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Are We Ready for the Post-COVID-19 Educational Practice? An Investigation into What Educators Think as to Online Learning

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Abstract

Coronavirus pandemic (COVID-19) has brought a great challenge to our society worldwide, which has resulted in the need for mandatory change in almost every aspect of our lives. Undoubtedly, educational practice is one of the most affected issues by this pandemic. At all levels of education, educators have forced themselves to adapt to online learning systems and platforms in a very short time. The main purpose of this study is to analyze the problems educators experienced in online learning practices during COVID-19 pandemic, the changes they expect in educational practices in the post-COVID-19 world and the measures to be taken in education against a potential outbreak in the future. The study was conducted with 1016 educators who teach at different levels. Data were collected through an online questionnaire developed by the researchers and analyzed using descriptive statistics. As a result of this study, it was found that most of the educators experienced some problems during their online learning practices, they expect certain changes in the educational practices in the post-COVID-19 world and they think essential measures must be taken in education against a potential outbreak in the future. At the end of the study, some recommendations were given for educational policy makers, practitioners and researchers about the post-COVID world in education.

Introduction

Digital transformation, which is widely used in the 21st century literature associated with Industry 4.0, has been accelerated by the mandatory lockdown of a great number of organizations due to COVID-19, and many educational institutions have started using different distance education systems and tools. This shows the fact that digital technology use in education has radically gained more importance at all levels of education. Accordingly, the flexible use of these digital learning management systems has recently turned into a necessity transforming educational organizations, educators and students' habits. To adapt this transformational change, while some countries have been trying to implement an urgent change vision at national level, many others have adopted some solutions to sustain their education systems at institutional or individual level. Although the outcomes of any implementations are unpredictable yet; still, it can be estimated that the schools or institutions which already have experienced teaching staff in distance learning management systems and the ones which invested on the innovation of their own digital technology resources will come out better off this situation, and it is no wonder that the roles of educational institutions and educators will continue to change in the post-COVID world of education.

There is still not a consensus in the literature about when distance education as a term came into existence; however, we can barely state that the first generation of distance education dates back to 1850s (Agostinelli, 2019; Holmberg, 1987; Jung, 2019). While many studies in the recent literature regards distance education as an online way of instruction via digital technology; decades ago, the distance education was also used to describe a form of education which is carried out via radio, letter, mail or TV (Simonson, Zvacek & Smaldino, 2019; Sumner, 2010; Zhao, et al., 2005). This shows that, thanks to the enhancements in digital technology throughout the years, both the definition and practices of distance education has changed, and distance education has turned into a form of online learning (Siemens, Gašević & Dawson, 2015). Agostinelli (2019) names this new form as the third generation of distance education.

On the other hand, the widespread use of digital technology in different educational contexts has brought some new terms into the literature such as online learning, web-based learning, blended learning, e-learning, learning management systems (LMS), computer-assisted instruction (CAI), massive open online courses (MOOCs), virtual learning environments (VLE), etc. (Daniel, 2014; Moore & Kearsley, 2004; Urdan & Weggen, 2000); therefore, it can be stated that distance education has become an umbrella term that stands for a form of

education conducted online through virtual learning environments. However, in this study, we prefer to use the term "online learning" instead of "distance learning" to describe the form of teaching and learning through some platforms or learning management systems on which both educators and students get together online synchronously.

When above-mentioned issues are considered, online learning, with its unique features, is obviously different in terms of its educational philosophy, theory and instructional methodology. Rooted in the paradigms reconstructionism and humanism (Korkmaz, 2019), online learning is mainly based on connectivism (Barnett, McPherson & Sandieson, 2013; Goldie, 2016; Jung, 2019) and it strives to remove barriers in order to ensure equal opportunities for lifelong learners (Gaskell, 2015). Developed by Siemens and Downes, connectivism is described as a learning theory for the digital age with the impact of the concepts such as globalization, technology, lifelong learning, digital information. Siemens (2004) states that connectivism is the integration of principles explored by chaos, network, and complexity and self-organization theories. Siemens (2004) highlights the principles of connectivism as follows:

- Learning and knowledge rests in diversity of opinions.
- Learning is a process of connecting specialized nodes or information sources.
- Learning may reside in non-human appliances.
- Capacity to know more is more critical than what is currently known.
- Nurturing and maintaining connections is needed to facilitate continual learning.
- Ability to see connections between fields, ideas, and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
- Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

Considering these principles, Duke, Harper and Johnston (2013) note that connectivism is characterized as a reflection of our society which is changing rapidly, in which society is more complex, connected globally, and mediated by increasing advancements in technology. Therefore, self-directed and connectivist learners on networks should create their learning environments according to their own learning needs (Downes, 2008; Levy, 2011; Tschofen & Mackness, 2012). Advocators of connectivism argue that knowledge cannot be transferred from educators to learners, participation to learning is important, and knowledge can be formed as a result of active interaction among individuals (Bozkurt, 2014; De Waard et al., 2011; Goldie, 2016; Steffens, 2015).

Although we do not have enough information about the outcomes of online learning practices and their pros and cons during this worldwide pandemic yet, we may still estimate that not all the practices being conducted now may reflect the suggested principles of connectivism described above. However, the most critical point to consider here is that, no matter what online platforms or systems have been used, we should be careful about not to cause a bigger problem while trying to solve an educational problem. In other words, while trying to ensure the academic development of the student, we should not overlook the psychological and social or socioemotional aspects of learning which require a more holistic perspective. We should also keep in mind that, as all humans are biological, psychological and social beings (Aslan & Güngör, 2019; Gove, 1994) and learning requires more than those factors, online learning alone may not meet all learning needs of students.

In addition to the educational philosophy and learning theory that online learning is based on, we should also know that online learning environments have some certain characteristics in terms of their instructional design (Larmuseau, Desmet & Depaepe, 2019; Mayer, 2019; Weidlich & Bastiaens, 2019). For example, Branch and Stefaniak (2019) state that the principles of online learning are collaboration, connectivity, student-centeredness, virtual reality, community, exploration, shared knowledge, multisensory experiences and authenticity. Similarly, Su (2016) notes essential characteristics of an ideal online learning environment include high levels of social presence, cognitive presence, and teaching presence, well-established online learning communities, self-directed online learners. These characteristics reflect the best or ideal practice of online learning and mostly reflect the social aspects of learning; however, how many educators or policy makers have been aware of those themes during these rapid actions taken or how many of these have been implemented during COVID-19 pandemic?

Another important issue is that, while educators, for many years, have been trying to make learning more social (Bandura, 2002; Boyd, Richerson & Henrich, 2011; Heyes, 2012), collaborative and cooperative (Jacobs, 2015; Lin, 2020; Ornstein & Hunkins, 2017, p. 209), today we have come to the result of digitalized and individualized learning. In other words, students have suddenly had to force themselves to take responsibility of their own learning although they get together with the educators trying to reach them through online platforms. As this way of learning may not be suitable for every student or not every digital platform may be reached by

everyone throughout the world, it is quite reasonable to reckon that this process during COVID-19 may expose more challenges and we may have to tackle with more diverse and complex problems in the future.

Considering all the issues mentioned above, not only investigation about what educators have experienced in online learning practices during COVID-19 but also finding out their opinions about what educational changes they expect and the actions/precautions to be taken for the new era of education is of great importance for post-COVID education. We must search for logical answers and effective solutions during our current online education practices as we may not have enough time to focus on those after the pandemic ends. We believe that finding answers to these questions will help educational institutions, educators and other stakeholders act for a better learning experience for learners and serve for a better knowledge society in a fairer and more equal world.

Purpose

The main purpose of this study is to analyze the problems educators experienced in online learning practices during COVID-19 pandemic, the expected changes in educational practices in the post-COVID-19 world and the measures to be taken in education against a potential outbreak in the future according to educators' views within the framework of the following research questions:

1. What are the problems that educators experienced during COVID-19 Pandemic in Turkey?
2. What are the changes that educators expect in terms of educational practices in the post-COVID-19 World?
3. What are the measures to be taken in education against a potential outbreak in the future?
4. Is there a significant difference between experiencing problems and the levels of education the educators work at?
5. Is there a significant difference between experiencing problems and the sector?
6. Is there a significant difference between expected changes in educational practices in the post-COVID-19 world and levels of education system?
7. Is there a significant difference between expected changes in educational practices in the post-COVID-19 world and sector?

Method

Research Design

In this descriptive study, which aims to analyze educators' views about their online educational practices during COVID-19 pandemic and about the expected changes in educational practices in the future, survey method was adopted. Descriptive studies provide a summary of an existing phenomenon using numbers to characterize individuals or groups, evaluate the nature of existing conditions. The purpose of most descriptive studies is limited to describing something as it is (McMillan, & Schumacher, 2014), and they provide foresight to produce hypothesis for further studies (Erkuş, 2013).

Participants

While this research was being carried out, COVID-19 pandemic was still active in Turkey. During the period, the government imposed a curfew for the people under the age of 20 and over 65. In addition, the schools had to be closed, and Turkish Ministry of National Education and Council of Higher Education decided to sustain the education online at all levels (preschool, primary, secondary, high school and tertiary). In summary, an active social isolation was being implemented in the country, and it was impossible for the researchers and the participants to come face to face and practice; therefore, an online survey was applied to the educators on a volunteer basis.

The reasons explained above led to the use of convenience (purposive) sampling method which is one of the nonprobability sampling methods. In nonprobability sampling methods, the probability of selecting each sample from the population cannot be accurately determined (Sümbüloğlu & Sümbüloğlu, 2005). Purposive sampling is selected on the basis of working with some, but not all, of the population (Şenol, 2012). Using the purposive sampling, researchers determine the major characteristics of the people who will form the population and reach the people who match these characteristics. Based on the researcher's knowledge about the population, the individuals (subjects) who can provide the best information for the purpose of the research are selected

(Christensen, Johnson, & Turner, 2014; McMillan & Schumacher, 2014). The most important criterion for the inclusion of individuals into the study is that "they are educators and have actively involved in online teaching during the COVID-19 pandemic", regardless of the levels they are teaching. Due to this criterion, the sample can also be considered within the scope of criterion sampling (Maxwell, 1996; Patton, 2002). The research was carried out with 1016 educators who teach at different levels of education, in different cities and different subject matters/areas of expertise. The characteristics about the participants are shown in Table 1.

Table 1. Characteristics of the Participants

Variable		**Frequency**	**Percentage (%)**
Gender	Female	664	65.4
	Male	353	34.6
	Total	1016	100
Sector	State/Public School/University	821	80.8
	Private/Foundation School/University	195	19.2
	Total	1016	100
Level/ Stages of Education	Pre-school	74	7.3
	Primary School	207	20.4
	Middle School	195	19.2
	High School	390	38.4
	University	150	14.8
	Total	1016	100
Experience	0-5 years	114	11.2
	6-10 years	159	15.6
	11-15 years	169	16.6
	16-20 years	176	17.3
	21 years and over	398	39.2
	Total	1016	100

Most of the educators who participated in the research are women (664, 65.4%), work at state/public schools/universities (821, 80.8%), work at high schools (390, 38.4%), have experience in teaching with 21 years and over (398, 39.2%). The subject matters that the participants teach are shown in Table 2.

Table 2. Distributions of Participants according to Subject Matter/Areas of Expertise

Subject Matter/Area of Expertise	**f**	**%**	**Subject Matter/Area of Expertise**	**f**	**%**
Physical Education (PE)	11	1.1	Preschool	62	6.1
Informatics/Information Technology (IT)	13	1.3	Special Education	79	7.8
Biology	31	3.1	Psychological counseling and guidance	69	6.8
Geography	13	1.3	Health	4	0.4
Religion and Ethics	10	1.0	Arts	59	5.8
Dentistry	3	0.3	Elementary Education	145	14.3
Educational Sciences	34	3.3	Social Sciences	16	1.6
Philosophy	9	0.9	Sociology	1	0.1
Physical Sciences	25	2.5	History	26	2.6
Science Education	2	0.2	Design	2	0.2
Physics	22	2.2	Technology Design	9	0.9
Economics and Administrative Sciences	13	1.3	Medical Sciences	19	1.9
Theology	4	0.4	Turkish Language and Literature	52	5.1
Chemistry	23	2.3	Turkish	30	3.0
Mathematics	65	6.4	Foreign Languages	120	11.8
Vocational Courses	42	4.1	Agriculture	2	0.2
Engineering	1	0.1			

The highest participation in the study was from Elementary Education (145, 14.3%), Foreign Languages (120, 11.8%) and Special Education (79, 7.8%) (see Table 2). The least participation was from Engineering (1, 0.1%), Sociology (1, 0.1%), Agriculture and Design (2, 0.2%). The least participation is from educators who work at university. The cities where the participants work are shown in Table 3.

Table 3. Cities where Participants Work (Frequency and Percentages)

City	Frequency	Percentage	City	Frequency	Percentage
Adana	6	0.6	Isparta	2	0.2
Afyonkarahisar	2	0.2	İstanbul	80	7.9
Aksaray	2	0.2	İzmir	140	13.8
Ankara	408	40.2	Kahramanmaraş	1	0.1
Antalya	32	3.1	Kastamonu	6	0.6
Ardahan	1	0.1	Kayseri	8	0.8
Artvin	3	0.3	Kırıkkale	11	1.1
Aydın	3	0.3	Kırşehir	3	0.3
Balıkesir	13	1.3	Kocaeli	7	0.7
Batman	2	0.2	Konya	18	1.8
Bilecik	1	0.1	Kütahya	1	0.1
Bitlis	10	1.0	Manisa	5	0.5
Bolu	3	0.3	Mardin	2	0.2
Burdur	3	0.3	Mersin	1	0.1
Bursa	3	0.3	Muğla	2	0.2
Çanakkale	29	2.9	Muş	3	0.3
Çankırı	2	0.2	Niğde	3	0.3
Çorum	4	0.4	Ordu	4	0.4
Denizli	4	0.4	Rize	2	0.2
Diyarbakır	1	0.1	Sakarya	2	0.2
Düzce	7	0.7	Samsun	35	3.4
Edirne	9	0.9	Sivas	2	0.2
Erzincan	1	0.1	Tekirdağ	12	1.2
Erzurum	1	0.1	Tokat	3	0.3
Eskişehir	11	1.1	Trabzon	34	3.3
Gaziantep	2	0.2	Van	1	0.1
Giresun	27	2.7	Yalova	2	0.2
Hatay	30	3.0	Zonguldak	3	0.3
Iğdır	3	0.3			

Data Collection Tool

First COVID-19 case occurred in China in December 2019 and became a pandemic that spread all over the world. People and almost all sectors were caught unprepared for this pandemic. Similarly, the field of educational sciences was not prepared enough to suddenly start a fully online education due to such a pandemic. There was no data collection tool found specially designed for online learning concerning COVID-19, which led the researchers to develop a data collection tool for online learning quickly.

The researchers originally considered developing a scale to collect data. However, as it would be difficult to carry out pilot study, to ensure the validity and reliability of the scale, and then to perform the actual research in order to develop a scale in such a short period in which data collection through a scale was difficult, it was decided to develop a "questionnaire". Questionnaire is an instrument that will not require statistical validity and reliability as a data collection tool and a tool which validity and reliability is ensured by referring to experts' opinions.

The following steps were followed in the questionnaire development process:

- 30 experts who have graduated from the field of Computer and Instructional Technology Education or have master and doctorate degree in the field of educational technologies were asked to write their views on the problems that may occur due to online learning during COVID-19 pandemic, potential developments in education in the post-COVID world, measures to be taken for another similar situation that may occur after the pandemic. The experts were asked to write an essay on these topics. This was conducted using Google Forms, open-ended question application.

- The responses received from the experts in the field of Computer and Instructional Technology Education were analyzed by the researchers and a list was created. The list was sent to the same 30 experts by e-mail, and they were kindly asked to mark the items if they are appropriate or not.

- In accordance with the experts' opinions about the items, a questionnaire was created consisting of three parts. Then the questionnaire was sent to 2 curriculum experts, 2 education technology experts and 1 measurement and evaluation specialist to check the appropriateness. According to experts' opinions, the necessary changes were made in the questionnaire and it was turned into an online form via Google Forms.

There are four sections in the latest version of the questionnaire. In the first section, there are questions that aim to determine the gender of the participants, whether they work in state/public or private schools, the level of education that work in, experience in teaching, workplace city and subject matter/area of expertise. In the second section, there are 24 problem statements (items) related to the educators' online learning practices during COVID-19. These statements were designed for the participants to choose the problems as "not experienced" or "experienced" from the list. In the third section, there are 17 items that aim to identify the "Expected Changes in Educational Practices in the post-COVID-19 World". The participants were asked to state their opinions by selecting "expected" or "not expected" from the list. In the last section, there are 15 items that aim to identify the "Measures to be Taken in Education against A Potential Outbreak in the Future". The items were designed for the participants to choose the measures as "necessary" or "not necessary".

Data Analysis

The data obtained from the participants were taken from Google Forms in "Excel" format, and they were transferred to the SPSS (Statistical Package for the Social Sciences). To analyze the data, descriptive statistics (frequency, percentage, etc.) were taken into consideration, and the data have been visualized using tables. In addition, the differences between the problems encountered in online learning practices during COVID-19 pandemic, expected changes in a possible similar situation in the future and measures to be taken in educational practices in the future in case of facing a similar possible situation to COVID-19 pandemic were analyzed by chi-square analysis in terms of sector, levels of education that the participants work at, and experience variables.

Results and Discussion

The Problems the Educators Experienced during COVID-19 Pandemic in Turkey

Participant responses to "The Problems the Educators Experienced during COVID-19 Pandemic in Turkey" and the frequency were analyzed. Participants were not instructed to respond to each item. The findings are given in Table 4.

The problems the educators experienced during COVID-19 pandemic in Turkey are about students' internet connection problems, lack of educator-student interaction, not being able to make a reliable assessment of learning, lack of knowledge about how to evaluate the learners' knowledge and skills, not being able to provide skills teaching, not being able to reach all the learning outcomes determined for learning, difficulty in providing feedback to students, difficulty in teaching according to the individual interests and abilities of the students, lack of student motivation, school/university administrators' attitude and behaviors towards educators who teach online during the obligatory online education period. On the other hand, they stated that they experienced no problems regarding the short duration of the lessons in online education, unsuitability of the time of online sessions for the educators, and the number of online sessions was too many for educators (see Table 4).

Table 4. Problems in Online Learning Practices

Problems during Online Educational Practices	Not Experienced		Experienced		No Response	
	f	%	f	%	f	%
1. The transition/shift to online learning was too rapid	518	51	242	23.8	256	25.3
2. Educators were not prepared enough for online education practices	498	49	249	24.5	269	26.5
3. The infrastructure required for online learning didn't exist/was not ready.	532	52.4	236	23.5	248	24.4
4. Educators had a lack of experience in preparing e-learning content.	500	49.2	244	24	272	26.8
5. Educators had internet connection problems	448	44.1	310	30.5	258	25.4
6. Students had internet connection problems	665	65.5	174	17.1	177	17.4
7. Educators who are used to formal education practices could not adapt to online teaching/learning practices	359	35.3	373	36.7	284	28
8. Educators were not experienced in using information and communication technologies.	385	37.9	363	35.6	269	26.5
9. Online learning management systems were not user-friendly	314	30.9	350	34.4	352	346
10. Educator-student interaction was poor in online learning practices	146	14.4	629	61.9	241	23.7
11. Reliable assessment could not be made in the online education environment	152	15	588	57.9	276	27.2
12. Educators do not have enough knowledge on how to evaluate the learners' knowledge and skills in the online education environment	212	20.9	527	51.9	277	27.3
13. Online education is not efficient in providing skills teaching (such as listening or speaking in language classes, drawing in visual arts lesson, etc.)	138	13.6	610	60	268	26.4
14. Online education is inappropriate for teaching every subject, knowledge or skill	138	13.6	643	63.3	235	23.1
15. Not all the learning outcomes determined for students can be gained through online learning environment	138	13.6	642	63.2	236	23.2
16. Giving feedback to students during online education is difficult	189	18.6	582	57.3	245	24.1
17. In online learning, it is difficult to teach according to the individual interests and abilities of the students	188	18.5	578	56.9	250	24.6
18. The duration of the course in online education was too short	470	46.3	261	25.7	285	28.1
19. Student motivation in online education is lower compared to face-to-face classes	98	9.6	706	69.5	212	20.9
20. The school/university administrators showed positive attitude and behaviors towards educators who teach online during the online education period	548	53.9	194	19.1	274	27
21. The time of the online sessions (teaching hours) was not suitable for the educators	551	54.2	183	18	282	27.8
22. The number of online sessions was too many for educators	540	53.1	167	16.4	309	30.4
23. Educators didn't have a suitable environment at home for online teaching	423	41.6	348	34.3	245	24.1
24. The fact that online lectures are archived created extra stress on educators.	354	34.8	387	38.1	275	27.1

The results related to the internet connection problems of the students during online learning are in line with research conducted by Ekmekçi (2017), Olt (2018), Saltan (2017), Tho and Yeung (2016), Tseng, Cheng and Yeh (2019). Similarly, there are many studies which indicate similar results that there is a lack of interaction between the students and the educators, difficulty in providing feedback to students, difficulty in teaching according to the individual interests and abilities of the students, not being able to provide skills teaching ,lack of student motivation during online learning (Hawkins, et al., 2013; LaRose & Whitten, 2000; Nart & Altunışık, 2013; Olszewski-Kubilius, & Lee, 2004; Rambe, 2017; Sintema, 2020; Wijekumar, Ferguson & Wagoner,

2006). Also, the results of the studies conducted by Jensen, et al. (2002), Mellar, et al. (2018), Olt (2002), Rowe (2004) and correlate with our research finding "not being able to make reliable assessment in the online education environment" and "educators' lack of knowledge about how to evaluate the learners' knowledge and skills in online learning environment".

Expected Changes in Educational Practices in the post-COVID-19 World

Participant responses about the "Expected Changes in Educational Practices in the post-COVID-19 World" and the frequency were analyzed. Participants were not instructed to respond to each item. The findings are shown in Table 5.

Table 5. Expected Changes in Educational Practices in the post-COVID-19 World

Changes in Educational Practices in the post-COVID-19 World	**Not Expected**		**Expected**		**No Response**	
	f	**%**	**f**	**%**	**f**	**%**
1. Educators' competencies will be reshaped	289	28.4	510	50.2	217	21.4
2. The need for online learning environments will increase	489	48.1	280	27.6	247	24.3
3. Education will be forced to change	293	28.8	494	48.6	229	22.5
4. Education expenditures will be made more upon online learning environments.	396	39	336	33.1	284	28
5. Educators' ability to provide online learning will improve	100	9.8	738	72.6	178	17.5
6. Fewer educators will be appointed by the government	486	47.8	247	24.3	283	27.9
7. Education will undergo a paradigm shift	228	22.4	528	52	260	25.6
8. Everything will get back into circulation and education will carry on in the same way as it used to be	347	34.2	475	46.8	194	19.1
9. Education faculties will integrate more courses about online learning into their curricula	129	12.7	710	69.9	177	17.4
10. There will be no need for formal/face-to-face education.	729	71.8	65	6.4	222	21.9
11. Upon returning to schools/universities, students' motivation towards learning will increase.	210	20.7	616	60.6	190	18.7
12. Upon returning to face-to-face education, students will have problems in adaptation to school and lessons.	426	41.9	413	40.6	177	17.4
13. Each school will have to develop and implement its own, individual curriculum.	405	39.9	319	31.4	292	28.7
14. Educators will experience a psychological crisis when they start going to school/university again	596	58.7	204	20.1	216	21.3
15. Online education will provide equal opportunities for all students	504	49.6	245	24.1	267	26.3
16. Students will realize the fact that they must take responsibility for their own learning	319	31.4	478	47	219	21.6
17. Educator's role will be to facilitating learning rather than teaching	281	27.7	449	44.2	286	28.1

The changes the educators expect in educational practices in the post-COVID-19 world are reshaping the competencies of the educators, undergoing a paradigm shift in education, supporting the educators' ability to provide online learning practices, integration of more courses about online learning into the curricula of education faculties, increase in students' motivation towards learning upon returning to schools/universities, role of educators from teaching to facilitating. The findings related expected changes in educational practices in the post-COVID-19 world are in line with research conducted by Cunningham and Anzola (2019), Jones and Sharma (2020), Ranasinghe, Karunarathna and Pradeepamali (2020) and Smiley, et al. (2020). On the other hand, some of the educators stated that they expected no change in the decrease in the need for formal/face-to-face education, increase in the need for online learning environments, fewer educator appointments by the government, having no need for formal/face-to-face education, having a psychological crisis upon returning to school/university again, providing equal opportunities for all students by online education.

Measures to be taken in Education against A Potential Outbreak in the Future

Participant responses about the "Measures to be Taken in Education against A Potential Outbreak in the Future**"** and the frequency were analyzed. Participants were not instructed to respond to each item. The findings are shown in Table 6.

Table 6. Measures to be taken in Education against A Potential Outbreak in the Future

Measures	**Not Necessary**		**Necessary**		**No Response**	
	f	**%**	**f**	**%**	**f**	**%**
1. The requirements such as network capacity, internet speed, information technology should be enhanced	82	8.1	778	76.6	156	15.4
2. Educators' competencies related to online learning environment need to be supported more	108	10.6	689	67.8	219	21.6
3. All educators should undergo training to use online learning management systems	127	12.5	659	64.9	230	22.6
4. Every student's access to the internet or other necessary equipment should be guaranteed	102	10	764	75.2	150	14.8
5. Special trainings about getting ready for another potential outbreak in the future should be organized for both students and educators	93	9.2	740	72.8	183	18
6. Educator, student and parent cooperation needs to be dynamized	164	16.1	646	63.6	206	20.3
7. More emphasis should be placed on teaching real-life problem-solving skills	110	10.8	685	67.4	221	21.8
8. Curricula should be revised and made more effective	172	16.9	621	61.1	223	21.9
9. Topics related to self-care, health, hygiene etc. should be integrated more in the curriculum content	232	22.8	612	60.2	172	16.9
10. Educational decision makers need to make effective plans for extraordinary conditions in the future	107	10.5	719	70.8	190	18.7
11. Starting from the concept of education itself, all educational practices should be revised, and a new structuring program should be made	223	21.9	574	56.5	219	21.6
12. Educators should have in-service training about online learning at least a day per week as a matter of lifelong learning	346	34.1	468	46.1	202	19.9
13. Measures need to be taken to promote educators' creative thinking skills	200	19.7	565	55.6	251	24.7
14. Educators need to be considered as professionals who can manage complex processes rather than technical employees	162	15.9	641	63.1	213	21
15. Educational decision makers do not have to take any measures about the post-COVID educational practices. This is a temporary situation, and everything will be fine in the future	624	61.4	175	17.2	217	21.4

The educators in Turkey think that some measures must be taken against a potential outbreak in the future because such a pandemic like COVID-19 may occur again and they may go back to teaching online. According to educators, the measures to be taken in education are enhancing network capacity, internet speed, information technology, supporting educators' competencies related to online learning environment, training educators to use online learning management systems, guaranteeing every student's access to the internet or other necessary equipment, organizing special trainings about getting ready for another potential outbreak in the future, dynamizing educator, student and parent cooperation, placing more emphasis on teaching real-life problem-solving skills, revising the curricula and making it more effective, integration of the topics related to self-care, health, hygiene etc. into the curriculum content more, making effective plans for extraordinary conditions in the future by the educational decision makers, revising all educational practices starting from the concept of education itself and making a new structuring program, taking measures to promote educators' creative thinking skills, considering educators as professionals who can manage complex processes rather than technical employees, and making effective plans for the potential extraordinary conditions in the future and taking measures about the post-COVID educational practices as this is a temporary situation, and getting back to circulation is not easy. These findings related to measures to be taken in education against a potential outbreak in the future are in line with research conducted by Crawford et al. (2020), Huang et al. (2020), Liu et al. (2020), Viner et al. (2020) and Zhou et al. (2020).

The Relationship between Experiencing Problems and Levels of Education System

"Is there a significant difference between experiencing problems and the levels of education system?" To analyze this relationship, chi-square analysis was preferred as both variables were measured categorically. The chi-square analysis results are given in Table 7.

Table 7. The Level of Experiencing Problems according to the Levels of Education System

Items	Response	Levels of Education System		Total	X^2	df	p	Effect Size (ϕ)
		K-12	University					
Educators had internet connection problems	NE	f 253	57	310	9.650	1	0.002	0.113
		% 81.6	18.4	100				
	E	f 401	47	448				
		% 89.5	10.5	100				
Online learning management systems were not user-friendly	NE	f 257	57	314	7.186	1	0.007	0.104
		% 81.8	18.2	100.0				
	E	f 312	38	350				
		% 89.1	10.9	100				
Giving feedback to students during online education is difficult	NE	f 153	36	189	6.273	1	0.012	0.090
		% 81.0	19.0	100				
	E	f 513	69	582				
		% 88.1	11.9	100				
The time of the online sessions (teaching hours) was not suitable for the educators	NE	f 468	83	551	5.599	1	0.018	0.087
		% 84.9	15.1	100				
	E	f 168	15	183				
		% 91.8	8.2	100				
Educators didn't have a suitable environment at home for online teaching	NE	f 345	78	423	15.282	1	0.000	0.141
		% 81.6	18.4	100.0				
	E	f 318	30	348				
		% 91.4	8.6	100.0				

* *Only the items with significant differences were reported.*
*** NE stands for Not Experienced, E for Experienced.*

Most of the educators working at K-12 level schools reported that they experienced problems regarding internet connection. For the item "Online learning management systems were not user-friendly", most of the educators working at university stated that there is no problem experienced with that; however, the majority of those working at K-12 schools stated that they experienced problems. For the questionnaire item "Giving feedback to students during online education is difficult", the educators who work at K-12 and university levels emphasized that they had problems in giving feedback during online sessions. The number of educators who reported not to have experienced any problems about giving feedback is very low. For the item "The time of the online sessions (teaching hours) was not suitable for the educators", neither K-12 nor university educators reported to experience any problems. The number of educators who reported to have experienced problems about the item is very low. For the questionnaire item "Educators didn't have a suitable environment at home for online teaching", most of the educators who work at university reported no problem. The significant differences obtained are at the level of small effect size (Table 7).

The Relationship between Experiencing Problems and The Sector (State/Public or Private Schools/Universities)

"Is there a significant difference between experiencing problems and the sector?" To analyze this relationship, chi-square analysis was preferred as both variables were measured categorically. The chi-square analysis results are given in Table 8. Most of the educators who work at state/public schools/universities stated that their students had internet connection problems. Similarly, both state/public and private school/university educators stated that reliable assessment could not be made in the online education environment. Likewise, most of the educators working at state/public schools/universities stated that online education is not efficient in providing skills teaching (such as listening or speaking in language classes, drawing in visual arts lesson, etc.). The significant differences obtained are at the level of small effect size (see Table 8).

Table 8. The Level of Experiencing Problems according to the Sector

Items	Response		Sector State/Public	Sector Private	Total	X^2	df	p	Effect Size (ϕ)
Students had internet connection problems	NE	f	117	57	174	24.922	1	0.000	0.172
		%	67.2%	32.8%	100.0%				
	E	f	559	106	665				
		%	84.1%	15.9%	100.0%				
Reliable assessment could not be made in the online education environment	NE	f	131	21	152	4.931	1	0.026	0.082
		%	86.2%	13.8%	100.0%				
	E	f	459	129	588				
		%	78.1%	21.9%	100.0%				
Online education is not efficient in providing skills teaching (such as listening or speaking in language classes, drawing in visual arts lesson, etc.)	NE	f	99	39	138	7.658	1	0.006	0.101
		%	71.7%	28.3%	100.0%				
	E	f	501	109	610				
		%	82.1%	17.9%	100.0%				

* *Only the items with significant differences were reported.*
*** NE stands for Not Experienced, E for Experienced.*

The Relationship between Expected Changes in Educational Practices in the post-COVID-19 World and Levels of Education System

"Is there a significant difference between Expected Changes in Educational Practices in the post-COVID-19 World and Levels of Education System?" To analyze this, chi-square analysis was preferred as both variables were measured categorically. The chi-square analysis results are given in Table 9.

Table 9. The Level of Expected Changes in Educational Practices in the post-COVID-19 World According to Levels of Education System

Items	Response		Level of Education K-12	Level of Education University	Total	X^2	sd	p	Effect Size (ϕ)
Education expenditures will be made more upon online learning environments.	NE	f	348	48	396	4.307	1	0.038	0.077
		%	87.9	12.1	100.0				
	E	f	277	59	336				
		%	82.4	17.6	100.0				
Upon returning to schools/universities, students' motivation towards learning will increase.	NE	f	166	44	210	10.671	1	0.001	0.114
		%	79.0	21.0	100.0				
	E	f	543	73	616				
		%	88.1	11.9	100.0				
Upon returning to formal/face-to-face education, students will have problems in adaptation to school and lessons.	NE	f	347	79	426	10.436	1	0.001	0.112
		%	81.5	18.5	100.0				
	E	f	369	44	413				
		%	89.3	10.7	100.0				

* *Only the items with significant differences were reported.*
*** NE stands for Not Expected, E for Expected.*

Most of the K-12 school educators stated they don't expect that Education expenditures will be made more upon online learning environments. Most of the educators who work at K-12 schools expect that students' motivation towards learning will increase returning to schools/universities when they return to schools. Similarly, the university educators think that students will not have problems in adaptation to school and lessons upon returning to face-to-face education. The significant differences obtained are at the level of small effect size.

The Relationship between Expected Changes in Educational Practices in the post-COVID-19 World and Levels of Education System and Sector

"Is there a significant difference between Expected Changes in Educational Practices in the post-COVID-19 World and Sector?" To analyze this, chi-square analysis was preferred as both variables were measured categorically. The chi-square analysis results are given in Table 10.

Table 10. The Level of Expected Changes in Educational Practices in the post-COVID-19 World According to the Sector

Items	Response		Sector: State/Public	Sector: Private	Total	X^2	sd	p	Effect Size (ϕ)
Educators' competencies will be reshaped	NE	f	256	33	289	17.476	1	0.000	0.148
		%	88.6	11.4	100.0				
	E	f	390	120	510				
		%	76.5	23.5	100.0				
Fewer educators will be appointed by the government	NE	f	403	83	486	5.426	1	0.020	0.086
		%	82.9	17.1	100.0				
	E	f	187	60	247				
		%	75.7	24.3	100.0				
Education will undergo a paradigm shift	NE	f	200	28	228	7.211	1	0.007	0.098
		%	87.7	12.3	100.0				
	E	f	420	108	528				
		%	79.5	20.5	100.0				
Everything will get back into circulation and education will carry on in the same way as it used to be	NE	f	267	80	347	4.937	1	0.026	0.077
		%	76.9	23.1	100.0				
	E	f	395	80	475				
		%	83.2	16.8	100.0				
Each school will have to develop and implement its own, individual curriculum	NE	f	347	58	405	12.004	1	0.001	0.129
		%	85.7	14.3	100.0				
	E	f	241	78	319				
		%	75.5	24.5	100.0				
Educators will experience a psychological crisis when they start going to school again	NE	f	494	102	596	6.860	1	0.009	0.093
		%	82.9	17.1	100.0				
	E	f	152	52	204				
		%	74.5	25.5	100.0				

** Only the items with significant differences were reported.*
*** NE stands for Not Expected, E for Expected*

Most of the educators both from state/public and private schools/universities expect that educators' competencies will be reshaped. Most of the state/public school educators do not think that fewer educators will be appointed by the government. The educators from both state/public and private schools/universities state that the education will undergo a paradigm shift in the future. Most of the state/public school/university educators expect that everything will get back into circulation and education will carry on in the same way as it used to be. While most of the educators from state/public schools/universities do not expect that each school will have to develop and implement its own, individual curriculum, most of the private school/university educators expect vice versa. Similarly, most of the educators from both state/public and private school do not think that educators will experience a psychological crisis when they start going to school again. The significant differences obtained are at the level of small effect size.

Conclusion

The problems experienced by the educators during online learning practices in COVID-19 pandemic in Turkey are about students' internet connection problems, lack of educator-student interaction, not being able to make a reliable assessment of learning, lack of knowledge about how to evaluate the learners' knowledge and skills, not being able to provide skills teaching, not being able to reach all the learning outcomes determined for learning, difficulty in providing feedback to students, difficulty in teaching according to the individual interests and abilities of the students, lack of student motivation, school/university administrators' attitude and behaviors towards educators who teach online during the obligatory online education period. On the other hand, they stated that they experienced no problems regarding the short duration of the lessons in online education, unsuitability of the time of online sessions for the educators, and the number of online sessions was too many for educators.

The changes the educators expect in educational practices in the post-COVID-19 world are reshaping the competencies of the educators, undergoing a paradigm shift in education, supporting the educators' ability to provide online learning practices, integration of more courses about online learning into the curricula of

education faculties, increase in students' motivation towards learning upon returning to schools/universities, role of educators from teaching to facilitating. On the other hand, they stated that they expected no change in the decrease in the need for formal/face-to-face education, increase in the need for online learning environments, fewer educator appointments by the government, having no need for formal/face-to-face education, having a psychological crisis upon returning to school/university again, providing equal opportunities for all students by online education.

The educators in Turkey think that some measures must be taken against a potential outbreak in the future because they may go back to teaching online in case of a pandemic like COVID-19. According to educators, the measures to be taken in education are enhancing network capacity, internet speed, information technology, supporting educators' competencies related to online learning environment, training educators to use online learning management systems, guaranteeing every student's access to the internet or other necessary equipment, organizing special trainings about getting ready for another potential outbreak in the future, dynamizing educator, student and parent cooperation, placing more emphasis on teaching real-life problem-solving skills, revising the curricula and making it more effective, integration of the topics related to self-care, health, hygiene etc. into the curriculum content more, making effective plans for extraordinary conditions in the future by the educational decision makers, revising all educational practices starting from the concept of education itself and making a new structuring program, taking measures to promote educators' creative thinking skills, considering educators as professionals who can manage complex processes rather than technical employees, and making effective plans for the potential extraordinary conditions in the future and taking measures about the post-COVID educational practices as this is a temporary situation, and getting back to circulation is not easy.

There are differences between the problems experienced by K-12 educators and the problems the university educators had in online learning practices during COVID-19 Pandemic in Turkey. Similarly, the findings showed that the perceptions in the problems faced by educators who work at state/public and private sectors are also different. It was also found that there are different expectations between K-12 and university educators, as well as the difference between state/public and private school/university educators in terms of the expected changes in educational practices in the post-COVID-19 world.

The COVID-19 experience has shown the world that education is one of the most important issues to be considered even in the most difficult times which all human beings globally suffer from the health problems and economic crisis. Considering the potential more difficult days to come, it is quite logical to state that education will have an even more critical role for societies. In addition, with the new educational context triggered by the pandemic, the recognition of online learning must be sustainable. Because this pandemic has also shown us the fact that having digital literacy skills and technology use in education is not a choice anymore but necessity. Therefore, all educators should revise their pedagogical knowledge to cope with the challenges. They should always keep in mind that "to teach is not to transfer contents to anyone, just as to learn is not to memorize the outline of some content that has been transferred by the teacher, but to create the possibilities for the production or construction of knowledge" (Freire, 2000).

Recommendations

For Educational Policy/Decision Makers

Schools or universities, regardless of state/public or private, are the educational institutions which are risky to be changed in a very short time. Therefore, while planning about the change, even it is a small one, it should be managed by making careful plans with a sustainable perspective. Decision makers should collaborate with school/university administrators, educators, students, parents and other stakeholders about the educational needs after COVID-19. In other words, both top-down and bottom-up strategies should be used to carry out a participatory policy making. Similarly, both K-12 and university curricula should be revised and redesigned according to the needs in the current life situations. In addition, instead of overwhelming students with many subjects and contents, more meaningful and flexible curriculum making strategies should be adopted.

Online learning practices during the pandemic all over the world should be carefully evaluated in terms of different aspects. The scientific approach should be applied in evaluation, and the research to be carried out on this issue should be supported by governments. According to the outcomes of these evaluations, the needs should be met immediately. In addition, education faculties should integrate more effective lessons about online education into their curriculum, regardless of the divisions, so that the future educators are well-equipped about

technology, online education and material design. In addition, teacher candidates should do their teaching practicum in online learning environment. This can be considered as a prerequisite for graduation.

For Educators

The educators should regularly attend professional development events, webinars and massive open online courses (MOOCs) to improve their digital literacy skills, learn more about different learning management systems (LMS), online collaboration platforms, tools to design online learning content, etc., and upon returning to formal education, educators should adopt a broader educational philosophy which aims to enhance the students' knowledge and skills such as real-life problem solving, decision-making, self-management, learning how to learn, critical and creative thinking, responsibility.

For Researchers

As an agenda for further research on online learning, studies should be conducted with the students about the online learning practices during COVID-19 pandemic. Because the online learning experience of the students during this pandemic may not have the same results with the related studies conducted before this worldwide outbreak. Furthermore, experimental research on the achievement of learning on different school subjects during coronavirus outbreak should be conducted. These studies can provide evidence to make decisions about what subjects are more suitable for online learning. And the comparative research which focus on online learning practices during coronavirus pandemic done with the sample from different countries may give educators a further perspective.

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