During the Covid-19 period in India, teachers were asked to continue their lessons in online synchronous classes with alternatives such as WhatsApp, Cisco WebEx, and Google Meet. On the other hand, Russia has used large-scale video communication programs in educational institutions, and teachers have used their learning communication tools such as Skype, Zoom, and Telegram. Educational institutions at all levels generally continued synchronous learning according to the hours in the curriculum. In regions where there is little or no internet access, phone connections were used to transfer materials and assignments to students. In some regions, students took their notes by writing and left their homework in boxes

placed at a local workplace or in a school and continued their education in a paper-based system.

During the pandemic in Saudi Arabia, distance education was given in synchronous sessions on online platforms such as Google Meet and Zoom. Schools and universities supplied internet and laptop support to provide access to disadvantaged students (Bozkurt and others, 2020, p. 34).

In Greece, a Facebook educator group called "Distance Education" was created so that students could share their experiences and support during the Covid-19 period. According to the distance education requirements, education stakeholders organized online seminars with experts and analysed pedagogy that should be considered in online education and learning-instructional design. Synchronous and asynchronous sessions were held using educational technologies, internet/computer-based television, and mobile phones to meet the needs (Tzifopoulos, 2020, p. 7).

In Romania, during the Covid-19 period, the TV channel "Telescoala" was established by the government to give specific lessons to high school students on weekdays. The deficiencies of teachers and students were determined with good planning, and synchronous training was conducted with Google Suite and Zoom (Ionescu and others, 2020, p. 2).

Spain increased its open education resources during the pandemic and offered learning resources to teachers at their own pace. Projects have been produced, and pieces of training have been organized to support home education. Distance education was offered as TV supported in addition to online education to students. Sweden permitted the teacher to intervene in the curriculum when necessary during the pandemic, considered the issue as lifelong learning, and made distance education initiatives in cooperation with universities. Many resources, software, and platforms were provided free to students. Teachers received the necessary training on digital competencies and distance education quickly. The training was carried out synchronously and asynchronously with Microsoft and Zoom teams, which are internet-based and supported by social media and mobile phones. (Bozkurt and others, 2020, p. 35).

The Netherlands institutions started synchronous and asynchronous education during the pandemic and continued the communication between teachers, students, and parents with virtual contact with the support of Information and Communication Technologies (Van der Spoel, Noroozi, Schuurink, and van Ginkel, 2020, p. 30).

In the UK, schools with sufficient opportunities to provide distance education turned to online platforms, while those with limited facilities delivered paper-based workbooks and photocopies of activities to students within the given time during the Covid-19 period. Some schools preferred using low-cost or free learning management systems services such as Google Classroom and Class Dojo and provided communication by sending instant notifications to the parents' mobile devices using asynchronous environments and mobile applications. The national broadcaster in the country, the BBC, offered some open education resources to students in addition to the courses on its website and prepared a list of free online resources on various subjects during the education stages for the government (Bond, 2020, p. 194).

Canada provided many teachers with various opportunities such as synchronous or asynchronous education, homework, or assessment during the pandemic. Teaching-learning support centres and workshops that can provide synchronous and asynchronous online training were established in schools. However, this application varied in each school (Bozkurt et al., 2020, p. 40).

3.2.2. Education Applications in the Covid-19 Period in Turkey

With the closure of schools during the Covid-19 pandemic process, the continuation of education on alternative platforms has become a critical issue in Turkey. (Özer, 2020b, p. 15). The EBA platform, which uses outsourcing and crowdsourcing and is interactive, has been redesigned, enriched, and actively used to realize distance education during the pandemic (Bozkurt et al., 2020, p. 100). Within the scope of the curriculum, many learning materials such as documents, videos, tests, e-books, and activities are offered to stakeholders at all levels of education up to the high school level on the EBA platform. On the platform, teachers, students, and parents can access thousands of books, documentaries, cartoons, and participate in educational games, virtual museum tours, or online book platforms (Bozkurt et al., 2020, p.110; Özer, 2020b, p. 25).

EBA, which is a dynamic platform, offers several opportunities for teachers and students. Teachers can assign assignments and assessment tasks to students through the portal. EBA provides tools to analyse students' needs by using data based on their responses to tasks, and teachers can review student reports. Students can find reviews and online courses by choosing the topics they want to learn. At the same time, video recordings of the lessons can be uploaded to the EBA platform (Özer, 2020b, p. 26).

To reduce the inequality and digital divide among students during the COVID-19 process, the Ministry of National Education provided free limited internet access to students.

In addition, EBA-supported TV educational broadcasts were offered, and online counselling was provided at designated times under the supervision of parents to ensure the psychological development of students. Although distance education is considered a simple process for teachers, on the contrary, it has been a more challenging process than face-to-face applications in terms of workload, and perceptions about it have changed. According to experiences shared by teachers, it is stated that distance education requires preparation and planning (Bozkurt et al., 2020, p. 100). During the pandemic, it was prominent to have a sustainable digital education platform like EBA and qualified educators who could use it. As a result of the cooperation of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Ministry of National Education, a professional development program was prepared for teachers, and programs focusing on different subjects were presented with distance education to support teachers' professional skills (Özer, 2020b, p. 30).

It can be said that the education policies of every developed and developing country in the world during the Covid-19 pandemic period are, overall, similar. It is seen that the pandemic period will have an essential place in the history of distance education, the distance education applications of the countries are similar, and the use of technology has vital effects. Although there is a generation that is accustomed to using all of the technological tools today, it can be stated that distance education will be below expectations when there is no curriculum preparation and planning, prepared teachers, and willing students for the situation. Therefore, it will be possible for pioneering teachers to lead by inspiring, design their goals clearly, lead innovation, and change, and cooperate in achieving goals with the appropriate school culture and self-efficacy perceptions that teachers can define by themselves. (McLennan, McIlveen and Perera, 2017, p. 177).

3.3. Problems Experienced in Distance Education in the Covid-19 Period

The Covid-19 pandemic, which affected large masses around the world and was influential in keeping people at home, played a role in gaining a different dimension in education. Countries have applied urgent solutions to protect the education right of individuals and to maintain equality of opportunity in education. The distance education model was applied as the first choice to ensure the sustainability of education during the Covid-19 pandemic. Distance education has been applied intensely for the first time in the history of education in Turkey and the world. However, it is not possible to say that countries are completely ready for distance education and that they have sufficient conditions to adapt the education system to distance education. It can be stated that there are not many problems in the transition to distance

education in countries that have given importance to distance education in their education history, have prepared the necessary infrastructure for this, and are economically strong.

In Turkey, face-to-face education was suspended on March 12, 2020, and distance education was started on March 23, 2020. The technological tools used in distance education have been the internet and television. According to the findings of a study conducted in this field, it has been seen that distance education is mostly based on television, through EBA TV, and one-way (Can, 2020, p. 12). It is seen that the lessons are mainly focused on fundamental courses such as Mathematics, Physics, Chemistry, and Turkish, applications such as painting and fine arts are not given, and there are not enough qualified courses in the field of special education on EBA TV. It is stated that making a new arrangement on the education programs, the achievements, the time allocated for them, the course hours, and the content which is arranged according to the face-to-face education model for distance education during the pandemic period is necessary (Yıldırım, 2020, p. 8).

In distance education, due to factors such as students being away from teachers, the students' increasing family needs, and the Covid-19 pandemic, guidance and psycho-social support applications become necessary in the education process for teachers, students, and parents who are essential elements in education. (Can, 2020, p. 15).

Social interactive environments are required for healthy learning. (Nathan and Sawyer, 2014, p. 21). In this direction, applications are needed to avoid problems in teacher-student communication, student-student communication, feedback, and collaborative learning in distance education. However, it can be said that there are some problems in interaction and communication in the distance education application carried out during the Covid-19 period.

In a study conducted in this field, it has been found that although students in higher education are provided with the opportunity to learn at an appropriate pace in web-based education, it is found that students forget the information they have learned more quickly. In the same study, it was determined that the students had thought that they quickly forgot what they learned because they did not get enough feedback, gained knowledge without practice, and could not express themselves adequately (Keskin and Kaya, 2020, p. 60). Some academics predict that graduates will be unhealthy under these conditions in distance education (Lau, Yang and Dasgupta, 2020).

During the covid-19 pandemic, communication between teachers and learners in distance education and between teachers and learners was not healthy. (Fidan, 2020, p. 25). In

a study conducted in the literature during the pandemic period in Turkey, undergraduate and graduate distance education students were evaluated. As a result of the study, it was determined that 49.9% of the learners could not communicate comfortably during the distance education process (Keskin and Kaya, 2020, p. 61). In the distance education process, it is necessary to increase the communication between students and the opportunities for learning together. In the study conducted by Keskin and Kaya (2020), it was determined that 59.9% of the students were directed to individual work in web-based distance education and group work decreased during the education process.

The problems experienced in communication and interaction in the distance education model initiated during the Covid-19 pandemic are discussed below.

3.3.1. Not Being Able to Participate in Distance Education

In Turkey, the EBA application of the Ministry of National Education is used in distance education, and other applications such as EBA TV and Zoom are used in live lessons. However, it is known that during the Covid-19 pandemic, some students' access to EBA publications was very limited due to reasons such as not having technological tools and problems with accessing the internet. In higher education, just like in formal K-12 education, some distance education students had limited access to the internet at schools, and some students faced problems such as accessing the internet at home, providing the internet, and lack of electricity and internet infrastructure in some regions. For this reason, some students could not participate in distance education (Can, 2020; Telli and Altun, 2020).

3.3.2. Exacerbating Existing Inequalities

It is seen that some studies have been carried out on the need for adult support of distance education students during the Covid-19 pandemic process. In a study, primary school teachers' opinions were consulted. As a result of the study, the participating teachers stated that especially the working parents could not contribute enough to the distance education process (Fidan, 2020, p. 36). Effective participation of teachers, administrators, students, and parents is needed to maintain the distance education process successfully (Can, 2020).

In the distance education process, when every house is considered as a school, it is clear that the parents' responsibility increases and the students will need their parents more. Considering that students' parents both have to work outside and the workload at home increases, it can be argued that the failure of families to provide sufficient support to students increases students' problems in the distance education process. In addition to having an internet connection at home, students must have a computer and a tablet-like technological device to

be involved in distance education from the internet. Because in the studies, it is seen that mobile-phone lessons in distance education are insufficient, especially live classes (Maniar, Bennett, Hand and Allan, 2008, 53). When the students are in the live class, the phone may ring, or the material projected on the screen may not be seen sufficiently on the mobile phone. Therefore, it would not be wrong to say that students need more than mobile phones to continue distance education.

It has been determined that inequalities among families had also emerged more in the distance education process during the Covid-19 pandemic (Anderson, 2020). The differences between the opportunities among families affected participation in distance education activities negatively. The fact that students do not have the appropriate technological tools to participate in distance education and there is no suitable environment even if there is an internet connection are some factors that negatively contribute to the process (Anderson, 2020).

The inequalities that exist in society should be taken into account in the distance education for carrying out during the pandemic process. Because inequalities between students probably result in learning losses. In this respect, it can be stated that there have been many inequalities felt by a portion of students negatively during the Covid-19 period. There are opinions that precautions should be taken to reduce the negative effects of school closures, especially on disadvantaged and vulnerable groups. Everyone should be supported to participate in education with the distance education model (Can, 2020).

3.4 A New Era in Post-Covid-19 Education

As the new era in education starts after the COVID-19 pandemic, it was predicted that there will be a tendency toward Hybrid Flexible (HyFlex) applications in addition to blended learning applications within the scope of planned educational actions (Bonk and Graham, 2012; Beatty, 2014; Bozkurt, 2020). Although it offers solutions such as flexibility, accessibility, and openness based on online distance education, it is seen that the HyFlex learning model will have priority in determining how students can access the content in the new period since it requires self-management and self-orientation skills. In addition, since the applications that require self-orientation and self-management learning skills are generally suitable for adult learners, it can be said that guiding and supporting learners in applications at the K12 level can have positive effects on learning experiences. At the same time, it is stated that the flexible roles of traditional educational institutions in the new post-Covid-19 era and the efforts of learners to access information from different environments are important in learning processes (Bozkurt, 2020, p. 118).

Comparisons between face-to-face education and distance education were also made during the Covid-19 pandemic. In these comparisons, it is stated that increasing the quality of learning processes and content, strengthening educational communication, and interaction are important steps for the future of education (Bozkurt, 2020, p. 118).

The biggest social experiment in the history of humanity occurred naturally with approximately 1.6 billion students around the world with the Covid-19 pandemic, which affected the whole world and was predicted to continue for a long time (Anderson 2020; Bozkurt, 2020; Zimmerman, 2020). The experiences during the pandemic process will inevitably affect the general education paradigms in the long term. Considering that crises will bring opportunities, it can be said that experiences and success stories can turn this crisis into opportunities (Ferdig, Baumgartner, Hartshorne, Kaplan-Rakowski and Mouza, 2020; Keskin and Kaya, 2020; Telli and Altun, 2020; Bozkurt, 2020). In addition, it is necessary to critically evaluate the events and develop policies to learn from the Covid-19 pandemic (Bozkurt, 2020; Eren, 2020).

According to Zhao and Watterson (2021), post-covid education should be based on strengths of the learners and be personalised. Assisted by advantages of digital learning, learners should be aided to gain autonomy, and have a say on their own learning. Schools should keep up with distance education to a degree to provide learners who want to engage in extra learning opportunities.

According to Caphapay (2020), developed countries had established blended learning where face-to-face education is supported by digital learning before COVID. The benefits of such methods became more apparent with COVID outbreak, and it is expected that blended learning models gain popularity as a remainder of distance education.

3.5 Studies on the Relation of COVID-19 Pandemic and Distance Education

Academic studies on distance education, which came to the forefront in the literature, especially during the Covid-19 pandemic, gained momentum. Studies in the national and international literature in the field of distance education are discussed under this title.

Instructors' views regarding distance education during the Covid-19 period were evaluated in the study conducted by Sayan (2020). The current situation analysis was made, and faculty members were requested to answer several questions regarding how they conduct distance education and what kind of experiences they faced in distance education. Participants were 124 University level educators. There were 75 females and 49 males, with an average age of 46,83 – with oldest being 68 and youngest being 24. Average computer usage experience in

years was 18,97 with minimum years being 10 and maximum years being 30. The participants overall agreed that different fields had different successes with distance education. Most were using computer and mobile phones both. Most agreed that the devices greatly enhanced education they delivered. Most (62%) were in favour of synchronous distance education. Overwhelmingly (92%), they agreed that different communication software (like Zoom, Google Meet etc) had different success rates. Most (83%) expressed dislike for online education. Half of the participants reported: a) distress while delivering the lessons, b) failure on motivating the learners properly, c) facing issues on communicating with the learners, d) issues regarding interactive functions like group working or learner presentations. A majority (78%) shared that they saw online education as inferior to face-to-face education. A smaller majority (59%) expressed that they didn't trust assessment and evaluation made during distance education. A great majority (92%) wished for a return to face-to-face education.

75 Science teachers' views regarding distance education during the Covid-19 pandemic were evaluated in the study conducted by Bakioğlu and Çevik (2020). The methods they used, the problems they experienced, their technological contributions, their professional satisfaction, the concerns and more was investigated. Most crucial issues reported were software/hardware problems, issues caused by faulty internet connection, difficulties stemming from lack of knowledge and skill required to successfully employ computer programs. Some also reported lack of motivation and distress during distance education.

In the study conducted by Alea, Fabrea, Roldan, and Farooqi (2020), teachers' awareness, difficulties, and distance education experiences were evaluated at the beginning of the Covid-19 pandemic process. Participants were 2300 teachers. As a result of the study, it was determined that the teachers were ready for the transition to distance education, but they had difficulties due to the inadequacies of equipment, facilities, and capacity increment for distance education. In the same study, it was determined that there was a positive relationship between the duration of the teaching experience, specialization in the field, and readiness for distance education, and a positive relationship between the geographical location of the teachers and their readiness for distance education. As a result of the study, it was seen that educational institutions are mentally ready to adapt to innovative methods in knowledge transfer with the support of teachers.

In their study, Hebebci, Bertiz, and Alan (2020) examined the views of 16 teachers and 20 students on distance education applications during the COVID-19 pandemic. Data was gathered by structured interviews and analysed by content analysis method, revealing themes,

sub themes and codes. As a result of the study, both participant groups -teachers and students- had positive and negative perceptions both regarding distance education, but negative responses were more pronounced. It has been reported that programs and courses designed with different models in distance education have become widespread rapidly. Therefore teachers, students, and educational institutions should be prepared for these educational environments. It was emphasized that the necessary infrastructure support should be provided for teachers and students to adapt to distance education, carry out education, and solve technical problems in this process. Some positive opinions included efficiency, diverse digital resources, comfort, and a "better than nothing" stance – as without the chance to gather for face-to-face education, the only other possible outcome was distance education according to the participants.

In the study conducted by Gordy and his friends (2021), how high school science teachers who received training in advanced education technology during the Covid-19 pandemic perceived distance education and the problems encountered in this process were evaluated. The study was carried out using qualitative method with 11 science teachers. As a result of the study, it was observed that the teachers who received advanced technology education conducted distance education with higher self-confidence compared to those who did not, it was determined that it was more difficult to continue their educational activities, and the workload increased in the distance education process. It was seen that although the workload of teachers increased, they had the opportunity to improve themselves and learn new teaching techniques in the same study.

In the study conducted by Krasnova and Polushkina (2021), the main factors affecting the development and spread of distance education in addition to the short-term and long-term results of switching to distance education in educational institutions were evaluated. As a result of the study conducted with the literature analysis, it has been determined that the form and content of education will change in the long term, and digital competencies cannot be accessed with traditional methods according to today's conditions. Therefore, it has become a necessity to create innovative education models. In the study, it was foresighted that in the future education will be individual rather than group activity, and time or place constraints will disappear. Therefore, distance education would be the focus of education.

Alqahtani and Rajkhan (2020) aim to prioritize, classify and identify critical requirements for the distance education systems of the COVID-19 pandemic in their study. 69 distance education administrators participated in the qualitative study. As a result of the study,

it was determined that according to the administrators the most important factors that negatively/positively affected the success of distance education during the Covid-19 epidemic process are information management, technological infrastructure, management support, increasing student awareness about the use of distance education systems, and meeting the content that teachers need. The blended education model is shown as the most influential model affecting the academic success of students.

The study conducted by Lassoued, Alhendawi, and Bashitialshaaer (2020), aimed to reveal the obstacles to success in the distance education model applied during the Covid-19 pandemic. Participants consisting of 300 students and 100 academicians took part in the research carried out with quantitative techniques. In the study, the obstacles in distance education are discussed as personal obstacles, technical obstacles, pedagogical obstacles, and organizational and financial obstacles. According to the opinions of academicians and students, the obstacles in distance education are the difficulty of explaining some subjects in distance education, the lack of motivation for learning, the accustomedness of the students to face-to-face education, the absence of classroom interaction, the fact that some of the academics are not convinced that distance education is applicable, and those who are convinced are ready to use this system.

In the study conducted by Sudarwo, Umasugi, Hafel, and Simabur (2020), students involved in distance education at Linnaeus University were discussed. In the study, student satisfaction in distance education application was examined. For this, the effect of course design, learning and interaction was evaluated. It has been emphasized that course design, learning, and interaction are critical factors in student satisfaction. As a result of the study, it was determined that interaction is challenging in the learning process in distance education, and students prefer teacher-student interaction. It was stated that all parts and materials of a course are essential, and this helps students in planning their studies. It has been reported that the need for teacher-student interaction decreases if the lesson is well structured. Therefore, it has been stated that course design affects student satisfaction. It has been determined that the effect of course design, teaching, and interaction is very effective in ensuring student satisfaction.

An evaluation of students who remained silent in distance education environments was conducted in Duran's (2020) study. Participants were 12 learners who experienced such issues during distance learning, data was gathered through interviews. As a result of the study, it was determined that there may be some reasons why students remain silent when they are online.

It has been stated that when they are online, students can be busy with activities such as thinking, conducting research on any subject, or reading and following the discussion board to share meaningfully. They also “absorb the silence” meaning more the silence stands, more the learners refrain from breaking it.

Teachers' views on the EBA application used in distance education during the Covid-19 pandemic were examined in the study conducted by Doğan and Koçak (2020). Participants were 20 teachers of different branches. 65% of the teachers who participated in the study stated that the participation of the students in distance education is very low, and the high participation rate is only 10%. A teacher who conducted research in a rural settlement on this subject stated that even 12th-grade students who are preparing for the exam due to the regional conditions have very low participation in distance education courses.

Erzen and Ceylan (2020) carried out a study with the students of the Faculty of Education who are educated with distance education. Participants were 13 learners between ages 20-24. Participating students in the study stated that if internet access could not be provided, they experienced stress in terms of attending classes and exams. In the same study, the participants stated that successful academics systematically give offline or online courses, provide feedback to students in a short time, and create qualified and original content. However, the participants stated that the sharing of unsuccessful academics is only the lecture notes, they cannot provide student communication, and they cause situations that make the homework difficult with the hard-to-understand expressions in the homework.

Kurnaz, Kaynar, Barışık, and Doğrukök (2020) evaluated the views of 418 teachers who were involved in distance education in different regions due to the COVID-19 outbreak in their study, in which qualitative and quantitative methods were used together. As a result of the study, 57% of the teachers thought that preparing for distance education lessons is time-consuming, while 55% stated that lesson planning is more effortless due to the flexible structure of distance education. In the same study, it was seen that 50% of the teachers had difficulty with distance education connections because they did not have internet infrastructure, 51% of them taught the courses on television faster than standard, and 44% of them saved time from distance education courses. 72% of the teachers think that the participation of the students in the discussions in the distance education environment is lower than in traditional education, and the students are motivated because they have faster access to the results of the exams made over the computer as another result of the study. In addition, it has been stated that there is no consensus among teachers that distance education creates opportunities for students to work.

Genç, Engin, and Yardım (2020) evaluated the views of postgraduate students on distance education in their studies. 14 learners participated in the research. Participating students in the study stated that always having registration and access to the courses, no physical preparation and no travel process for the lessons, the homework that is given by the instructors leading to the research, and the open communication of the instructors make distance education advantageous.

Başaran and others (2020) evaluated the effectiveness of distance education in the COVID-19 process in their study. 80 students, teachers, and parents participated in the study. In the results of the study, the students stated that distance education did not fail, it provided an advantage, and they did not miss the lessons. In addition, the students stated that they can follow the lessons in a comfortable environment in distance education, and they have the opportunity to reinforce what they have learned by watching them again whenever they want. Students stated that the disadvantages of distance education are receiving less feedback, limited interaction because of not actively participating in the lessons, not being as efficient as traditional education due to short course times, and getting bored due to the lack of socialization. In the study, the necessity of developing a distance education model was expressed, and it was emphasized that if this was provided, the benefit to be gained from distance education would be greater.

Ceviz, Tektaş, Basmacı, and Tektaş (2020) evaluated the distance education model in their research with 997 students studying at universities in Turkey. As a result of the study conducted by applying an online questionnaire to the participants, it was stated that the students were dissatisfied with the distance education model, especially regarding homework. As a result of the study, 22.7% of the students stated that they did not want to be given homework, 20.63% of the students did not want difficult assignments, and 17.01% of them reported that they wasted time with homework. 14.47% of the participant students emphasized that they had difficulties at home regarding the technical equipment required in distance education and that they had to do their homework mostly with their mobile phones. 10.33% of the students stated that they could not find a suitable environment for distance education at home, 7.76% of them had internet interruptions, and 7.1% of them stated that they did not have the internet at home.

In the study carried out by Özdoğan and Berkant (2020), an examination was made of 137 stakeholders' opinions about the distance education process, which was implemented in the field of education in Turkey during the Covid-19 pandemic, including the problems experienced and solution suggestions. As a result of the study, it has been reported that the

benefits of distance education are the realization of education without being tied to a certain time and place, the ability to watch the lessons again when desired, the ability to meet the educational needs in the environment created by the pandemic, the protection from the contagiousness of the pandemic, the integration and use of technology in daily life. In the same study, it was determined that the negative aspects of distance education are causing motivation loss, lack of measurement and evaluation, inequality of opportunity in education, inadequate internet connection, computer, tablet, inadequacy in interaction and communication, lack of socialization, technical infrastructure problems, and being unprepared for distance education. The solution suggestions of the distance education stakeholders were reported as providing measurement and evaluation, ensuring equal opportunity, participation in the lessons, reducing the lesson hours, and teaching the lessons with the students' own teachers.

Yurtbakan and Akyıldız (2020) discussed the views on distance education of classroom teachers, primary school students, and parents in the pandemic in their studies. Participants were 39 people in total with 13 being primary school students. Study was conducted through semi-structured interviews. As a result of the study, it was emphasized that the participants did not have any problems in the distance education process, but the face-to-face education model was more beneficial because the lessons were not taught in depth.

In their study, Demir and Özdaş (2020) discussed the lesson preparation of teachers, meeting with parents, and live lesson activities within the framework of distance education during the Covid-19 pandemic. Participants were 44 teachers and the data was gathered through open ended written questionnaire. Content analysis method was applied to gathered data. It has been observed that teachers do these educational activities by using various communication tools with the help of the EBA platform. They stated that there are problems such as lack of infrastructure and uncertainty in the distance education process, the deficiencies need to be eliminated to continue the activities, and it is a necessity to carry out studies for this.

Türker and Dündar (2020) discussed distance education during the pandemic in their study. Data was gathered through online forms according to qualitative methods and analysed by descriptive analysis. Participants were 60 high school teachers. They revealed that the most important factor in the functional use of the EBA platform that is used in distance education is internet-related problems. They emphasized that the best functional features of the EBA platform are the ability to conduct live lessons and lessons in the form of questions and answers with students.

In their study, Yahşi and Kırkıç (2020) investigated teacher attitudes towards distance education during the epidemic. Participants were 628 teachers. Data was gathered through a questionnaire. It was determined that there was no change in the attitudes on the limitations of distance education before and after the pandemic hit. The advantages of distance education and the attitudes differ according to the teacher variable. It has been observed that there is a change in the attitudes of teachers towards distance education according to the variable of education level. In the same study, it was determined that teachers' attitudes towards distance education decreased in parallel with the variables of working time at their school and time spent in the profession.

Demir and Kale (2020) examined the views of teachers on distance education in the study they carried out during the Covid-19 period, identified the advantageous and disadvantaged stakeholders in distance education, and revealed what should be done to improve distance education. Participants were 44 teachers and the data was gathered through structed interviews, which were later subjected to content analysis. As a result of the study, it was seen that most of the teachers found themselves sufficient in distance education, and some of them improved themselves while the process was going on. They identified the most common problems experienced by students in the distance education process as the lack of internet and technical equipment experienced. The difficulties experienced by students with special needs and younger students are lack of socialization and low motivation.

Kızıltaş and Çetinkaya Özdemir (2021) discussed the opinions of classroom teachers in the distance education process in the study they conducted during the COVID-19 lockdown process. Participants were 38 teachers. Data was collected through a structed interview form and analysed with content analysis method. As a result of the research, it has been determined that there is no active participation in the lessons in distance education, not enough support from the parents, inexperience, lack of internet access of the students, and device problems. Due to young age of their learners, they expected much support from the parents, but parents failed to support their children’s education properly. However, being able to repeat courses in distance education has been reported as an important advantage.

In the qualitative study conducted by Taş (2021), the distance education process implemented in the Covid-19 period was evaluated according to the opinions of students, teachers, and parents, and solution suggestions were developed. Participants were 30 primary school teachers, 26 parents and 26 primary school learners. Data was gathered through semi-structured interview forms, that are conducted through online video communication tools like

WhatsApp, Skype and Zoom. Data was analysed by content analysis. As a result of the study, it was determined that the distance education applied in the Covid-19 process was not found useful by a significant part of the participants. Participants expressed revealing the importance and value of teachers and the teaching profession, enabling the active use of technology, and slowing the spread and transmission rate of the Covid-19 pandemic as positive aspects of distance education application. But they stated that it reduces the interaction, communication, and cooperation of teachers, students, and parents, and the opportunity to learn by living and doing the risk of technology addiction increases, it prevents socialization, and there are access problems in lessons.

In the study conducted by Kurt, Kandemir, and Çelik (2021) with primary school teachers working in Balıkesir and Samsun provinces, primary school teachers' views on distance education were evaluated. Participants were 35 classroom teachers and the data was gathered through interview forms, which was investigated with content analysis method. As a result of the study, EBA, which is associated with distance education in teachers, has been determined as education outside of school, teacher and family cooperation, effective teaching from the internet, obtainable and continuous education. Problems arising from students, families, and technology have been observed in the distance education process. Participating teachers, on the other hand, stated that they did not know the method they would use in the evaluation process.

In their study, Çilek, Uçan, and Ermiş (2021) investigated the efficiency of education by evaluating distance education during the Covid-19 period. Participants were 50 teachers working in three different schools in Istanbul. A semi-structured interview form was utilized as data gathering tool, and the data gathered was subjected to content analysis method. As a result of the study, it was seen that the teachers stated the positive aspects of distance education, such as being independent of space and time, watching the repetition of the lessons, improving technical skills, and protecting from Covid-19 disease. Teachers stated that the disadvantages of distance education are motivation loss, lack of internet and computers, lack of socialization, parental interventions, and technical problems.

In the study conducted by Özçelik (2022) with 15 primary school teachers and using a semi-structured interview technique, the problems, opinions, and solution suggestions of classroom teachers during the pandemic period were evaluated. As a result of the study, it was determined that the participant primary school teachers did not have knowledge about distance education before Covid-19. It has been determined that distance education is functional in

education in this process, but there are important deficiencies in the measurement, evaluation, and functioning stages. It has been observed that students experience internet access problems in distance education, the problem of owning technological devices such as computers and tablets, problems arising from the inexperience of students and parents, and the inability to attend classes at a sufficient level. In the same study, it was determined that the students who regularly follow the courses benefit from distance education. It has been reported that the participant teachers offered solutions regarding the need to inform the distance education stakeholders, inform the teachers about distance education, provide internet access, and device support in order to ensure equal opportunity in education.

4 Methodology

4.1 Participants

The qualitative chapter of the study, the structured interview, had 30 participants. 3 participants from Marmara, 4 from Black Sea, 2 from Aegean, 10 from Mediterranean, 3 from Central Anatolia, 3 from Eastern Anatolia and 5 from Southeastern Anatolian regions. 19 of the participants were females and 11 were males. There were 13 participants in both 20-30 age group and 31-40 age group and 40+ age group had 4 participants. Of these 30 participants, 7 had 1-3 years of experience, 8 had 4-6 years of experience, 4 had 7-10 years of experience and 11 had 10+ years of experience. 13 of them were working in primary schools, 10 of them were working in secondary schools and 7 were working in high schools.

The participants of the questionnaire – the quantitative aspect of the study - were 150 anonymous teachers from different geographical regions of Turkey gathered through snowball sampling. Four of them had left some demographical information blank, leading us to dropping them from the participant pool. Remaining participant total was 146, with 42 males and 104 females, and 78 participants aged 20-30, 51 participants aged 31-40 and 17 participants aged 40+. As aforementioned, all participants had to be working during COVID lockdown period of mass-utilization of synchronous online education and post-COVID face-to-face education periods both to join the research. It should also be noted that teachers' fields were not surveyed.

Starting with experience in years, below are different demographic information gathered from qualitative part of the study -the questionnaire-, shown in the table below.

Table 2. *Experience*

Teaching Experience of Participants, in Years

	Years	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-3	35	24.0	24.0	24.0
	4-6	50	34.2	34.2	58.2
	7-10	30	20.5	20.5	78.8
	10+	31	21.2	21.2	100.0
	Total	146	100.0	100.0	

Next demographic data is the school level participants are working at.

Table 3. *School Level*

School Levels the Participants Work At

School Level	Frequency	Percent	Valid Percent	Cumulative Percent
Primary School	51	34.9	34.9	34.9
Secondary School	70	47.9	47.9	82.9
High School	25	17.1	17.1	100.0
Total	146	100.0	100.0	

The last demographic data to share -and perhaps the most valuable one- is which geographical area of Turkey the participants work at.

Table 4. *Regions*

Geographical Regions of Turkey and Participant Distribution

Region	Frequency	Percent	Valid Percent	Cumulative Percent
Marmara	18	12.3	12.3	12.3
Aegean	8	5.5	5.5	17.8
Mediterranean	31	21.2	21.2	39.0
Black Sea	27	18.5	18.5	57.5
Central Anatolia	5	3.4	3.4	61.0
Eastern Anatolia	11	7.5	7.5	68.5
Southeastern Anatolia	46	31.5	31.5	100.0
Total	146	100.0	100.0	

Note. The potential limitations of the study stemming from the low participant areas will be mentioned throughout the text.

4.2 Instruments

The first instrument was a questionnaire. Questionnaire tool was designed originally by the researcher, and was approved by three experts of the field. It involved 29 questions in total, including questions aimed to gather personal information of age, teaching experience in years, gender, school level and the geographical region the participant was working at.

The questionnaire's 29 questions, including demographic questions, were split into 4 parts. Part 1 – Demographics (5 questions), Part 2 – Technology (4 questions), Part 3 – Attendance and Attitudes (8 questions) and finally Part 4 – Effects of Online Education (12 questions). Part 1 was designed with multiple-choice questions, and parts 2,3 and 5 were made to use 5-point Likert scales.

Part 1 – Demographics, as the name clearly shows, gathered demographic data.

Part 2 – Technology investigated whether the participants had technological issues regarding online education period. The data from this part will help answering the research questions 1 and 2, and will be investigated to show whether technological availability has any affect on contentness of the participants regarding online education, and also whether technological availability changes anything regarding effects of the online education period.

Part 3 – Attendance and Attitudes investigated how well the students joined and followed the online lessons, plus whether teachers and students were happy with the online education period or not. Data gathered here is again valuable for 1st and 2nd research questions.

Part 4 – Effects of Online Education is, perhaps, the most crucial part of the study. It will gather data regarding teachers views on what lingering effects a year of online education period had left on the students, what difficulties it raised on the current period (if any) and whether benefited from the online education period or not. Data gathered here will answer the third research question and will be compared with demographics, plus technology related data.

The second instrument was the structured interview form was an original design of the researcher just like the questionnaire and was approved by three experts of the field. It had six points (parentheses show the reasoning behind adding those questions to the interview.):

1- How was your technological availability during distance education? Were you able to utilize these opportunities? Did you experience problems related to technology? (Here teachers' technological issues are investigated to illuminate answers of RQ1 and RQ2)
2- How was your students' technological availability during distance education? Were they able to utilize these opportunities? Did they experience problems related to technology? (Here learners' technological issues are investigated to illuminate answers of RQ1, RQ2 and possibly RQ3)
3- During distance education, what kind of problems were experienced except technological ones? Did learners express satisfaction or dissatisfaction with distance education? (Answers here are important for RQ3 as dissatisfactions of teachers and learnes during distance education are expected to leave effects onto post-distance period, and sources of their dissatisfactions can be useful for while answering RQ1 and RQ2)
4- Are you satisfied with how distance education turned out? Do you think it succeeded its aims? (This question is important for RQ1 and RQ2, especially

detailed answers are expected to illuminate the issues teachers experienced, or if they are satisfied what factors led to satisfaction are expected to be found.)

5- Have you experienced different problems during the post-pandemic 2021-2022 period? Were there any problems related to learners' approach to school, their academic success, their behaviour or any other points like these that you think stemming from distance education period? What problems occurred? (This question is designed to find answers for RQ3, investigating residual problems of distance education.)
6- If you want to add anything that is related to the topic, please add. (Here any extra information regarding distance education and its aftermath is collected.)

4.3 Procedure

The study aimed to gather a wide array of participants, in order to portray the situation in Turkey accurately and to see if there were differences regarding region, gender, age, experience and school level. Therefore, it was decided to conduct an online questionnaire to gather data for quantitative research. After quantitative part was done, it was decided to supply the findings with smaller qualitative research using a six-question written structured interview form. As a combination of quantitative and qualitative methods, this work is considered a multi-method research.

First part of the research, the Likert-scale questionnaire, was created by the researcher as original design, validated by three experts in the field, and conducted through Google Forms for ease of application. After participant pool reached 150-mark through snowball sampling, data was drawn from Google Forms and analysed through SPSS. Each question/statement of the questionnaire was applied One-Way ANOVA test, which is to designed to analyse inter-group differences of at least 3 groups. Since each demographic data we gathered except gender had more than 3 groupings, (for example there are seven regions, three age groups, four experience groups and three school levels) ANOVA was the suitable testing method. For gender, Independent Samples T-Test was conducted. There were no significant differences regarding gender detected in entire questionnaire.

Analysis procedure involved investigating the results with SPSS for Windows. Primary analysis regarding soundness of the questionnaire started with reliability analysis which revealed that the entire questionnaire as a whole had a Cronbach's Alpha score of 0.9, showing very high reliability. When investigated on a section per section basis, excepting demographics, the three Likert scale parts show 0.71, 0.87 and 0.84 Cronbach's Alpha scores respectively. The questionnaire also had a Kaiser-Meyer-Olkin (KMO) test of .86, pointing to high reliance. (Kaiser,1974).

In order to check normality of the data, which was a requirement for further testing, Skewness and Kurtosis values were investigated. Skewness value was 0.203 and Kurtosis value was 0.404. Both of these values are within the expected ranges of -1/+1 and +2/-2, respectively (George & Mallery (2012); Hair, Black, Babin & Anderson (2013)).

Afterwards, each question of the questionnaire was subjected to ANOVA or T-Tests Upon ANOVA detecting a significant difference, Eta-Squared scores that show size of the difference were calculated. Eta-Squared score was preferred sample size deduction method because of its ease of use and high popularity in the social sciences. Afterwards, in order to find which groups were the differing ones, Post-Hoc tests of were applied. From potential Post-

Hoc methods, Bonferroni was selected. This is due to several factors. Tukey's test, due to different groups potentially having wildly differing participant numbers (for example there are 70 middle school teachers but only 25 primary school teachers), was not trustworthy enough. Tukey's test is told to be better for approximately equivalent sample sizes. LSD- Least Significant Difference method was prone to Type-1 Errors of accidental significance reports and was told to be not suitable with many differing groups and this was not suitable especially for analysing the seven regions. Therefore, tests were applied using Bonferroni method which includes an error correction procedure and is resistant against differing group sizes (NIST/SEMATECH e-Handbook of Statistical Methods, 2002). Afterwards, results were interpreted.

Then it was decided to amplify the results with further research, and a small-scale qualitative structured interview form was prepared by the researcher, validated by three experts of the field, and sent to certain teachers that had joined the previous research. These teachers were asked to share the interview form with same people who they had shared the previous questionnaire. Upon reaching the target of 30 participants that span all regions, ages, experience groups and school levels, Content Analysis was conducted and the results interpreted. In order to interpret the interview forms, MAXQDA software was used and answers were coded in 24 codes in four groups – comments on during-distance period, comments on post distance period, learner related issues of distance education and teacher related issues of distance education.

After descriptive analysis, these 24 codes were turned into yes/no questions (e.g., "Did participant face software issues?" or "Did participant express satisfaction with distance education?") and their descriptive answers transformed into Boolean (True/False – or yes and no) format to be coded into SPSS along with demographics. SPSS then provided crosstabulations regarding regions, gender, age, experience and school level and also allowed us to single-count the answers (If a participant mentioned the same problem in two different situations both of them are coded in MAXQDA, but in SPSS a participant can only have or not have the issue/opinion, therefore allowing us to analyse how many participants suffered an issue or had an opinion.) The SPSS analysis of the qualitative interview results was done to gather insight on the situation and won't be reported as quantitative data.

5. Results

During the results, interview and questionnaire results will be given in an interwoven form depending on topics they encompass. In order to answer some of the sub questions regarding region, age, gender, experience and school level; crosstabulations from the questionnaire will be utilized. Crosstabulations will be provided whenever ANOVA tests detected between-groups differences. In the crosstabulations regarding regions of Turkey, names of the regions will be shortened as Ma for Marmara, A for Aegean, Me for Mediterranean, B for Black Sea, CA for Central Anatolian, EA for Eastern Anatolian and finally SA for Southeastern Anatolian. No tables for T-Tests on Gender factor will be provided, since no significant differences were detected.

Another important detail must be mentioned: During delivery of the results, when interview excerpts are quoted, entire demographic information belonging to the participant will be reported in coded form. Code is formulated as follows: Region & Number, Age/Experience, Gender/School Level. Below is an example:

"(B1, 38/16, F/S)"

Code here means that participant was from Black Sea (B) region, first participant from that area (1). She was 38 years old and had 16 years of experience (38/16). She was Female and was working in a Secondary school (F/S).

The word "code" has also another meaning during the interview reporting. After content analysis, 24 "codes" which are topics teachers talked about were detected. They are split into four groups as follows 1- learner problems, 2-teacher problems, 3-distance education problems, and 4-effects of distance education. If a topic related to the issue at hand is present while answering the research questions, codes will be stated as "3/2" for example. This means second topic of third group (distance education problems).

While related results are listed, on what exact point the result delves onto is noted down in parentheses. For example; below RQ1 is answered. While answering its first part A, in finding A.1, the relevant result of QK7 is shown. which dealt with how close distance education was to face-to-face education, therefore noted down as "(Distance Education Compared to Face-to-Face Education)".

5.1 RQ1- In retrospective, are teachers content with how the online education period turned out?

Answers related to RQ1 will be analysed in two parts – A) the comparison of distance education to face-to-face education (which was meant to display how good or bad distance education was against face-to-face education) and B) general dissatisfaction regarding distance education (which notes down the results that display satisfaction or dissatisfaction).

A) Comparing Distance Education to Face-To-Face Education

Below, results related to teachers' preference of face-to-face education over distance education will be stated. A.1 and A.2 are the findings which are related with part A.

A.1- Questionnaire statement QK7 (Distance Education Compared to Face-to-Face Education)

Table 5. *QK7*

QK7-Online education provided enough or close-enough benefit when compared with face-to-face education.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	53	36.3	36.3	36.3
	Disagree	55	37.7	37.7	74.0
	Neutral	29	19.9	19.9	93.8
	Agree	6	4.1	4.1	97.9
	Strongly Agree	3	2.1	2.1	100.0
	Total	146	100.0	100.0	

This statement has a mean of 1.9, pointing that teachers clearly don't agree that online education provided enough benefit. ANOVA tests have not noticed any differences between groups. Teachers, overall, agree that online education wasn't enough.

A.2 - Interview Code 3/8 (Distance Education Compared to Face-to-Face Education)

Teachers expressed that face-to-face education was superior to distance 17 times in the interviews. Some had strong opinions on this topic.

- "There should be no education from distance. It should be face-to-face, eye-to-eye." (B1, 38/16, F/S)

- "I think distance education causes learning to decrease, education should be conducted face-to-face always with increased precautions." (B2, 48/23, M/S)

- "It (distance education) cannot be compared to effectiveness of face-to-face education." (Ma3, 35/11, F/P)

- "Face-to-face education should continue non-stop because our learners don't have to consciousness level to gain anything from the distance education." (CA3, 41/16, M/H)

Some others were more accepting.

- "I don't think it is as good as face-to-face education, but I have reached a success rate of 70%." (B4, 29/5, F/P)

- "It cannot take place of face-to-face education, but can remain as a complementary. (SA4, 26/2, M/H)

Overall, there are numerous complaints regarding distance education in its mass application, as it is compared to face-to-face education. These data from the interviews, combined with statement QK7 of the questionnaire, shows that teachers are heavily in favour of face-to-face education.

B) General Dissatisfaction Against Distance Education

Below, answers related to general dissatisfaction regarding distance education will be given. B1, B2 & B3 are results related with part B.

B.1- Questionnaire statement QE11 (Success of Distance Education)

Table 6. *QE11*

QE11-As a teacher, I am satisfied with the online education.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	30	20.5	20.5	20.5
	Disagree	43	29.5	29.5	50.0
	Neutral	43	29.5	29.5	79.5
	Agree	16	11.0	11.0	90.4
	Strongly Agree	14	9.6	9.6	100.0
	Total	146	100.0	100.0	

Mean score is 2.5, showing teachers' dissatisfaction with online education process. This of course may have a myriad of reasons, which will be investigated during the answering of RQ2. A regional difference of Eta-Squared 0.10 magnitude (medium) was observed by ANOVA tests, this will be mentioned during analysis of results for RQ1a – Regions.

B.2- Questionnaire statement QE5 (Success of Distance Education – Post-Pandemic)

Table 7. *QE5*

QE5- Seeing the aftermath of the online education period, I think the process was successful.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	33	22.6	22.6	22.6
	Disagree	53	36.3	36.3	58.9
	Neutral	41	28.1	28.1	87.0
	Agree	17	11.6	11.6	98.6
	Strongly Agree	2	1.4	1.4	100.0
	Total	146	100.0	100.0	

The mean score for the statement is 2.3, showing that teachers don't think that online education was a success. Perhaps it was for preventing the disease's spread, but as an education tool, it did not have the desired outcome – or at least teachers think this way. ANOVA tests have detected an intergroup difference of 0.09 (medium) size, this difference will be mentioned in RQ1a.

B.3 – Interview Code 3/1 (Teacher Satisfaction)

In the interviews, there were 33 instances of display of general dissatisfaction regarding distance education and 9 instances of satisfaction. The 33 instances of dissatisfaction display are made by 22 participants. Four of the participants who displayed satisfaction expressed that their opinion was under conditions of pandemic.

- “Yes, (as an answer to “are you satisfied with distance education”) according to that pandemic situation we were in.” (Me10, 34/10, F/P)

- “Yes, because we had to. But I definitely don’t think that it is useful especially for Primary schools.” (Me8, 32/10, F/P)

- “It was hard and tiring but after we got accustomed to the situation, we managed to achieve our aims.” (Ma2, 29/5, F/S)

Other participants had stronger opinions, who were outright dissatisfied.

- “I am not satisfied; it was not efficient and we didn’t reach our aims.” (EA1, 26/2, F/S)

- “I am not satisfied; I wouldn’t wish to return to that ever. I couldn’t reach any of my aims.” (Me6, 28/6, F/P)

- “No, education is not working in distance. I partially reached my aims, but the parents just didn’t aid the learning of the students properly.” (CA2, 38/12, F/P) [This particular instance is also counted as a home environment issue (will be mentioned later) due to parents’ lack of aid to the children which was expected of them by many teachers especially during the distance education.]

- “I am satisfied of classroom management of distance education, but in conducting lessons, timing and feedback aspects I am not satisfied. Overall, I think it didn’t reach its aims. I saw that aims were not reached when we started face-to-face education.” (SA1, 26/2, F/H)

According to the results above, teachers are dissatisfied of distance education.

5.1.1 RQ1a - Is there a difference among regions of Turkey regarding how content the teachers are with the online education period?

Of the two topics showing general dissatisfaction, B) General Dissatisfaction showed a dependence on region in the questionnaires according to the ANOVA tests conducted. Also, a general trend towards being more vocal and criticizing towards distance education was noticeable in the interviews.

B) General Dissatisfaction Against Distance Education – Regional Differences

Below, the detected significantly different answers based on regions are explained in detail. Also, some interview excepts are given as examples that show how eastern regions disliked distance education more. B1, B2 & B3 are the findings related to the topic at hand.

B.1 - Questionnaire statement QE11 (Teacher Satisfaction Regarding Distance Education) – Regions Crosstabulation

Table 8. *QE11*Regions*

*QE11 * Regions of Turkey Crosstabulation*
Count

		Regions of Turkey							
		Ma	A	Me	B	CA	EA	SA	Total
QE11	Strongly Disagree	0	1	7	7	1	6	8	30
	Disagree	5	4	8	6	1	3	16	43
	Neutral	6	1	6	10	2	2	16	43
	Agree	4	1	4	2	0	0	5	16
	Strongly Agree	3	1	6	2	1	0	1	14
Total		18	8	31	27	5	11	46	146

Marmara and Eastern Anatolia was reported as conflicting, probably because of lack of agreeing answers from Eastern Anatolia while Marmara is much more positive when compared to EA. Marmara and Eastern Anatolia had mean scores of 3.2 and 1.6 respectively. The size of the difference was reported as 0.10 (medium) eta-squared by ANOVA tests and 0.000 (as p-value) from T-Tests. This may once again signal that Marmara region had a better experience with online education, and are more satisfied.

B.2 - Questionnaire statement QE5 (General Success of Distance Education) – Regions Crosstabulation

Table 9. *QE5*Regions*

*QE5 * Regions of Turkey Crosstabulation*
Count

		Regions of Turkey							
		Ma	A	Me	B	CA	EA	SA	Total
QE5	Strongly Disagree	1	2	6	5	3	7	9	33
	Disagree	7	3	10	11	0	2	20	53
	Neutral	6	2	7	8	1	2	15	41
	Agree	3	1	8	2	1	0	2	17
	Strongly Agree	1	0	0	1	0	0	0	2
Total		18	8	31	27	5	11	46	146

Note: QE5- Seeing the aftermath of the online education period, I think the process was successful.

The differing groups are identified as Marmara and Mediterranean versus Eastern Anatolian. Marmara's mean is 3.8 Mediterranean's mean is 2.5 and Eastern Anatolia's is 1.1. The difference clearly stemmed from extreme negativity observed in Eastern Anatolia, but it is not largely meaningful due to lack of participants. Still, Marmara is observed to have the best opinion on success of online education. Marmara, overall, has the best and most optimistic answers regarding online education. The difference size reported as eta-squared 0.09 – medium. The difference between Marmara and Eastern Anatolia, the best and worst means present at this statement, are detected as 0.02 (p-value) by T-Tests.

B.3 - Interview Excerpts (General)

While all regions had complaints, Eastern regions usually were more vocal in their complaints. Marmara and Aegean teachers, while still criticizing distance education, also provided the mildest opinions.

For example, the aforementioned comments of participants Ma2 and EA1:

- "It was hard and tiring but after we got accustomed to the situation, we managed to achieve our aims." (Ma2, 29/5, F/S) (This participant later stated "[several problems] caused distance education to not be enough")

- "I am not satisfied; it was not efficient and we didn't reach our aims." (EA1, 26/2, F/S)

And some more examples:

- "No, (as an answer to "Are you satisfied with distance education?") it was a very difficult time. (SA2, 27/5, F/H)

- "I was satisfied. Of course, it can never be an equal to the face-to-face education, but since the situation demanded it, we achieved our aims as well as we could." (A1, 37/12, F/P)

As the examples above show, teachers working in eastern regions are less satisfied when compared to western regions. This does not mean that teachers in the west are satisfied, but there is a clear difference among them. When combined with statistical information from QE5 and QE11 above, the answer to RQ1a is clear: Yes, there are significant difference among regions of Turkey regarding how content the teachers are.

5.1.2 RQ1b - Is there a difference among age of participants regarding how content they are with the online education period?

No such significant difference was reported by ANOVA tests conducted on the questionnaire data. The interviews also do not have such a difference clearly apparent, but in statistical terms most of the participants who reported clear dissatisfaction are of 30+ age. This is not very meaningful, due to the 30+ group being the larger than 20-30 age population. Therefore, in short, it could be said that age of the participant does not seem to have an effect on how content the participant is.

5.1.3 RQ1c - Is there a difference among teaching experience (in years) regarding how content the teachers are with the online education period?

No such significant difference was reported by ANOVA tests conducted on the questionnaire data. The interviews also do not have such a difference that is noticeable. Overall, teaching experience of the teacher does not seem to have any effect on how content the teacher is regarding distance education.

5.1.4 RQ1d - Is there a difference between genders of participants regarding how content the teachers are with the online education period?

No such significant difference was reported by ANOVA tests of the questionnaire, nor a difference based on gender factor was noticeable among the interviews. Actually, nowhere in this study such a difference was noticed. Overall, gender does not seem to make a difference on how content the participant is regarding distance education.

5.1.5 RQ1e - Is there a difference among school levels the participants work at regarding how content the teachers are with the online education period?

No such significant difference of "teacher satisfaction" based on school level was detected in the questionnaire. The interviews also do not show a difference among school levels regarding satisfaction. Therefore, school level participant is working in does not seem to be a factor for how satisfied they are regarding distance education.

5.2 RQ2 - In retrospective look, what kind of problems were experienced with online education in the lockdown year?

A somewhat lengthy list of issues can be found in the questionnaire results and the interviews. The problems teachers complained of regarding distance education are:

A) Technological issues
B) Learner Dissatisfaction
C) Home Environment and Isolation
D) Issues Related to Digital Environment
E) Lack of Attendance or Attention
F) Assessment and Evaluation Issues
G) Lack of Academic Success
H) Ease of Application

The results which point out to the issues above will be listed below.

A) Technological Issues

Here, the topics related to technological factors will be mentioned. These are A1) Teachers' Technological Sufficiency, A2) Learners' Issues Regarding Technology.

A1 - Teacher's Technological Sufficiency

Results related to teachers' reports on their technological availability will be mentioned here. These are valuable in terms of removing teachers' technological limitations as a factor for distance education dissatisfaction.

A1.1 - Questionnaire statement QT1 (Teachers' Technological Issues)

Table 10. *QT1*

QT1 – I had the technological availability (smartphone, computer, internet etc.) to conduct the online education, as a teacher.

	Opinion	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	1.4	1.4	1.4
	Disagree	4	2.7	2.8	4.1
	Neutral	16	11.0	11.0	15.2
	Agree	28	19.2	19.3	34.5
	Strongly Agree	95	65.1	65.5	100.0
Total		146	100.0		

Combined together, only 6 teachers disagree having proper technological possibilities to conduct online education. The overwhelming majority of 123 teachers point out the availability of technological equipment. The statement had a mean score of 4.4. ANOVA tests have not detected any significantly different intergroup means. Therefore, technology was not an issue for teachers on their part. This information is important to remove teachers' technological suitability as a factor for distance education dissatisfaction. It should also be noted that there was another statement, QT3, which dealt with how skilled the teachers are to utilize the technological equipment they had. With a mean of 4.2, QT3 showed that teachers were confident in their skills of technology. Overall, technology was not a problem on teachers' part.

A1.2 - Interview Excerpts – Code 1/1 (Teachers' Technological Issues)

Of 30 participants to the interview, 22 had reflected no issues directly related to technological equipment.

- "I had enough technological possibilities to conduct distance education" (SA5,25/2, M/H)

But there were 10 instances of problems related to internet connections, 5 instances of problems related to technological equipment like computers or smartphones failing to work properly and one instance of software issues complaining on complexity of software.

- “During the distance education, I had problems with programs like Zoom which were utilised very frequently” (Ma2, 29/5, F/S)

The teachers who complained about equipment suffered from slow computers or lack of a computer outright. They had to conduct lessons over tablets and phones.

- “Since my spouse is a teacher as well and our lesson hours matched, we had to shift places between computer and smartphone in turns. Without computer some problems arose.” (Ma3, 35/11, F/P)

Overall, teachers had enough proper technological availability but slow internet connection is occasionally mentioned as an obstacle, plus computers are described as better alternatives to phones for teachers to conduct distance education.

When interview and questionnaire data are combined, it can be said that technology is not a problem for teachers in general sense.

A2 - Learners’ Issues Regarding Technology

Here we will talk about issues the learners faced that were related with technology.

A2.1 - Questionnaire statement QT2 (Learners’ Technological Issues)

Table 11. *QT2*

QT2- My learners had the technological availability (smartphone, computer, internet etc.) to conduct online education.

	Opinion	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	46	31.5	31.5	31.5
	Disagree	44	30.1	30.1	61.6
	Neutral	37	25.3	25.3	87.0
	Agree	9	6.2	6.2	93.2
	Strongly Agree	10	6.8	6.8	100.0
	Total	146	100.0	100.0	

The overwhelming majority of 90 teachers disagreed that learners had sufficient tools to conduct online education, while only 19 of participants agreed that such resources were available to learners. The “neutral” 37 can be interpreted as partially problematic situations. Mean score for this question was 2.3, showing that teachers, overall, don’t think that their learners had enough access to technology to conduct proper online learning. ANOVA analysis focusing on regions of Turkey has shown that there was a significant difference between groups of eta-squared score of 0.14, which corresponds to a large sized difference which will be mentioned later.

A2.2 - Questionnaire statement QT4 (Technological Skills of Learners)

Table 12. *QT4*

QT4- My learners (and their parents) had enough skills and knowledge to properly utilize technological availabilities they had

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	36	24.7	24.7	24.7
	Disagree	55	37.7	37.7	62.3
	Neutral	36	24.7	24.7	87.0
	Agree	14	9.6	9.6	96.6
	Strongly Agree	5	3.4	3.4	100.0
	Total	146	100.0	100.0	

The question had a mean score of 2.2, showing that the teachers don't trust their learners and/or their parents to use the technology properly. This might have raised many issues like learners failing to join the online lessons, follow them properly, solve the technological issues, watch recorded lessons or complete homework, with many more possible examples. Therefore, just presence of these technological equipment may not be enough to ensure a smooth distance education procedure. Learners and parents may need basic training to utilize them. ANOVA tests regarding regions, school level and teaching experience have reported that there were significant differences between groups. These each will be mentioned in their respectable sections.

A2.3 – Interview Code 2/1 (Learners' Technological Issues)

Out of 30 participants, only 5 teachers expressed that their learners had adequate equipment. Internet problems were mentioned 18 times and software was mentioned twice.

- "Most of my learners didn't have technological equipment." (Me8, 32/10, F/P)

- "I work in a village school. Our learners don't have that kind of availability. Even our school doesn't have the internet." (EA1, 26/2, F/S)

- "(Technological availability) was not good. Only some of the learners could attend to the lessons and I couldn't see equal opportunities." (SA2, 27/5, F/H)

- "Many of my learners did not have equipment to join the online lessons." (A2, 34/12, F/S)

Similar issues are present for almost all participants. Here is one of the participants who did not express equipment as a problem as much as the others:

- “Almost 70% of my learners had technological availability. … Occasional internet connection problems and issues with programs like Zoom sometimes caused problems.” (Ma2, 29/5, F/S)

Overall, most common point that was mentioned is lack of equipment, followed by lack of access to internet – or at least a good connection. Software does not seem to be an issue, largely.

Data above, when combined, show clearly that learners faced some problems with technology. This way A) Technological Issues topic gets concluded with two outcomes: teachers mostly had no problem with technology on their part but learners faced technological obstacles.

B) Learner Dissatisfaction

Here we will mention data which points to learner dissatisfaction, which itself may not be seen as a problem perhaps, but a signal towards other issues.

B.1 – Questionnaire statement QK6 (Learner Satisfaction)

Table 13. *QK6*

QK6- During the online education period learners expressed their contentness with the process.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	30	20.5	20.5	20.5
	Disagree	62	42.5	42.5	63.0
	Neutral	34	23.3	23.3	86.3
	Agree	15	10.3	10.3	96.6
	Strongly Agree	5	3.4	3.4	100.0
	Total	146	100.0	100.0	

This question had a mean score of 2.3, showing that learners were not particularly happy with online education. This score points out to problems surrounding online education, and can be a signal of low motivation during distance education. A single difference between groups was detected by teaching experience in years ANOVA test, of 0.05 (small) magnitude, which will be mentioned later.

B.2 – Questionnaire statement QE3 (Learner Dissatisfaction)

Table 14. *QE3*

QE3- Learners expressed dissatisfaction with the online education period, during the face-to-face education.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	5.5	5.5	5.5
	Disagree	10	6.8	6.8	12.3
	Neutral	31	21.2	21.2	33.6
	Agree	52	35.6	35.6	69.2
	Strongly Agree	45	30.8	30.8	100.0
	Total	146	100.0	100.0	

High number of agreeing answers show that perhaps learners are aware of the problems that were caused by the distance education period. Mean score of this question is 3.7, meaning that teachers overall agreed with the statement. Learners are not content with the results of online education. ANOVA tests reported intergroup differences regarding school levels of 0.04 (small) magnitude, which will be mentioned in its respectable section.

B.3 – Interview Code 3/2 (Learner Satisfaction)

There were 8 instances where teachers shared dissatisfactions that learners talked about, and 5 instances that learners shared satisfaction with their teachers that teachers reported. Let's start with some examples on learners who were content with distance education.

- "As learners get accustomed to the distance learning satisfaction rate increased" (Ma2, 29/5, F/S)

- "Those who had attended were satisfied." [This participant later stated that "I don't think distance education was successful because not all learners attended to the lessons."] (A2, 34/12, F/S)

- "Learners with high academic success talked about how they like there isn't much learners attending distance education, causing them an advantage in their eyes." (SA1, 26/2, F/H)

- "It was not easy to grab their attention from the screens, but those who attended to the lessons were happy – even if not as much as face-to-face education." (SA4, 26/2, M/H)

Some learners were less happy.

- "Learners mostly expressed complaints about it." (Me8, 32/10, F/P)

- “Some learners had problems understanding the topics.” (CA2, 38/12, F/P)

- “They usually complained that internet or devices causing issues.” (B4, 29/5, F/P)

- “Virtual communication is just not enough for them.” (Me1, 37/12, F/P)

- “Learners complained that they were not able to ask about topics they don’t understand again” (SA1, 26/2, F/H)

Overall, learners who willingly participated in the lessons showed some overall satisfactions, but especially for primary schools there were only complaints, most probably due to learners being too young to aid the distance education procedures through autonomy, or build internal motication. Of course, the learners who showed satisfaction were those who were already motivated to join.

When the data above are combined, it looks like learners overall did not like the distance education.

C) Home Environment and Isolation

Here we will discuss the issues that stem from home environment that which learners usually join to the distance education from, and isolation that can be detrimental to psychological and physiological health.

C.1 – Questionnaire statement QK4 (Home Environment)

Table 15. *QK4*

QK4- Joining the online education procedure was easy for learners. (Here we wish you to consider other factors except technology, like suitability of home environment, availability of learners during planned lesson times, approach of the parents towards the efforts etc.)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	43	29.5	29.5	29.5
	Disagree	55	37.7	37.7	67.1
	Neutral	31	21.2	21.2	88.4
	Agree	14	9.6	9.6	97.9
	Strongly Agree	3	2.1	2.1	100.0
	Total	146	100.0	100.0	

This question had a mean score of 2.1, showing that teachers think that learners were also having problems unrelated to technology during online education. Therefore, we can say that, by looking at the mean score to the statement, home environment issues were present. ANOVA tests followed by post-hoc tests on this question detected a between-groups significant difference between Marmara and Eastern Anatolia with the Eta-Squared score of 0.08 (medium), which will be mentioned again in its respectable section.

C.2 – Interview Code 2/2 (Health & Fatigue)

Five times in the interviews, health issues and related attention loss caused by tiredness that were related to home environment or online distance education methods were mentioned by teachers.

- "They (young learners) cannot view the screen for too long." (A1, 37/12, F/P)

- "I think it creates a loss of attention and tiredness to attend to the lessons by staring at a screen for long duration." (SA1, 26/2, F/H)

- "Staying at home for extended periods have negatively affected learners in physiological and psychological means." (B2, 48/23, M/S)

The health issues mentioned by teachers seem to be caused by either a) extended periods of inaction, or b) eye problems like tired eyes caused by extended periods of watching screens from close distance. Some of the attention issues are also probably rooted in same problems, since hurt eyes and tired minds are a great obstacle against grabbing attention of a learner, but can be also caused by teachers' teaching methods failing to capture sufficient attention especially if experienced during the first online lessons of the day. Attention issues that are not stemming from health problems, or at least not told by the interviewee that way, will be mentioned in their own topic later.

C.2 – Interview Code 2/3 (Home Environment)

There are also the instances of issues that caused by home environment except health or attention, like other people in the house disturbing the lesson procedure or high number of siblings straining technological availability. This kind of issues were mentioned 8 times.

- "Some parents have kept watching TV at the same time lesson was being conducted" (Ma3, 35/11, F/P)

- "Learners tried to join the lessons from the smartphones of the parents, if they could take the turn from their siblings." (Me7, 31/6, F/P)

- "Parents did not give enough effort" (CA2, 38/12, F/P)

- "Since most families had more than one learners and lessons were supposed to happen at the same time, students in exam years took the precedence. My learners have expressed that their brothers or sisters were joining the lessons instead of them, causing them to miss the lessons." (EA3, 26/2, F/P)

Health and attention loss due to fatigue were natural outcomes of the home environment and isolation and wouldn't be easy to solve without methodological changes, but issues of large number of siblings straining technological equipment availability or lack of sufficient parental attention could perhaps be avoided.

C.3 – Interview Code 2/4 (Peer Socialisation)

This code was related to peer socialisation, and peer socialisation was noted as an issue six times. While this was not caused by distance education directly, but by the pandemic, schools were -and still are- good places for learners to socialise. Lack of this has affected them

negatively or at least caused unhappiness, teachers claimed. This kind of issues were mentioned 7 times.

- "(Learners complained about) having to stay at home and being unable to socialise with their friends." (B2, 48/23, M/S)

- "Students are unhappy of the situation due to not being able to socialise and do something together with their friends." (EA2, 26/3, M/S)

- "They forgot how to act within social environments, leading to discipline issues." (SA1, 26/2, F/H)

This issue of peer socialisation may not be immediately seen as a problem that is directly stemming from distance education itself, since learners could still go out and socialise if no pandemic was in order. But lack of school environment deprives the learners from a good option for peer socialisation. This result shows that long term distance education that removes school experience may not be healthy for psychological well-being.

The questionnaire and interview data above, when combined, clearly show that distance education is vulnerable to some issues that may stem from the surrounding environment it is conducted. For most of the learners it is their homes, and the household should be careful not to disturb distance education efforts. Also, some families apparently need more devices to cater for all their learners in such a distance education scenario.

D) Issues Related to Digital Environment

According to some of the data gathered from the interviews, distance education had some problems that seemingly stems from the digital environment it is conducted through. These are namely teacher-learner communication and fictional classroom issues.

D.1) Interview Code 3/6 (Teacher-Learner Communication Issues)

Some teachers expressed that teacher-learner communication was problematic during online education. There were 4 instances expressing this issue.

- "I had problems reaching the learners emotionally." (CA3, 41/16, M/H)

- "It was not as easy as face-to-face education; I had issues telling whether learners understood what I was explaining or not." (SA2, 27/5, F/H)

- "Not being able to return feedback immediately, and the fictional classroom environment caused the distance education to not be enough." (Ma2, 29/5, F/S)

- "I am not satisfied with distance education, … we couldn't establish proper communication with no eye connection from distance. (Ma3, 35/11, F/S) [Shortened. Full excerpt also contains many other issues related to else issues. The full statement will be shared later on.]

These statements, and some else issues, point out that distance education perhaps has some critical issues regarding emotional nature of human nature. Communication through the

screens seems to be inferior to face-to-face one and, if this is factually correct, this can be one against mass application of distance education methods.

D.2) Interview Code 3/7 (Fictional Classroom)

Some teachers expressed that fictional classroom environment was an issue in itself. This code is used when "classroom" is explicitly stated. There were 3 examples regarding this kind of an issue.

- "It was not possible to control the kids like we do in classroom." (Me9, 34/10, F/P)

- "Since they were attending to the lesson from the smartphone, they thought of the lesson as playing a game or watching a cartoon, simplifying their look towards the lessons. Compared to the classroom, they had a very simple look towards the lessons." (Me6, 28/6, F/P)

- "Reasons like impossibility of immediate feedback and the artificial classroom environment were the cause of education sometimes not being enough. (Ma2, 29/5, F/S)

This kind of issues shared by the teachers show that lack of an actual classroom has affected the success of distance education. Of course, lack of a physical classroom is probably not the issue in itself but indirectly creates issues, for example hindering teacher-learner communication or peer socialisation.

Results above show collectively that distance education lacks some advantages that physical classrooms have, especially strength of the communication conducted.

E) Lack of Attendance or Attention

According to some of the results, a sizeable portion of the learners either did not join to the online lessons altogether, or even if joined, did not show any interest or attention to the lesson. Below are related results.

E.1 – Questionnaire Statement QK5 (Attendance Rate)

Table 16. *QK5*

QK5-During the online education period, most learners joined to the lessons. [1- Almost no one joined, 2- A small part of the learners joined 3- Approx. half joined, 4- Most of the learners joined, 5- All learners, with small exceptions, joined.]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	20	13.8	13.8	13.8
	Disagree	68	46.9	46.9	60.7
	Neutral	29	19.3	19.3	80.0
	Agree	16	11.0	11.0	91.0
	Strongly Agree	13	9.0	9.0	100.0
Total		146	100.0		

The mean score of this statement is 2.5. This is troubling when it is considered that the disagreeing scores lowering this score into neutral levels mean that there are many learners

who failed to take part in online education. The ANOVA tests followed by post-hoc tests revealed that there were two significantly different factors, namely regions and experience in years. This will be mentioned in under correct sub-question. From this statement we can see that there were many teachers who conducted their lessons with less than half of the learner population.

E.2 – Interview Code 3/3 (Attention & Attendance)

There were 19 instances of attendance and attention problems being mentioned.

- "I am not happy with distance education. Almost half of the learners did not join the lessons." (Ma3, 35/11, F/P)

- "Learners simply didn't join the lessons when attendance was not tracked." (CA1, 40/12, F/H)

- "There was a huge issue of learners not showing attention to the lesson." (CA3, 41/16, M/H)

- "Many of the learners who were living in villages and were normally using student transports couldn't join the distance education lessons, sometimes due to lack of devices and sometimes because they were working in the fields. But those who lived in the city had all chances to join, yet still didn't due to simply being uninterested." (CA4, 26/2, M/H)

- "Since they were attending to the lesson from the smartphone, they thought of the lesson as playing a game or watching a cartoon, simplifying their look towards the lessons." (Me6, 28/6, F/P) [This excerpt was mentioned before]

- "Learners' lack of attendance and even if they joined the lesson their lack of attention caused me to not be satisfied with the distance education." (EA2, 26/3, M/S)

Majority of interview participants complaining of attendance and attention clarifies that attendance problems existed during distance education when combined with above questionnaire statement, and also shows another possible problem – those who attended to the lessons were not showing much interest to the lessons.

Combined with questionnaire data, we can say that there were issues with attendance and for learners who attended the lessons there were attention issues instead.

F) Assessment and Evaluation Issues

Both in the questionnaire and in the interviews, assessment was noted down as problematic. Main data source here is the questionnaire.

F.1 – Questionnaire Statement QK8 (Assessment and Evaluation)

Table 17. *QK8*

QK8-Assesment and evaluation procedures were successfully applied during online education.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	45	30.8	30.8	30.8
	Disagree	45	30.8	30.8	61.6
	Neutral	39	26.7	26.7	88.4
	Agree	12	8.2	8.2	96.6
	Strongly Agree	5	3.4	3.4	100.0
	Total	146	100.0	100.0	

Mean score for this question is 2.2, showing that teachers have faced problems with the assessment procedures during distance education. This is expected, as there were incentives against gathering the learners together – preventing standard exam procedures. But this situation hardens the possibilities regarding evaluating success of online education. Were students able to grasp the lessons? ANOVA tests have detected a single difference between groups with Eta-Squared score of 0.01 (small difference) for school levels, identified as secondary school versus high school. This difference will be mentioned later.

F.2 – Interview Code 3/5 (Assessment and Evaluation)

Teachers mentioned evaluation issues, but in the entire interview data there were only 2 instances where this topic was raised.

- "I am not satisfied with distance education, half of the students didn't join the lessons, we couldn't establish proper communication, learners couldn't socialise, we couldn't complete evaluation and assessment properly, learners forgot school rules and they had to stare at screens for long times. And we saw that it was actually a more problematic issue than we thought when schools reopened. At least we did all we could." (Ma3, 35/11, F/S) [This excerpt also contains issues related to some of the previous topics and some of the upcoming ones.]

- "Since we were unable to conduct assessment during distance education, lacking points were discovered only after the schools reopened." (Me1, 37/12, F/P)

Overall, when we add the insight from the interviews to the data from the questionnaire, we can clearly say that distance education period had issues with assessment and evaluation.

G) Lack of Academic Success

There was a single result from a single item from the questionnaire that merits existence of this topic. Considering attendance was low, attention was not good, and evaluation is not successfully conducted, academic success being low is not a suprising outcome. But in teachers opinion, learners did not properly grasp the material taught by them. Results are shown below.

G.1 – Questionnaire Statement QK2 (Educational Success)

Table 18. *QK2*

QK2- I think that the educational aims/knowledge that were delivered to the learners were successfully grasped by the learners. (You can consider the assessment/evaluation procedures of the year. Were learners able to show their understanding?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	19	13.0	13.0	13.0
	Disagree	51	34.9	34.9	47.9
	Neutral	52	35.6	35.6	83.6
	Agree	19	13.0	13.0	96.6
	Strongly Agree	5	3.4	3.4	100.0
	Total	146	100.0	100.0	

The question has a mean score of 2.5, showing that the teachers' opinion regarding how much the learners have learnt is not optimistic. If we understand this data as how much the attending students have learnt - since ones who were not even attending was not able to grasp anything in the first place and therefore unable to fit into "educational aims/knowledge that were delivered" part of the statement – we can say that either attention problems prevented their learning or teachers were not using the proper methods. No significant differences between groups of participants were detected by ANOVA tests.

With this last statement, we can say most probably that there were little academic development achieved during distance education for a sizeable portion of the learners according to the teachers' views.

Overall for all RQ2, we can say that issues related to technology, home environment, digital interface, attendance, attention, peer socialisation, teacher-learner communication and possibly more issues have occurred during distance education and it was not easy (but not necessarily hard) to conduct. These have led to learner dissatisfaction along with teacher dissatisfaction which was mentioned in RQ1, and led to drops in academic success.

5.2.1 RQ2a - Is there a difference between regions of Turkey regarding online education problems the teachers experienced?

It was detected by ANOVA tests that some of the questionnaire statements had ANOVA significant differences amongst the regions. The first and second of such items QT2 and QT4 were related to technology available to the learners. QK4 regarding home environment and QK5 regarding attendance were also regionally different significantly. QK3, which dealt with how easy it was to conduct distance education also found significant regional differences.

A2) Learners' Issues Regarding Technology

There are two items from the questionnaire that shows difference based on regions that is related to this topic.

A2.1 – Questionnaire Statement QT2 (Learners' Technological Issues) – Regions Crosstabulation

Table 19. *QT2*Regions*

*QT2 * Regions of Turkey Crosstabulation*

Count

		Regions of Turkey							
		Ma	A	Me	B	CA	EA	SA	Total
QT2	Strongly Disagree	2	2	15	3	1	6	17	46
	Disagree	5	1	9	9	1	2	17	44
	Neutral	5	3	3	11	2	1	12	37
	Agree	3	1	1	1	1	2	0	9
	Strongly Agree	3	1	3	3	0	0	0	10
Total		18	8	31	27	5	11	46	146

Apparent from the table, Mediterranean and Southeastern Anatolia had 24 and 34 disagreeing participants, respectively. Other groups had more balanced distributions. Here is a limitation. Perhaps more participants could have balanced this outcome, or sway Marmara and Black Sea into disagreeing. ANOVA analysis focusing on regions of Turkey has shown that there was a significant difference between groups of Marmara and Southeastern Anatolia of eta-squared score of 0.14, showing that the difference is indeed large. T-Tests conducted to double-check the size of the difference showed that difference was indeed large, with 0.000 p-value result. Marmara Region's mean was 3 and Southeastern Anatolia's mean was 1.8.

Therefore it could be said that Marmara region learners had much better technological availability when compared to Southeastern Anatolian learners.

A2.2) Questionnaire Statement QT4 (Technological Skills of Learners) – Regions Crosstabulation

Table 20. *QT4*Regions*

*QT4 * Regions of Turkey Crosstabulation*
Count

		Regions of Turkey							
		Ma	A	Me	B	CA	EA	SA	Total
QT4	Strongly Disagree	2	4	14	3	0	4	9	36
	Disagree	2	1	10	10	3	4	25	55
	Neutral	8	2	4	9	2	2	9	36
	Agree	5	1	2	2	0	1	3	14
	Strongly Agree	1	0	1	3	0	0	0	5
Total		18	8	31	27	5	11	46	146

Eta-squared score of the ANOVA test was 0.14, showing that there is a large difference between groups according to regional factor. The Post-hoc tests showed that conflicting regions were Marmara Region versus Southeastern Anatolia Region. Such a significant difference is present when Marmara Region is compared to Mediterranean region as well. T-Tests conducted between these mentioned pairs returned as 0.000 p-value for Marmara/Southeastern Anatolia pair and 0.001 p-value for Marmara/Mediterranean pair. This means that Marmara region's learners and parents had more technological skill when compared to Southeastern Anatolia or Mediterranean. While Marmara region's teachers didn't actually give diametrically opposite answers and instead opted to remain neutral mostly, the overwhelming negativity of Mediterranean and Southeastern Anatolia regions created the disparity regarding learners and parents lacking technological skills. Mean of Marmara region was 3, Southeastern Anatolia's mean was 2.1 and lastly Mediterranean Region's mean was 1.9

C) Home Environment Issues

Here we will mention QK4, which investigated factors outside of technology scope, especially the home environment or related difficulties.

C.1 – Questionnaire Statement QK4 (Home Environment) – Regions Crosstabulation

Table 21. *QK4*Regions*

*QK4 * Regions of Turkey Crosstabulation*
Count

		Regions of Turkey							
		Ma	A	Me	B	CA	EA	SA	Total
QK4	Strongly Disagree	2	3	10	5	2	7	14	43
	Disagree	7	2	11	11	1	3	20	55
	Neutral	3	2	4	9	1	1	11	31
	Agree	6	1	5	1	1	0	0	14
	Strongly Agree	0	0	1	1	0	0	1	3
Total		18	8	31	27	5	11	46	146

ANOVA tests have detected a significant difference of the 0.08 eta squared (medium) size between Marmara and Eastern Anatolia. The same difference is of 0.002 p-value according to the T-Tests. Marmara region had 2.7 mean and Eastern Anatolia's mean was 1.4. According to these results, Marmara region had the best home environment conditions and Eastern Anatolia the worst.

E) Lack of Attendance or Attention

Here we will focus on QK5 which dealt with how many learners were attending to the lessons.

E.1 – Questionnaire Statement QK5 (Attendance Rate) – Regions Crosstabulation

Table 22. *QK5*Regions*

*QK5 * Regions of Turkey Crosstabulation*
Count

		Regions of Turkey							
		Ma	A	Me	B	CA	EA	SA	Total
QK5	Strongly Disagree	0	0	4	2	1	4	9	20
	Disagree	5	3	19	8	1	4	28	68
	Neutral	6	0	3	11	0	1	7	28
	Agree	2	3	4	2	3	2	0	16
	Strongly Agree	5	2	1	4	0	0	1	13
Total		18	8	31	27	5	11	45	145

This factor has an Eta-Squared score of 0.22 – the single greatest discrepancy present in this work. Eta-Squared scores are counted as large differences starting from 0.14, so perhaps this score is larger than usual. The opposing groups are Marmara versus Mediterranean (0.001) and Southeastern Anatolian (0.000) regions, with an additional discrepancy noted between Black Sea and Southeastern Anatolia (0.000) separately. The values in parentheses are p-values showing size of the difference for region pairs. The portrait of the situation, is that many learners have not joined the online education process, especially in Mediterranean and Southeastern Anatolian regions as apparent from the table, with Marmara having the most attendance. Regions had means of 3.3 for Marmara, 2.9 for Black Sea, 2.3 for Mediterranean and 2 for Southeastern Anatolia.

Overall, for RQ2a, we can say that learners had worse technological availability and skills, had more home environment issues and attended much less to the lessons in the eastern regions, especially in Southeastern Anatolia, Eastern Anatolia or in Mediterranean.

5.2.2 RQ2b- Is there a difference between age of participants regarding online education problems they have experienced?

No such ANOVA significant results were found, nor any trends to suggest such an outcome was noticed from the interviews.

5.2.3 RQ2c - Is there a difference between teaching experience (in years) regarding online education problems the teachers experienced?

Some ANOVA significant results were detected, but further testing using T-Tests did not return significant results, so ANOVA reports may have been false-positives. Under this suspicion, these results will not be shared. Therefore, the safe option is to say that there were no significant differences found that depended to experience of the teacher.

5.2.4 RQ2d - Is there a difference between gender of participants regarding online education problems the teachers experienced?

No such ANOVA significant differences were detected, nor any trends were apparent in the interviews.

5.2.5 RQ2e - Is there a difference between school levels the participants work at regarding online education problems the teachers experienced?

No such ANOVA significant differences were detected, but a trend was apparent from the interviews. Teachers who had mentioned home environment issues (excepting health & fatigue code, only considering code 2/3 mentioned in topic C) were Primary school teachers. Some problems also seem to be unique to primary school context, for example older siblings

occupying all available devices and depriving primary school learners from a chance to join the lessons. Or learners forgetting how to write - which is actually academic regress other school levels mentioned, but is different in the sense that a skill is being lost.

Overall, we detected several regional differences, and some special issues that concerned primary schools only. Primary school learners also may be more vulnerable to home environment issues.

5.3 RQ3 - What problems teachers have noticed 2021-2022 education year (during face-to-face education), that they relate to 2020-2021 education year (distance education)?

Here we will attempt to pinpoint the after-effects of the distance education that were observable in the face-to-face education that followed it. Overall, we can group the issues detected in three parts:

A) Academic Issues
B) Behavioural Issues
C) School Readjustment Issues

A) Academic Issues

Under this topic, we will talk about the academic issues that teachers think was caused by distance education period learners experienced. Since distance education was reported as problematic regarding attendance and attention these kinds of results are expected to a degree. But here we will see how severe is the problem and how teachers reflected on these issues. Since accessing exam results or gathering data on which lessons the learners were having problems with was not within scope of this work, all the stated "academic issues" are from teachers' view. At the end of this part, QE12 will be mentioned, which shows that learners also think that their lacks regarding academic development are fault of distance education.

A.1 – Questionnaire Statement QE1 (Retaining Previous Learnings)

Table 23. *QE1*

QE1-The objectives and knowledge provided to the learners were retained. (Are learners able to show their previous gains (made during online education) in assessments or in-lesson activities of this year?)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	22	15.1	15.1	15.1
	Disagree	44	30.1	30.1	45.2
	Neutral	52	35.6	35.6	80.8
	Agree	21	14.4	14.4	95.2
	Strongly Agree	7	4.8	4.8	100.0
	Total	146	100.0	100.0	

The mean score for this question is 2.6, slightly worse than a neutral score. This shows that, learners were only partially able to utilize their gains from the previous year. Since education process is based on building upon the already gained knowledge or skills, this may cause critical problems. No significant differences between groups were noticed by ANOVA test.

A.2 – Questionnaire Statement QE2 (Using Retained Learnings)

Table 24. *QE2*

QE2- Learners able to utilize their previous gains in new, face-to-face education period.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	21	14.4	14.4	14.4
	Disagree	39	26.7	26.7	41.1
	Neutral	57	39.0	39.0	80.1
	Agree	25	17.1	17.1	97.3
	Strongly Agree	4	2.7	2.7	100.0
	Total	146	100.0	100.0	

With this question we aimed to seek whether learners are only memorised the delivered teachings, knowledge and skills and only retain the knowledge they had, or able to use what they learned in practical aims. The difference inferred is whether the learnings are internalised properly or shallow. The question had a mean score of 2.6, same as the question before. Overall, with both QE1 and QE2 we can say that learners only partially retain knowledge they had, and only partially capable to utilize their retained learning.

A.3 – Questionnaire Statement QE8 (Display of Learning)

Table 25. *QE8*

QE8-Learners are unable to display the knowledge and skills they should have gained during online education period.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	4.1	4.1	4.1
	Disagree	19	13.0	13.0	17.1
	Neutral	47	32.2	32.2	49.3
	Agree	37	25.3	25.3	74.7
	Strongly Agree	37	25.3	25.3	100.0
	Total	146	100.0	100.0	

The mean score for the question is 3.5, pointing out to presence of such an issue. Since normal education procedure always puts upon new information and skills upon a previous year, such an issue can be severe, especially when long term effects that may rise in several years are considered. ANOVA tests have not discovered any intergroup differences, teachers think alike. This result cements the results from the above two statements, QE1&2, academic issues are present.

A.4 – Questionnaire Statement QE9 (Comparing Distance Education to Face-to-Face Education)

Table 26. *QE9*

QE9-If learners were able to get educated by face-to-face education instead of online education last year, they would have been much more successful this year.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	1.4	1.4	1.4
	Disagree	7	4.8	4.8	6.2
	Neutral	25	17.1	17.1	23.3
	Agree	51	34.9	34.9	58.2
	Strongly Agree	61	41.8	41.8	100.0
	Total	146	100.0	100.0	

This question was designed to see how deep the issue went, with larger agreeing scores would show a deeper stretch between academic success distance education and face-to-face education granted. With a mean score of 4.1, this statement makes it clear that teachers prefer face-to-face education to overwhelming degree. Having seen its effects, they apparently wished that their learners could be able to get face-to-face education last year. No intergroup differences were detected.

A.5 – Interview Code 4/1 (Academic Problems)

Teachers mentioned problems about academic success 17 times. Since they were explicitly asked to mention the issues that they think were related to distance education, each issue mentioned here is understood as an after-effect of distance education according to the teachers. Below are some excerpts that contain Code 4/1.

- “I have observed that learners regressed regarding academic success.” (A1, 44/17, F/S)

- “Since most didn’t attend the lessons during distance education, they had forgotten even the things that they should have learned before the pandemic” (Me7, 31/6, F/P)

- “A drop was observed in educational success.” (EA2, 26/3, M/S)

- “Learners who did not attend the distance education properly had lacking points academically, so taking this situation into consideration I delivered the lectures starting from much earlier points.” (SA4, 26/2, M/H)

- “Since desired academic development was not achieved and enough number of learners were not attending to the lessons previously, I had to repeat the lessons on past topics.” (SA3, 29/5, M/P)

- “I think that distance education decreases academic success and it would be much more efficient if face-to-face education would go on with increased precautions always.” (B2, 48/23, M/S)

- “Learners started the education year under effects of a kind of lethargy caused by the distance education, which caused learners to not be as successful as we had expected.” (CA3, 41/16, M/H)

The interview excepts also added an unforeseen point: learners didn’t just lack previous knowledge, but had issues gaining new knowledge as well. While this can be an effect of spiral curriculum building new knowledge onto older knowledge and without the base knowledge being acquired new knowledge not being grasped as well, it can also be a result of the “lethargy” participant CA3 mentioned. Such nuances are present in some of the participants’ statements.

Overall, when interview excerpts are combined with the questionnaire results, it appears that learners had academic issues that were rooted in distance education period, or teachers think that way. A last extra detail remains: QE12

A.6 – Questionnaire Statement QE12 (Academic Issues on Learners’ View)

Table 27. *QE12*

QE12-Learners reflect the issues that occur when the teacher mentions or wishes to utilize previous year’s gained knowledge or skills into last year’s distance education period. (For example, learners saying “But last year was distance education!” or “Last year we didn’t go to school!” (or an equivalent) upon teacher inquiring “You should remember this from last year.” (or an equivalent))

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	2.1	2.1	2.1
	Disagree	10	6.8	6.8	8.9
	Neutral	47	32.2	32.2	41.1
	Agree	36	24.7	24.7	65.8
	Strongly Agree	50	34.2	34.2	100.0
	Total	146	100.0	100.0	

The statement has a mean score of 3.8, showing agreement. Here it is made clear that distance education has left some gaps on children, or at least learners claim that their gaps in

academic knowledge are caused by distance education. Combined with teachers who also think this way, it can be said that most probably this is factually true.

B) Behavioural Issues

Here, we will talk about issues that were related with how the learners behave during lessons, or in school overall, that the teachers think were related with distance education.

B.1 – Questionnaire Statement QE10 (Behavioural Issues)

Table 28. *QE10*

QE10-Distance Education period has led to issues regarding behavioural development of learners.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	2.7	2.7	2.7
	Disagree	17	11.6	11.6	14.4
	Neutral	32	21.9	21.9	36.3
	Agree	39	26.7	26.7	63.0
	Strongly Agree	54	37.0	37.0	100.0
	Total	146	100.0	100.0	

A crucial question. With 3.8 mean score, teachers are in agreement to the statement. Potential causes are isolation and lack of self-discipline which may have surfaced due to simplified evaluation that occurred during that period, which might have sticked. A follow up research could have been made investigating what kind of learner behaviour issues have raised in the aftermath of the online education.

B.2 – Interview Code 4/2 (Behavioural Issues)

Behavioural problems were mentioned 18 times, where learners were acting differently when compared to previous years. Some of these issues may be caused by, or resulting in, school readjustment issues of topic C, therefore the two codes are related closely. But at large, the issues of behaviour seems to be a separate thing that teachers mentioned elsewise.

- “When the schools reopened, we noticed that students were showing hyperactivity, aggressive behaviour and were facing problems on focusing and understanding. This is the fourth class I am working with, and I see this different situation as an outcome of distance education and pandemic lockdowns which forced learners to remain at home.” (Ma3, 35/11, F/P)

- “Students started not to take the lessons seriously. “School would get closed soon anyway!” they thought while coming to lessons and gave no effort. They hoped the

assessments would be as lax as they were during distance education, and faced the consequences. Learners also started having problems on how to act in social environments, causing some discipline problems." (SA1, 26/2, F/H)

- "Some behavioural problems and drops in academic success were observed. They had a hard time readjusting to school. And attendance problems increased when compared to previous years. (EA2, 26/3, M/S)

- "Learners got used to laziness. They forgot raising a hand to ask for permission before speaking. They also stopped fulfilling their responsibilities." (B1, 38/16, F/S)

- "Kids got addicted to telephones or tablets, which did not decrease. I think this was one of the worst outcomes of that period." (Me6, 28/6, F/P)

- "Discipline was lost." (Me9, 34/10, F/P) [She was an extremely laconic participant.]

- "Behaviour problems and drop in academic success was noted. Learners had issues adapting to the school. Also, attendance issues grew larger when compared to previous years." (EA2, 26/3, M/S)

Overall, some learners did not act in the way they were expected to, or vice versa. These kinds of situations caused teachers to report behavioural problems. Some of these are actually related to school readjustment period, but some others are lingering effects of the other factors like lax standards, low socialisation, general uninterest in studying and the like.

C) School Readjustment

Here we will investigate a single code from the interviews, code 4/3. The difference of this code from the above code of 4/2 (behavioural issues) is that teachers reported some issues as behaviour problems directly, while school readjustment was stated elsewise. But in the end these two codes are tightly related, and some excerpts contain both, or can be considered as a part of any one of these two codes.

C.1 – Interview Code 4/3 (School Readjustment)

School readjustment problems were coded as such when learners appeared to have problems with getting used to school environment again, or when such a statement is clearly used.

- "Learners had problems getting used to school again." (Ma1, 25/2, M/H)

- "I saw that learners were left behind on the curriculum (academic problem, counts in topic A as well) and their bond with school was weakened. (Me2, 32/8, M/P)

- "It was hard to establish discipline again while children were getting used to school again. Their look to the lessons had changed. But towards the end of the education year these issues were mitigated as much as they could be." (Me6, 28/6, F/P)

- “Whether they joined the lessons or not, the kids have developed a prejudice against schools. They had trouble getting used to it again.” (Me8, 32/10, F/P)

- “It was hard for kids to get themselves together. They forgot the school culture, and how to act there. They were just as 1st grade kids just starting the school for the first time.” (CA2, 38/12, F/P)

- “Learners forgot school rules.” (Ma3, 35/11, F/P)

- “They (learners) were left behind in terms of education. It also took time for them to get used to school once again.” (Ma5, 32/5, F/S)

- “Their (learners’) uninterested approach continued for some time. They had a hard time coming to the school.” (CA1, 40/12, F/H)

Overall, some behavioural issues seem to be stemming from learners facing difficulties with readjusting to school environment. Academic problems seem to be stemming from learners not attending to online lessons for any reason. This raises the question of what would happen if all learners had attended the lessons well and gave attention? Perhaps then overall satisfaction would increase, but spending extensive time in front of screens and lack of peer socialisation seems like problems of distance education as well. In short, distance education left some residual issues with academic success, behaviour and school culture, which are expected to be mended in time.

5.3.1 RQ3a - Is there a difference between regions of Turkey regarding problems the teachers have noticed this year?

No such significant differences were detected by ANOVA tests, and in the interviews, there are participants from each region that complain of all the three problems. Therefore, it can be said that regions suffered from lingering effects of distance education period to somewhat a close degree. But considering difference between regions seen in RQ2a, most probably there were some differences present.

5.3.2 RQ3b - Is there a difference between age of participants regarding problems they have noticed this year?

A single difference was noted down by ANOVA test, but after T-Tests failing to find a significance, it turned out to be that a potential false-positive. Therefore, such a result won’t be reported. And no such difference was noted in the interviews. Therefore, it can be said that age of the teacher was not a significant factor regarding the after effects of distance education.

5.3.3 RQ3c - Is there a difference between teaching experience (in years) regarding problems they have noticed this year?

No such significant difference was detected by ANOVA tests. Also, there were not a noticeable difference between experience groups. Therefore, it could be said that experience did not have an effect on what kind of issues teachers faces in the aftermath of the distance education.

5.3.4 RQ3d - Is there a difference between gender of participants regarding problems the teachers have noticed this year?

No such significant difference was found by ANOVA tests, nor a trend in the interviews was noted. It must be mentioned again that gender is not detected to be a factor in any research questions in this work.

5.3.5 RQ3e - Is there a difference between school levels the participants work at regarding problems the teachers have noticed this year?

Just like RQ3b, this question also had an ANOVA significant report, but due to this difference being too small just like the age factor, T-Tests did not find a significant difference. Under such circumstances, seeing the result of ANOVA test as a false-positive, it will not be reported. Along with the lack of such a trend observed in the interviews, it could be said that all school levels faced all three kinds of issues.

Overall, all teacher groups and school levels have faced academic, behavioural and school readjustment issues during the face-to-face education that was conducted after the distance education period was over.

6. Discussion

Here we will discuss each RQ and sub-questions, and reflect on the outcomes. Research questions that do not have significant results will not be mentioned here.

6.1 RQ1 - In retrospective, are teachers content with how the online education period turned out?

Overall, we had seen that no, teachers were not happy with distance education according to questionnaire results, and interviews also showed that distance education was not very successful, it only got the job done as far as it could. This outcome is somewhat in line with previous research like Sayan (2020), Doğan and Koçak (2020), Yahşi and Kırkıç (2020), Kızıltaş and Çetinkaya (2021), Taş (2021) and more. For example, all of these mentioned works had noticed similar reasons of dissatisfaction. This work solidifies the issue by questioning an overall look.

Also, by virtue of being conducted after the distance education is over, this work solidified that view of teachers regarding distance education did not get better, if not soured even more. Some works in the field had proposed that aftermath of the distance education would see many parts from it surviving into post-covid era, and for some works distance education from home was proposed as the norm of the future, but after a year of such education teachers and learners do not seem to be happy about it. Perhaps we are still not into future enough to think such a thing and future developments will change the situation, but so far we have no reason to think this way.

6.1.1 RQ1a - Is there a difference among regions of Turkey regarding how content the teachers are with the online education period?

A significant difference was noted down by ANOVA tests of the questionnaire. We saw that towards the eastern regions satisfaction rate of the teachers regarding success of distance education was dropping, and the most satisfied region was Marmara. Of course, this does not mean that Marmara did not have problems or were totally satisfied, but we can infer that a large difference existed between the regions.

This work is important in the sense that it is now empirically verified that this difference exists noticeably. Hopefully, if such a work is ever made, the results can be solidified with an even larger participant group.

6.2 RQ2 - In retrospective look, what kind of problems were experienced with online education in the lockdown year?

First of all, we can say that technology was the first apparent issue. This was also noted by numerous previous works in the field, for example Çilek, Uçan and Ermiş (2021), Kale (2020) and more. Teachers have reflected on technological issues greatly in the interviews, especially on lack of adequate technological equipment and internet connection. But the issue was almost always on the learners' side. Also, some details like effect of large sibling size were important details. Hopefully, if we ever face such a condition, more families could be aided with tablets delivered by the state.

Second, we saw that learners were not satisfied of the period they experienced. They faced isolation, tiring methods of learning where looking at screens from close distance for long hours was a requirement, loss of motivation and similar factors souring their view of distance education is understandable. And this result aligns with the field, except university students who were shown to be autonomous and capable of aiding the distance education period with their own efforts, nor being affected by isolation from peers as hard as the K12 learners.

Third, it was noted that home environment has its own problems that kind of added to the distance education's possible problems. Some of the home environment problems were isolation, health issues stemming from spending long, continuous hours in front of a screen – and also the mental exhaustion coming from the same situation, and more. Home environment is also deemed problematic due to household not always respecting the lesson, or learners not being free during lesson hours (girls looking after smaller siblings or cooking, boys working in fields or with their fathers as "there is no school already" are some examples I have heard during my own teaching experience in Southeastern Anatolia) and potentially more issues.

Fourth, we noted that digital environment itself lacked some capabilities that physical classrooms like enhanced education due to better communication being conducted due to facial and body gestures, peer socialisation, better discipline and more. In the field, communication problems are mentioned by several other works as well. For example, Sayan (2020) or Erzen and Ceylan (2020) mentioned these. Many more are present.

Fifth, we talked about how attendance rates were low, and even among the learner population who attended regularly there were low attendance. While this is possible to be mitigated by giving more devices to families or using more interesting methods, there is a more fundamental obstacle: the chance to not be part of the lesson, while looking that way. How?

Turning the camera and microphone off allows the learners to watch TV, play games, or simply complete their other tasks in peace. With a single ear following the teacher's lecture without proper focus, it is very possible to interact with the lesson at the least possible level without getting attention. In my teaching experience, I have encountered with such issues. Therefore, without some internal motivation, it is very hard to retain attention of the learner. It should be noted that attendance issues are documented in various works in the field like works in the fields, like Demir and Kale (2020) or Kızıltaş and Çetinkaya Özdemir (2021).

Sixth and seventh, we talked about how assessment was problematic and how there were academic problems. On these topics, the main source of data is the questionnaire which showed that assessment was not conducted properly according to the teachers. But interviews also had two participants mentioning assessment issue. With problematic assessment, it is hard to deduce how well the learners have learnt the lectures. But according to our post-distance data, teachers clearly mention that learners were not capable of showing their previous learnings, therefore combined with this factor it could be said that education delivered over distance education did not reach its aim properly and there were academic problems with delivery of education during distance education. Of course, there should be learners who grasped the topics well, and capable to utilize the gains, but more learners seem to fail at this than those who succeed. This outcome could be changed with proper technological equipment and internet, also with better teaching methods. Academic obstacles are perhaps possible to overcome in such a context.

6.2.1 RQ2a - Is there a difference among regions of Turkey regarding online education problems the teachers experienced?

According to the results of ANOVA tests, three problems show significant difference among regions: technological availability learners have, home environment and attendance.

In all three, eastern regions are in worse situation when compared to western regions. This is expected, as anyone who knows the regions of Turkey could notice that western regions are in better conditions socio-economically. We have now seen how much of a difference regarding success and issues of distance education these regional differences cause. Their severity became apparent, and also with this work, the differences present between regions regarding distance education are noted down and solidified.

While the differences are already mentioned above, it should be also mentioned as the largest difference found between regions that western regions had much higher attendance rates, most probably due to technological equipment being less of a problem. The differences could be investigated further, parent factor can be very effective regarding attendance rate of K12 learners.

6.3 RQ3 - What problems teachers have noticed 2021-2022 education year (during face-to-face education), that they relate to 2020-2021 education year (distance education)?

According to the results of the interviews and the questionnaire, there were three kinds of problems were noticed: academic, behavioural and school readjustment.

Academic issues seem to stem from lack of attendance and attention on learners' behalf. This factor could be mitigated by parents getting involved, more devices being handed out, or teachers using better models and materials to make lessons more fun. The academic issues encountered during distance education, then affected distance education. Learners had issues due to spiral nature of curriculum, and the requirement of using older topics to support new knowledge. Also, the lax conditions encountered by a sizeable portion of learners by not attending the lessons or not showing any attention to it caused them to lose their studying skills or discipline, causing potential academic success to drop even further.

Behavioural issues are seemingly caused by lack of peer socialisation and also from the above-mentioned desire to remain undisciplined. At this point is becomes clear that school readjustment and behavioural issues cannot be truly separated from each other. All school readjustment problems are behavioural, and all behavioural problems eventually stem from lack of school environment, which surfaces when this environment is once again relevant. But behavioural and school readjustment issues could be differentiated mainly from self-related ones and social ones. For example, learners showing aggressive behaviour was mentioned, which was considered a behaviour issue, but "bonds with school weakening" or discipline losses were considered as school readjustment issues. In the end, the two groups are related.

Solution of behavioural issues may not be possible with improving technological condition or using better distance education techniques.

7. Conclusion

This original research was conducted to see if there were lingering effects distance education had left on face-to-face education. Results showed that there were some effects, especially regarding failure of some learners to retain what they were supposed to learn, and the resulting academic success drop. Other effects teachers pointed out were behavioural and motivational issues, and problems with readjusting to school environment. Teachers have also shared problems they noticed during distance education like technological issues their learners have faced, or difficulties in application of distance education like attendance and attention issues.

The study is significant in the sense that it investigated post-covid era and what distance education had brought in its wake. There are not many research in the field focusing this area. Another important point is that it showed inequalities present among regions of Turkey, as we move from west to east learners had less access to technology, and less skill to utilize it successfully. Also, satisfaction rates drop according to the same route, eastern regions are more dissatisfied with online education and its results.

The study is limited in the sense that some regions had a small number of participants in questionnaire. This may have decreased the potential to reflect the situation found in of some regions properly. Another limitation is that some issues are not investigated in depth, for

example investigating what kind of behavioural issues have arisen could be a good research topic. The interviews alleviated these limitations to a degree.

The study was built on good methodological foundations, with the questionnaire having very high reliability rates, and while reporting all required tests were conducted. The structured written interview form was simple, short and it allowed teachers to reflect their insight to the situation they were in.

Further research could focus on what kind of behavioural problems occurred (and why), how could distance education be improved, how could learners be motivated during online education and how could they be motivated now into not giving up due to the gaps online education left. Perhaps some methods could also be developed or increased scaffolding that would aid learners to grasp the new iterations of the gaps they had.

Thank you for reading.

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Appendix

a) The Questionnaire

Uzaktan Eğitimin Etkileri

Bu Araştırma uzaktan eğitim sürecinin (2020-2021 eğitim yılının), ardından gelen fiziksel eğitim sürecine (2021-2022 eğitim öğretim yılına) olan etkilerine yönelik öğretmen görüşlerini toplamak amacındadır. Katılarak araştırmaya dahil olmayı onaylamış olursunuz. Bu formun tüm katılımcıları anonim olarak veri bırakır.

* Gerekli

Demografik

Bu bölümde sizin ve okulunuzun hakkında bilgi toplanmaktadır.

1. Yaşınız kaç?

Yalnızca bir şıkkı işaretleyin.

- ◯ 20-30 arası
- ◯ 31-40 arası
- ◯ 40 üzeri

2. Cinsiyetiniz nedir?

Yalnızca bir şıkkı işaretleyin.

- ◯ Kadın
- ◯ Erkek

3. Kaç yıldır öğretmenlik yapmaktasınız?

Yalnızca bir şıkkı işaretleyin.

- ◯ 1-3
- ◯ 4-6
- ◯ 7-10
- ◯ 10+

4. Türkiye'nin hangi bölgesinde görev yapmaktasınız?

Yalnızca bir şıkkı işaretleyin.

- ◯ Marmara Bölgesi
- ◯ Ege Bölgesi
- ◯ Akdeniz Bölgesi
- ◯ Karadeniz Bölgesi
- ◯ İç Anadolu Bölgesi
- ◯ Doğu Anadolu Bölgesi
- ◯ Güneydoğu Anadolu Bölgesi

5. Çalıştığınız okulun düzeyi nedir?

Yalnızca bir şıkkı işaretleyin.

- ◯ İlkokul
- ◯ Ortaokul
- ◯ Lise

Uzaktan Eğitim Süreci

Uzaktan eğitim sürmekte iken varolmuş durumları incelemeye yönelik sorular.

Teknoloji

Uzaktan eğitim sürmekte iken (2020-21 eğitim öğretim yılı), sizin ve öğrencilerinizin teknolojik imkânlarınıza yönelik sorular. Bu bölümde ifadeye ne düzeyde katıldığınıza dair 1-5 arasında puan verirsiniz.

6. 1- Öğretmen olarak ben uzaktan eğitimi gerçekleştirebilecek teknolojik imkânlara sahiptim. (telefon/bilgisayar/internet gibi)

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

7. 2- Öğrencilerim uzaktan eğitimi gerçekleştirebilecek teknolojik imkânlara sahipti (telefon/bilgisayar/internet gibi)

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

8. 3- Öğretmen olarak ben bu teknolojik imkânları uzaktan eğitimde kullanacak yetenek ve bilgiye sahiptim.

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

9. 4- Öğrencilerim (ve velileri) teknolojik imkânları uzaktan eğitimde değerlendirecek yetenek ve bilgiye sahiplerdi.

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

Katılım

Uzaktan eğitim sürmekte iken sizin ve öğrencilerinizin süreci devam ettirmenize ve süreçten memnuniyetinize yönelik sorular.

10. 1- Uzaktan eğitim sürecinde hedef kazanımların ve bilgilerin öğrencilere aktarıldığını düşünüyorum.

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

11. 2- Uzaktan eğitim sürecinde öğrencilere aktarılan kazanımların ve bilgilerin öğrenciler tarafından öğrenildiğini düşünüyorum. (öğrencilerin bu dönemde ölçme ve değerlendirme süreçlerindeki başarılarını göz önünde bulundurabilirsiniz. Aktarılan bilgiler öğrenciler tarafından gösterilebilmiş midir?)

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

12. 3- Uzaktan eğitimi uygulamak (benim için) kolaydı.

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

13. 4- Uzaktan eğitime katılmak öğrenciler için kolaydı. (Burada teknolojiden ziyade süreci engelleyebilecek diğer tüm faktörleri göz önünde bulundurmanızı rica ederiz. Örneğin ev ortamlarının uygunluğu, öğrencilerin ders saatindeki müsaitliği, velilerin tutumları vesaire.)

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

14. 5- Süreç devam etmekte iken öğrencilerin çoğu genel olarak uzaktan eğitime katıldılar [1- Neredeyse hiçkimse katılmadı, 2- Sınıfın az kısmı katıldı 3- Sınıfın yarısı katıldı, 4- Sınıfın çoğu katıldı, 5- Sınıfın tamamı (istisnalar olabilir) katıldı.]

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

15. 6- Süreç devam etmekte iken öğrenciler uzaktan eğitimden memnun kaldıklarını ifade ederlerdi.

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

16. 7- Uzaktan eğitim yüz yüze eğitime denk veya yakın derecede fayda sağlamıştır.

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

17. 8- Uzaktan eğitim sürecinde ölçme ve değerlendirme başarıyla gerçekleştirilmiştir.

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

Uzaktan Eğitimin Etkileri

Bu bölümde uzaktan eğitim sürecinin sonrasında gelen fiziksel eğitim sürecine (2021-2022 eğitim-öğretim yılına) olan etkilerine yönelik sorular mevcuttur.

18. 1- Uzaktan eğitim sürecinde öğrencilere sağlanmış olan kazanımlar ve bilgiler korunmuştur. (Mevcut dönemde yapılan ölçme ve değerlendirmede veya ders içi performansda önceki yıla dayanan bilgiler sergilenebiliyor mu?) *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

19. 2- Öğrenciler uzaktan eğitim sürecinde öğrendiklerini yeni dönemde kullanabilmektedir. *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

20. 3- Öğrenciler uzaktan eğitim sürecine yönelik şikâyetler belirtmişlerdir. *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

21. 4- Öğrenciler uzaktan eğitim sürecine yönelik memnuniyet belirtmişlerdir. *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

22. 5- Uzaktan eğitim sürecinin etkilerine bakıldığında, sürecin başarılı olduğunu düşünüyorum. *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

23. 6- Uzaktan eğitimin yerine başka bir alternatif geliştirilmeliydi. *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

24. 7- Uzaktan eğitim başarısız olduğunu düşünüyorum. *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

25. 8- Öğrenciler uzaktan eğitim döneminde kazanmış olmaları gereken bilgi ve yetenekleri sergilememektedirler. *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

26. 9- Öğrenciler, eğer uzaktan eğitim sürecinde fiziksel eğitim alabilmiş olsalardı, şimdi çok daha başarılı olurlardı. *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

27. 10- Uzaktan eğitim süreci öğrencilerin davranışsal gelişiminde olumsuz etkiler yaratmıştır. *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

28. 11- Öğretmen olarak ben, uzaktan eğitimin sürecinden memnum kaldım. *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

29. 12- Öğrenciler uzaktan eğitim döneminde öğrenmiş olmaları gereken bilgilere ve kazanımlara atıf yapıldığında bilmiyor veya unutmuş oldukları noktaları uzaktan eğitim sürecine bağlarlar. (Örneğin; öğretmenin "bu konuyu geçen yıldan hatırlıyorsunuz" demesi üzerine öğrencilerin "öğretmenim geçen yıl uzaktan eğitimdi / okula gitmedik" demesi gibi.) *

Yalnızca bir şıkkı işaretleyin.

	1	2	3	4	5	
Kesinlikle Katılmıyorum	◯	◯	◯	◯	◯	Kesinlikle Katılıyorum

Bu içerik Google tarafından oluşturulmamış veya onaylanmamıştır.

Google Formlar

b) The Interview

Uzaktan Eğitimin Etkileri Üzerine Yazılı Röportaj

Bu form, 2020-2021 eğitim öğretim yılında COVID-19 pandemisinden ötürü gerçekleştirilen uzaktan eğitim dönemi ve bu dönemin 2021-2022 yıllarında gerçekleşen yüz yüze eğitime olan etkilerini incelemek üzere gerçekleştirilen bir araştırmada kullanılmak üzere yapılan yazılı bir röportajı içermektedir.

Araştırma anonim olup, isim bilgisi gerektirmemektedir. Sadece araştırmada yeri olan, temel demografik bilgiler toplanacaktır. Ardından açık uçlu 6 soru karşınıza gelecektir. Soruları istediğiniz şekilde doldurunuz. Uzun ve detaylı anlatımlar araştırmaya daha fazla katkı sağlayacaktır.

Teşekkürler.

* Gerekli

Demografik

1. Türkiyenin hangi bölgesine görev yapmaktasınız? *

Yalnızca bir şıkkı işaretleyin.

- ( ) Marmara Bölgesi
- ( ) Karadeniz Bölgesi
- ( ) Ege Bölgesi
- ( ) Akdeniz Bölgesi
- ( ) İç Anadolu Bölgesi
- ( ) Doğu Anadolu Bölgesi
- ( ) Güneydoğu Anadolu Bölgesi

2. Kaç yaşındasınız? *

_____

3. Kaç yıldır öğretmenlik yapmaktasınız? *

_____

4. Cinsiyetiniz nedir? *

Yalnızca bir şıkkı işaretleyin.

- ◯ Erkek
- ◯ Kadın

5. Hangi eğitim kademesinde çalışmaktasınız? *

Yalnızca bir şıkkı işaretleyin.

- ◯ İlkokul
- ◯ Ortaokul
- ◯ Lise

Yazılı Röportaj Soruları

6. 1- Uzaktan eğitim sürecinde teknolojik imkanlarınız nasıldı? Bu imkanları değerlendirebildiniz mi? Teknolojiyle ilgili sorunlar yaşadınız mı? *

7. 2- Uzaktan eğitim sürecinde öğrencilerinizin teknolojik imkanları nasıldı? Bu imkanları değerlendirebildiler mi? Teknolojiyle ilgili sorunlar yaşadılar mı? *

8. *

3- Uzaktan eğitim sürecinde, teknoloji dışında, ne gibi sorunlar yaşandı? Öğrenciler memnuniyet veya şikâyet belirttiler mi?

9. *

4- Uzaktan eğitim sürecinden siz memnun kaldınız mı? Sizce hedefine ulaştı mı?

10. *

5- Pandemi sonrası 2021-2022 eğitim-öğretim yılında (yani uzaktan eğitimden sonra gerçekleştirilen yüz yüze eğitim sürecinde) farklı sorunlar yaşandı mı?

Öğrencilerin okula karşı tutumlarında, akademik başarılarında, davranışlarında ve bunun gibi herhangi bir noktada, temelinin uzaktan eğitime dayandığını düşündüğünüz sorunlar var mı? Varsa nelerdir?

11. 6- Konu ile ilgili olduğunu düşündüğünüz, eklemek istediğiniz bir şey var ise; burada belirtebilirsiniz. *

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