

COVID-19 Pandemic and Education

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Effects of COVID-19 Pandemic on Education¹

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Abstract

COVID-19 has been one of the biggest challenges which education systems have ever faced. Distance education solutions have become the ‘mandatory choice’ of countries to maintain educational processes in this period. Concurrently, the long-term impact of distance education on educational outputs and suggestions towards minimizing the negative effects have begun to be discussed. Predictions on the potential increase in educational inequalities after COVID-19 pandemic have become prominent in these discussions. The aim of this study is to discuss the effects of transition to distance education and potential increase in educational inequalities in detail. Steps taken by Ministry of National Education (MoNE) in pandemic and the expected educational transformations after the pandemic are also discussed. MoNE has maintained the educational services via distance education through the digital platform EBA and television broadcasting. MoNE has successfully activated the production potential and human resources particularly in vocational education institutions against the pandemic. After the pandemic, it is predicted that transitions towards digital education platforms will be accelerated, and revisions of educational processes based on the new skills demanded by labor market will be critical. The importance of remedial education is emphasized against permanent effects of inequalities in opportunity particularly in disadvantaged schools.

Keywords

COVID-19, pandemic, education, Ministry of National Education, inequality

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Introduction

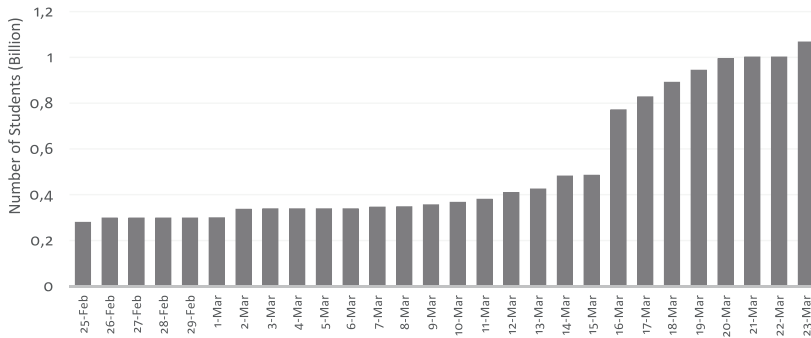
In Wuhan, China, a new type of coronavirus has arisen as a public health issue and has become a global problem. In this period, COVID-19 which has become a global pandemic in a short while due to its highly infectious characteristic and human mobility (WHO, 2020), has led to radical changes in daily life. In the first weeks when virus spread out of China, countries have begun to take precautions to avoid the effects of pandemic, and precautions were strengthened on a large scale after identification of COVID-19 as a global pandemic.

World Health Organization (WHO) has identified the COVID-19 as a ‘global pandemic’ in 11th March 2020, and has warned all authorities around the world to maximize their precautions against pandemic (WHO, 2020). The common precautions that are taken by the authorities around the world include the lockdown, traveling limitations between cities, regions and countries (OECD, 2020a; WHO, 2020). Lockdowns which are implemented in many countries have become highly effective on many areas, particularly on the labor market and education (OECD, 2020a; 2020b).

Education provides service for the majority of population including students, teachers, parents and other stakeholders. The issue of how the conventional educational processes, which are performed based on the teacher-student interaction in schools, will be maintained during the pandemic has become a challenge for countries (Daniel, 2020). In many countries, educational authorities have decided for school closures to keep the students and their families out of COVID-19 risk (ETF, 2018; OECD, 2020a; 2020b). By the last week of April 2020, the number of students who have been away from schools around the world exceeded to 1.6 billion, and these students constitute the 91% of student population of the world (Micks & McIlwaine, 2020). The number of students who have been affected by the school closures is given at Figure 1 between the February and March 2020.

As is seen in Figure 1, the number of the students who have been away from schools began to increase in March, and it accelerated and reached to more than 1 billion after 15th March (UNESCO, 2020a). For the first time in history, COVID-19 caused a group of students of this size to be out of school simultaneously and it is difficult to predict how long this process will continue (Micks & McIlwaine, 2020). The modelling studies which focus on the effect of school closures on the spread of the epidemic show that school closures have led to a decrease in mortality 2%-4% (Viner et al, 2020). Therefore, studies show that school closures have contributed the decreasing of ratio of spread and mortality regarding COVID-19.

Figure 1. Number of Students Affected by School Closures Based on COVID-19 (25th February-23rd March 2020)



Although school closure has been beneficial in preventing from the pandemic, it is costly for countries. Many countries have been caught unprepared for the one of the biggest issues in education history and they have been obliged to maintain education services through distance education (Daniel, 2020). This ‘mandatory’ transition to distance education has led to deficiencies in adequate discussions on the possible effects of maintaining educational processes with distance education solutions. Although the distance education solutions have been considered as the best option that countries have, they have composed many problems (Daniel, 2020; Morgan, 2020; Shapiro, 2020).

In this study, the advantages and limitations of distance education solutions, which is the mandatory preference of countries in pandemic period, are discussed in a multidimensional perspective. Then, the pandemic period in Turkey and the steps that have been taken by Ministry of National Education (MoNE) in this period are evaluated. Lastly, opinions on the permanent effects of COVID-19 pandemic on education and transitions that will occur after pandemic period are reviewed.

The Mandatory Preference in COVID-19 Pandemic: Distance Education

Distance education was considered as the future of the education especially in 1990s based on the progress in information technologies and easy access of people to information technologies (MacBrayne, 1995). In this period, the number of the people who has technological equipment, particularly computer, in home and access of society to innovative technologies increased substantially (UNESCO, 2002). The use of distance education accelerated particularly in 2000s in USA and UK, and many undergraduate programs began to be carry out through distance education platforms (Duffy et al, 2002; HESA, 2000). In fact, the 96% of the well-known colleges and universities in USA provided online courses, and more than 3 million students participated in at least one of these online courses in 2000s (Allen & Seaman, 2006).

A well-structured distance education system has a great potential to provide many opportunities to the students and teachers (ETF, 2018). Distance education allows people who cannot participate the conventional education due to many challenges to attend the educational processes (Evans & Shortall, 2011; Ginsburg, Sabatini & Wagner, 2000; Schardt, Garrison & Kochi, 2002). Distance education makes education possible for people who cannot participate or avoid participating in the conventional education due to disabilities, regional distances, educational fees, age and such reasons (Hassenburg, 2009; UNESCO, 2002). From the personal perspective, distance education allows people to structure their own learning process and constitutes an appropriate learning environment for people who cannot express their opinions (Hassenburg, 2009; UNESCO, 2002).

Although distance education provides important opportunities, it almost eliminates the social environment and leads to important limitations. The social dimension of learning, which is defined as a “socio-cognitive and interactive process” (Vygotsky, 1978), is restricted in distance education systems (Hassenburg, 2009). Due to the limitations of social environment, students cannot use the effective learning approaches such as peer learning and learning from the questions of other students (Bolton & Unwin, 1996; Cowan, 1995). In this circumstance, students are devoid of the competition and other motivational factors provided by the school interactions, which may lead to decrease in students’ motivation (Knebel, 2001).

In conventional education, the action of teaching and the reaction of learning occur concurrently, however, these two components of learning are separated in distance education (Hassenburg, 2009). In this manner, students are more likely to feel isolated and have inadequate support from the instructors (Stevenson, Sander & Naylor, 1996). Based on its structure, participation and performance of people in educational processes is prioritized. Therefore, inclusion of some modern learning approaches such as cooperative learning to educational processes is mostly inadequate in distance education (Duffy et al, 2002).

Instructors in distance education are also separated in two groups depending on the advantages and limitations of distance education (Peterson, 2001). In the first group, educators focus on the opportunities that distance education provides, its promotion on the life-long learning, and they claim that “courses in online education can be satisfactory like the conventional courses”, and many students who have diverse learning styles benefit greatly from the distance education. In the second group, educators think that distance education is one-sided and it focuses on the teaching rather than learning, students consider themselves in an isolated position, and cannot have adequate feedback from educators. It is also stated that students can communicate with their teachers much more easily and request for feedback in conventional education, however, this interaction is restricted in distance education. The interaction in online courses is also limited because it is dependent on e-mail and digital platforms, and this circumstance leads to increase in students’ concerns about education (Duffy et al, 2002).

The way in which education is delivered to students is also effective on the benefits and limitations of distance education. In 1990s, distance education was provided to students through particular media types that do not necessitate the internet connection such us CD-ROM, recorded video and voice recordings. However, by the 2000s, distance education has become almost entirely available on online platforms (Cejda, 2000). The opportunities provided by the online connection have accelerated the transformation of distance education into online education. As an example of this transition, the ratios of different ways used to deliver distance education to students in the USA in 2002 are given in Table 1.

Table 1. The Ways of Delivering Distance Education in USA (2002)*

The Way of Delivery	Percentage (%)
Nonsynchronous internet connection	95
Two-way audio/video	60
One-way previously recorded video	57
Synchronous internet connection	40
CD-ROM	30
Multiple mod packages	21
One-way video/two-way audio	13
One-way audio	11
One-way live video	9
Two-way audio	7

Source: (Cejda, 2007)

As seen in Table 1, in America, which is one of the countries where large-scale use of distance education was first introduced, the way of delivering distance education has been mostly online services that required internet connection.

As distance education has become an online education type, the prevalence of distance education has increased, however, it also contributed to gaps widening between students and increased the effectiveness of external factors on learning processes.

As is seen, distance education has been the best preference for countries in COVID-19 pandemic with its structural advantages and limitations. Countries have spent great effort to adjust their education services to distance education solutions, and projects have been carried to increase the quality of distance education (Daniel, 2020; Ozer, 2020a). Although educational services are maintained in pandemic period with distance education, distance education has made the inequalities in education and opportunity visible in many countries. In addition to ensuring the maintenance of the services, the mandatory transition to distance education has made inequalities in education and opportunity visible in many countries (Doyle, 2020; Van Lancker & Parolin, 2020). Current inequalities in conventional education has become stronger and visible in distance education. In this period students have been affected by many factors, particularly digital gap and socioeconomic characteristics, and this circumstance has led to increase in educational inequalities (Block, 2010; Bolt & Crawford, 2000).

The factors that should be considered and the sources of inequalities due to transition distance education in COVID-19 pandemic are evaluated below in detail.

Inequalities in Home Resources and Parents' Education Level

Students need to have required hardware and a stable internet connection to participate in the distance education (Morgan, 2020). However, 830 million students do not have a computer that they can use in their residences, and 40% of these students do not have a stable internet connection (UN Education Agency, 2020). Under the scope of inequalities in hardware and internet connection, the most disadvantaged students are those who live in African countries, however, this issue is also valid for European countries and USA (Van Lancker & Parolin, 2020). In Europe, 6.9% of the students do not have an internet connection in their residences, and 2.5% of the students in USA do not have permanent residence (Van Lancker & Parolin, 2020). These statistics show that there has been major inequalities in opportunity between students in accessing distance education.

Access to distance education is strongly related with the home resources that students and their families have (Doyle, 2020; Vigdor & Ladd, 2010). It is a common finding that students who have more technological equipment and intellectual resources, have comparatively higher academic performances (Akyüz, 2014; Batyra, 2017; Parcel & Dufur, 2001). It is probable that home resources, which are important indicators of socioeconomic level of families, have stronger effect on students' performance. Therefore, when the distance education is the only way that students can learn, the possibility of increasing

these inequalities should be considered (Carvalho & Hares, 2020). In pandemic, students from lower socioeconomic levels did not have chance to close the achievement gap with their peers through conventional education.

One of the other possible factor that creates inequality about participation in distance education and academic achievement is the parents' level of education (Doyle, 2020). It is found in studies that students, whose parents have higher level of education, are more supported by their families (Gooding, 2001), and their achievement level is comparatively higher (MoNE, 2018; 2019; OECD, 2019; Ozer & Perc, 2020). While the education level of parents is a determinant factor on the students' academic performance even in the conventional education, this effect is likely to strengthen during the epidemic, when the students cannot interact directly with their teachers.

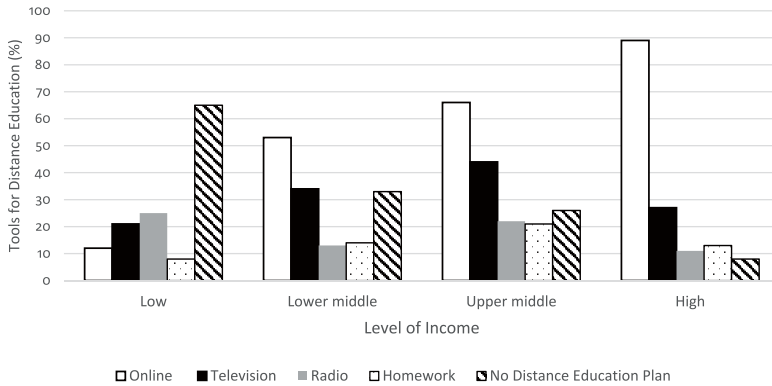
Socioeconomic level has a significant effect on the educational outcomes also in conventional education (Ozer, 2020d; Suna, Tanberkan & Ozer, 2020; Suna et al, 2020). It is clear that students who have more possessions at home and supported more by their families could be more advantageous than other students. Therefore, it is an important factor to consider that students from diverse socioeconomic levels have significant differences in opportunity to access distance education.

Differences between Countries in Infrastructure and Familiarity to Distance Education

Opportunities that are provided to students for accessing distance education change dramatically from one country to another, and this circumstance is another source of inequality (UNESCO, 2000; 2002). In some countries such as the United States, Canada, distance education has been used for a long time, and the required infrastructure has been already available. However, the adequate infrastructure has not been available or partially available in many countries, particularly African countries (UN Education Agency, 2020). While 90% of high-income countries can provide the students distance learning opportunity in one form or another, the percentage of the countries that can provide students distance learning among low income countries is only 29% (Carvalho & Hares, 2020).

The most problematic areas in terms of infrastructure are in Sub-Saharan Africa countries, nearly half of the total population (56 million people) in these countries live in areas where no mobile infrastructure or internet access is available (UN Education Agency, 2020). The main tool of distance education is the radio, which nearly 80% of the people have, in many African countries, particularly sub-Saharan countries. The main instrument of the distance education in many African countries, especially in sub-Saharan countries, is the radio owned by nearly 80% of the population (Burns, 2020; UN Education Agency, 2020). The distribution of instruments used by countries for distance education in the COVID-19 pandemic, and the income levels of the countries are given in Figure 2.

Figure 2. Instruments of Distance Education in COVID-19 Pandemic by Countries' Level of Income*



Source: (Carvalho & Hares, 2020)

As is seen in Figure 2, distance education is delivered to students via online platforms, radio, television and homework. The frequency of using online platforms to deliver distance education and the income levels of countries increase concurrently. Additionally, the frequency of using TV broadcasting to deliver distance education is higher in lower middle, upper middle and high income countries in comparison with low income countries. Also, the ratio regarding absence of a distinct plan on delivering distance education in low-income countries is remarkably higher than in higher-income countries. Therefore, the income levels of countries have become decisive on the distance education solutions they have provided, and quality of the educational services in pandemic.

Differences in Digital Literacy Levels of Students

The huge differences in students' digital literacy levels is another issue in distance education. "In assumption that all students can access the distance education, it is known that all students cannot benefit equally from the distance education (Huang & Russell, 2006; Robinson, Wiborg & Schulz, 2018)." Each student is in a unique level of digital literacy; therefore, they cannot take advantage of distance education opportunities at the same level. In other words, the capability of using the digital resources, adopting its processes, learning from digital platforms change from one student to another.

It is found in studies that students with lower level of digital literacy cannot participate the distance education adequately, and they have tendency to leave the education (Journell, 2007; Huang & Russell, 2006). These students can benefit from the peer education and teacher support more in conventional education, however, they are devoid of these kinds of supports in distance education (Makoe, 2012). In this case, the students could not benefit from the distance education adequately or leave the education. As an example to this situation, ratios of course participation have decreased after transition

to distance education in many states in USA, and the amount of decrease is higher for students from lower socioeconomic levels (Goldstein, Popescu & Hannah-Jones, 2020).

Issues in Assessment and Evaluation of Students' Learning

Assessment and evaluation are the fundamental parts of the education, and they have an important effect on students' learning processes (Lemanski, 2011). With the digitalization of learning processes, how to carry out the assessment and evaluation, which are an important part of education, has become an issue (Baleni, 2015; Chaudhary & Dey, 2013). The reason is that the restriction of social environment and direct interaction with the teacher in distance education leads to limitations on the assessment and evaluation (Kearns, 2012). Separating the environments of teacher and education decreases the control of teacher in assessment and evaluation process (Levine, 2005). In distance education, it is very difficult for teachers to use observational assessment methods, give feedback to students and assessment of students' participation in learning (Hannafin et al, 2003).

Assessment and evaluation processes are classified in two groups as formative assessment and summative assessment based on their purposes (Perera-Diltz & Moe, 2014; Rovai et al, 2006). Formative assessment gives deeper feedback on student learning, it allows students to create products, and it allows assessing all learning process as a whole (Rovai et al, 2006). At the same time, formative assessment requires iterative feedbacks from teachers and more student-teacher interaction (Ludwig-Hardman & Dunclap, 2003; Meyen et al, 2002). Formative assessment is mostly conducted through portfolio, product development, case study, and online group discussions and such methods in distance education (Perera-Diltz & Moe, 2014). Therefore, it is difficult to conduct formative assessment adequately with a large group of students in distance education, where teachers and students are not in the same physical environment. Thus, the transition to distance education at all educational levels in a short time during the COVID-19 pandemic raises questions about the usability of formative assessment, which is depending on the iterative feedback of teachers.

Summative assessment, which is also used in distance education, brings many limitations. Summative assessment mostly includes the assessment practices which are applied in the particular periods such as beginning and end of the semesters, and the purpose these practices is to assess to what extent students have achieved the predefined learning outcomes (Rovai et al, 2006). The teachers' ability to control is limited in these assessments which are frequently performed with multiple choice questions or tests with different question types in distance education (Michael & Williams, 2013). The assessment performed in this context provide an appropriate environment for students to use internet resources and academic resources at home without authorization, share test questions online, instant communication during the test and cheating behaviors (Ravasco, 2012; Tan, 2002). Numerous online platforms

are used to prevent cheating behavior of students in order to make summative assessments available in higher education programs which are conducted via distance education. These platforms have the ability to detect the students' identity through various methods, prevent the students' unauthorized use of internet resources and sharing the questions online, and they can review the students' responses for possible plagiarism (Al-Saleem & Ullah, 2014; Mellar et al, 2018). On the other hand, the results of online tests may still be doubtful due to the fact that use of technology and cheating behavior are becoming more complex day by day. Therefore, it is also recommended to use assessment methods that students can complete the test in a flexible timeframe, and they can use resources explicitly within the scope of summative assessment (Williams, 2006).

Assessment of students' vocational skills is another major problem related to measurement and evaluation within the scope of distance education (OECD, 2020c). Unlike the academic education, vocational skills are assessed with the theoretical knowledge of students in vocational education and training (VET). Therefore, students need to show their skills on-the-job for the assessment of vocational skills. Within the scope of VET programs conducted via distance education, assessments can be conducted through the educators in institutions that students enroll on-the-job training, theoretical tests and simulation studies that are applied on computers, video recordings, and e-portfolios (ETF, 2016; NCVET, 2004). However, in case of pandemic, direct observation of students' skills on-the-job is not an option to assess vocational skills. In assessment of students' vocational skills, the evaluator and student have to be in different environments. Unlike cognitive skills, vocational skills require coordination between reasoning and behavior, and this requirement and security risks lead to additional difficulties in creating the conditions required for student performance. Therefore, assessing and evaluating the students' vocational skills in a valid and reliable manner is quite difficult within the scope of distance education.

COVID-19 Pandemic in Turkey and Steps Taken by Ministry of National Education

Turkey has achieved to keep COVID-19 outside its borders for nearly one-month period following the rapid spread of pandemic on an international scale. Ministry of Health and Science Council have followed closely the spreading of pandemic around the world and they have identified the measures and steps to be taken. On the other hand, since 11th March 2020 as the day that first positive case was approved in Turkey, the number of cases has accelerated, and the level of measures taken has been increased. In this section, steps taken by Ministry of National Education (MoNE) to maintain educational services after the spreading pandemic in Turkey are discussed in detail (ETF, 2020; Özer, 2020a; 2020b; 2020c).

MoNE has prioritized all educational stakeholders, particularly students and parents, and has decided to close schools in all levels of education. In this period, MoNE has negotiated with Ministry of Health and Science Council, and has decided to close the schools until the end of April due to the growing number of COVID-19 cases, and time interval for school closures has extended to end of May. As a result of this decision, education process of approximately 18 million students from primary school to the end of secondary education have been transferred to distance education (Ozer, 2020a).

MoNE has announced that all educational services in COVID-19 pandemic to meet the educational needs of students will be provided through the distance education. MoNE also has decided to deliver the distance education through the Education Informatics Network (EBA), which is the digital education platform of MoNE, and Turkish Radio and Television Association (TRT). Strengthening the infrastructure of EBA has been considered as a necessity and required investments have been made in order to prevent problems in students' access to distance education. The protocols are signed between MoNE and TRT to facilitate the students' access to distance education and allow students to access distance education through television broadcasting. MoNE has produced the course contents for distance education with its human resources in a short time, and the courses are provided to students through EBA and TRT (Ozer, 2020a; 2020b).

MoNE has strengthened VET to become prominent in order to meet the needs of the society and prevent the spread of the pandemic. In this period, R&D activities have been supported and capacities of VET institutions that produce the medical productions have been increased. As a result of R&D activities, highly needed products such as respirators, video laryngoscope, air sterilization machines, contactless thermometers, surgical mask production machine, beds for intense care units, sample handling units have started to be produced in VET institutions. As the most urgent materials, the production of cleaning liquids and disinfectants has been increased in VET institutions, and the cleaning material needs of more than 54000 schools have been met by the productions of VET institutions. Additionally, new products such as face protection shields, disposal overalls and aprons, surgical/medical masks, and masks with N95 standard have begun to be produced in VET institution, their production process has been completed and they have been shared with healthcare professionals in a short time (Ozer, 2020c). Multidimensional and systematic steps taken by MoNE in the last two years underlie the VET institutions' reaching this level of production capacity (Ozer, 2018; 2019a; 2019b; 2020a; Ozer & Suna, 2019; 2020).

Besides the maintaining education services through distance education, MoNE has prepared the psychosocial support programs for students (Ozer, 2020b). Therefore, psychosocial support guides have been prepared for three groups: families, adults and youth. Then, a helpline which is available for the access of students and parents, has been established and psychological counsellors

and special education experts have been assigned to support the students and parents in this helpline (CEDEFOP, 2020). Production of course contents for special education has accelerated, and the number of the contents with sign language option has increased in a short time. Additionally, a mobile application titled as ‘I am Special, I am in Education’ has developed and released for the use of special education students and their parents.

MoNE has decided to postpone the central examination within the scope of High School Transition System (LGS) from 7th June to 20th June 2020 in order to minimize the effects of pandemic. It was decided that students take the central examination in their own schools to minimize the mobility of students, and the social distance regulations will be followed. Considering the digital literacy differences between students, the content of the central examination is restricted with the first semester curriculum which students have received under conventional education in schools. MoNE has prepared example test booklets twice a month, and a support package that includes approximately 1000 questions and published via official website in order to support the students who prepare for central examination. Solutions of the example questions were recorded and uploaded to EBA TV. “Live courses” practice that allow students to interact live with their teachers through EBA platform during preparation for exam preparation has been developed (Ozer, 2020a).

MoNE has also decided to use the distance education as a tool for teacher training. In this manner, it was planned that teacher training program would be provided through distance education and more than 125000 teachers would participate these training programs. Therefore, distance education has been used by MoNE as an important tool for the professional development of teachers as well as supporting students and parents (Ozer, 2020a).

Transformations in Education after COVID-19 Pandemic

COVID-19 has become effective on many sectors deeply in the world and it has become clear that its effects will be permanent. The current uncertainty in the economy causes firms to minimize their targets in the fields of production and recruitment, the number of people whose income decreased has increased, job losses have become more frequent, and these led to a decrease in purchasing power of people and worsen the economy (Ahmed et al, 2020). The predictions on the impact of pandemic show that COVID-19 will result in a greater loss of \$10 trillion in the global economy, and lower-income countries will be more affected by this loss, like other pandemics (Ahmed et al, 2020). However, after many crises, such as post-war periods, the global economy has somehow been recovered, and national economies could adapt to changing conditions. COVID-19 has constituted an important example for determining the recovery process of the global economy and the prioritization in case of such a situation. Education, which is one of the areas most affected by COVID-19, is also one of the areas where the major changes are expected after the pandemic (Strauss, 2020; Sweeney, 2020).

One of major changes expected in education is shifting of many educational processes conducted in traditional school environments to digital environments (Dennis, 2020; KPMG, 2020). In this context, COVID-19 has functioned as a catalyzer for the digitalization efforts in education which increased remarkably in last decade (Tam & El-Azar, 2020). Before the COVID-19 pandemic, global investments for the digitalization in education increased significantly to reach \$18.66 billion in 2019, and it is also estimated that the investments in same issue will reach \$350 billion in 2025 (Li & Lalani, 2020). The experiences of COVID-19 have approved the importance of the digitalization in education. Therefore, it is predicted that global investments for the digital technologies that will enable transition to distance education will increase further. More studies and investments are expected to be planned for the development of new educational technologies based on 5G, especially in leading countries of digitalization in education such as China, Japan and South Korea (Tam & El-Azar, 2020).

The transition of conventional education processes to digital platforms after COVID-19 pandemic necessitates the supporting of students' and teachers' digital literacy (Bergson-Shilcock, 2020; Moreno & Gortazar, 2020). Structuring the digital literacy as a part of education and ensuring that students and teachers use digital resources efficiently will be critical in the policies for supporting digital literacy. International Association for the Evaluation of Educational Achievement (IEA), which has been performing educational monitoring studies for a long time, has been conducting the International Computer and Information Literacy Study (ICILS) since 2013, and shows that these digital skills will be as important as major education disciplines (IEA, 2019). Therefore, it is predicted that more studies will be conducted to close the gap regarding digital skills between students. The development of teachers' digital skills is also important in increasing the effectiveness of distance education. The development of digital skills is expected to be emphasized more in the training of teachers for their professional and pedagogical development.

COVID-19 has been an important example of how production power and human resources of educational institutions can contribute to cope with a pandemic (Ozer, 2020a; 2020b; 2020c). VET has been one of the major actors in coping with COVID-19 pandemic in Turkey with its capacity in producing the products, which are needed in an emergency, and its ability to adapt R&D activities. VET has made a significant contribution to the manufacturing process with its production capacity, especially through the comprehensive improvement process in the last two years (Ozer, 2019b; Ozer & Suna, 2020). In this context, COVID-19 has clearly showed that educational institutions, particularly VET institutions, can play an active role in meeting the needs of society. The importance of determining the ways of activating production capacity and human resources in the event of a crisis is understood. In this context, preparation of strategy plans will be one of the important outcomes of the post-epidemic period to enable educational institutions to take a more active role in coping with crisis.

It is quite important and necessary to conduct the remedial education after the pandemic especially for the disadvantaged students in terms of access to and benefit from distance education after the epidemic. With the reopening of schools after pandemic, it is critical to support the students from lower socioeconomic levels and those who cannot learn efficiently during distance education due to various restrictions. In this context, currently countries have been planning of implications to support the students' who have academic deficiencies during the distance education (UNESCO, 2020b). These plans, which require a large-scale organization such as rescheduling the teaching process based on health measures, transportation of teachers and students to schools, and supporting students academically and socially, started in many countries in early May 2020 (UNESCO, 2020b). In this respect, COVID-19 showed the importance of countries' strategic planning for the transition from distance education to traditional education.

In global, studies to determine the effects of COVID-19 focus especially on the supply-demand balance in the labor market. It is expected that the possible economic recession and transformation after the pandemic (Ahmed et al, 2020) will lead to considerable changes in the skill sets demanded by the labor market. The transitions in expectations of the labor market should be reevaluated in all educational processes, especially in VET, which has a direct relationship with the labor market. Educational should be revised with the contribution of the sectors by increasing the weight of academic and digital skills in coherent with the expectations of the labor market.

It is vital to maintain the educational services and meet the educational needs of students in times of crises such as COVID-19. In this context, the importance of collaborations between educational institutions and private sector, which could contribute to the education considerably in these extreme conditions, increased during the COVID-19 pandemic. Therefore, it has been seen that cooperation between educational institutions with diverse numbers of students and profiles in a way that they will use all opportunities in common could made a great contribution (Tam & El-Azar, 2020). Private sector leaders such as Microsoft and Google in the USA, Samsung in South Korea, Tencent, Ping An and Alibaba in China have updated their education platforms for open access, they also increased and prioritized their investments in education (Tam & El-Azar, 2020). The cooperation between institutions is also beneficial for non-governmental organizations and think tanks that focus on education. In case of inadequate cooperation between the private sector and governmental institutions, the efforts of institutions are limited to their own stakeholders, and the possible benefit of cooperation is restricted.

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