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|Araştırma Makalesi / Research Article|

Views of Teacher Candidates on Distance Education in the COVID-19 Pandemic Process

COVID-19 Pandemi Sürecinde Öğretmen Adaylarının Uzaktan Eğitime İlişkin Görüşleri

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Keywords

1. COVID-19
2. Pandemic
3. Emergency distance education
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Anahtar Kelimeler

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Abstract

Purpose: The purpose of this study is to determine the reflection of the faculty of education science and social studies teacher candidates in the emergency distance education process (their motivation for education, educational activities, purposes and preferences of social media use) during the COVID-19 pandemic process.

Design/Methodology/Approach: This research is a qualitatively prepared study. As a research design, it is a descriptive research that is also included in qualitative studies. The research group of this study total consists of 120 science (N = 42; 38 females, 4 males) and social studies (N = 78; 60 females, 18 males) teachers candidates. An open-ended survey was used as a data collection tool in the study. The data collection tool was applied within the scope of the "Instructional Technologies" course, which is common in the program of the students of both departments. The data obtained from the survey were subjected to content analysis.

Findings: As a result of the study, it was concluded that the social media environment most used by science/social studies teacher candidates during the COVID-19 pandemic process was WhatsApp.

Highlights: It has been determined that the COVID-19 epidemic process offers significant opportunities science/social studies teacher candidates to explore the digital learning world. Considering the positive effects of the digital literacy of candidates during the COVID-19 epidemic process, it is recommended that teachers, teacher candidates, curriculums and textbooks are developed in terms of digital competencies.

Öz

Çalışmanın amacı: Bu çalışmanın amacı, COVID-19 pandemi sürecinde eğitim fakültesi fen bilgisi ve sosyal bilgiler öğretmen adaylarının acil uzaktan eğitime ilişkin görüşlerini (eğitime yönelik motivasyon, eğitim-öğretim faaliyetleri, sosyal medya kullanım amaçları ve tercihleri) belirlemektir.

Materyal ve Yöntem: Araştırma nitel olarak hazırlanmıştır. Araştırma deseni olarak nitel çalışmalar içerisinde de yer alan betimsel bir araştırma niteliğindedir. Bu araştırmanın çalışma grubunu toplam 120 fen bilgisi (N=42; 38 kadın, 4 erkek) ve sosyal bilgiler (N=78; 60 kadın, 18 erkek) öğretmen adayı oluşturmaktadır. Çalışmada veri toplama aracı olarak açık uçlu anket kullanılmıştır. Veri toplama aracı her iki anabilim dalı öğrencilerinin programında ortak olan "Öğretim Teknolojileri" dersi kapsamında uygulanmıştır. Anketten elde edilen veriler içerik analizine tabi tutulmuştur.

Bulgular: Çalışma sonucunda, fen bilgisi ve sosyal bilgiler öğretmen adaylarının COVID-19 pandemi sürecinde en fazla kullandıkları sosyal medya ortamının WhatsApp olduğu sonucuna varılmıştır.

Önemli Vurgular: COVID-19 salgın sürecinin dijital öğrenme dünyasını keşfetmek adına öğretmen adaylarına önemli fırsatlar sunduğu belirlenmiştir. COVID-19 salgın sürecinde adaylarının dijital okuryazarlığının gelişmesine olumlu etkileri göz önüne alındığında öğretmenlerin, öğretmen adaylarının, öğretim programlarının ve ders kitaplarının dijital yetkinlikler açısından geliştirilmesi önerilmektedir.

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INTRODUCTION

The pandemic caused by the virus called COVID-19, which emerged in Wuhan, China in late 2019, affected the whole world in a very short period of time. Against this situation, countries have implemented a series of measures (Pınar and Dönel Akgül, 2020). Against this situation, countries social distancing, quarantine, curfews, suspension of face-to-face education activities, wide restrictions on the movement of goods and people, etc. has implemented measures packages (Gupta and Goplani, 2020). During this transition to compulsory distance education, face-to-face education of approximately 25 million students in Turkey and 1.6 billion students worldwide had to be suspended (UNESCO, 2020). International organizations such as UN, UNICEF and OECD are working to ensure that the new education conditions, which have to be carried out remotely, do not increase the current success gaps in countries. In addition, they publish reports so that they do not create a new social problem area and try to support this process in different dimensions. Countries within the scope of UNESCO are trying to support especially the more vulnerable and disadvantaged people in reducing the negative impact of the compulsory break in education and ensuring the continuity of education through distance learning (UNESCO, 2020). In this direction, starting from the principle that education is a basic human right, both public and private institutions and organizations have made an effort to continue their activities within the scope of distance education (Honey, Culp and Carrigg 2000). This rapid transition has been in a structure that was caught off-guard in parallel with the sudden and rapid spread of the pandemic and required a rapid transformation (Telli Yamamoto and Altun, 2020). Considering the practices in the world, the activities of universities with a large number of programs and students such as the Technical University of Munich in Germany, the University of Bologna and Milan in Italy were been limited. Distance education was started in these universities, and educational activities were carried out synchronously and asynchronously using systems such as Moodle, UNIBO, Ariel (Dikmen and Bahçeci, 2020). Turkey encountered COVID-19 relatively later than European countries, thanks to the measures it took. However, after the understanding that the epidemic would spread, the practices of the countries that were successful in the fight were evaluated. In this context, higher education was suspended for 3 weeks at the first stage, and then it was deemed appropriate to conduct the 2019-2020 spring and 2020-2021 fall semesters entirely with distance education (YÖK, 2020). In addition, before the decision to suspend education in higher education, information and guidance regarding some measures were sent to universities. During the period when education was suspended within the scope of COVID-19 measures, studies were also carried out in the basic areas of legislation, infrastructure, human resources, content and implementation in order not to disrupt the learning processes of students (Telli Yamamoto and Altun, 2020).

This process has seriously affected the education sector, one of the largest service industries worldwide. 123 universities with distance education infrastructure and experience have switched to distance education with their own means as of March 23, 2020. For universities that do not have a distance education unit, it has been decided that the open course materials pool created after this date will be opened to all universities and supported by the coordination of the Higher Education Council from universities with distance education infrastructure or open education capability. It has been decided to broadcast common lessons throughout the country by including state-affiliated television channels within the body of the Turkish Radio and Television Corporation (TRT) to this support (YÖK, 2020). By allowing this practice and approach at the associate and undergraduate level, also at the graduate level; necessary studies have been carried out to ensure that there is no interruption in these processes by using distance education and digital opportunities, provided that they are auditable (Kırmızıgül, 2020). Trabzon University, where the study was conducted, has structured all its education within the scope of distance education in this context. The process was carried out using moodle as a learning management system and Adobe Connect infrastructure as a live classroom platform. Within the scope of the undergraduate programs of the university, a total of 2394 lessons were given with the live class method. Students were supported by establishing auxiliary elements such as technical support documents, SMS, e-mail notification, contact points, and information platform. In this context, the system structured according to formal education was immediately transformed into crisis management and distance education. The sudden development of the pandemic has brought with many problems. For this reason, the continuation of education was aimed with the means at hand, and the process was structured within the scope of "emergency distance education", not distance education, for reasons such as temporary solutions and physical distance (Bozkurt, 2020). Emergency distance education includes the use of distance education solutions in times of crisis or emergency, where the process cannot continue face-to-face. However, the most important difference of this process from distance education is to switch to face-to-face education again when the problem disappears. In these conditions, the main purpose is to deliver educational content to students quickly and reliably, even if it has been not prepared for distance education during an emergency or crisis (Akkoyunlu and Bardakçı, 2020; Hodges, Moore, Lockee, Trust, and Bond, 2020). Although many universities have distance education infrastructure, there is a need for a configuration called "emergency distance education" and new solution proposals in the process. When uncertainties such as the possibility of emergence and/or repetition of similar situations are added to the aforementioned needs, it is necessary to determine the training problems for the instant solution of the problems that occur within the scope of emergency distance education in the face of a global crisis such as COVID-19. Within the scope of this period, the social media environments shared and the research of the shared contents have become a current and priority work area. In other words, although rapid studies are carried out in the field of medicine in order to produce a solution to the pandemic, studies are needed to successfully manage the process in the field of education. It has been observed that individuals use social media tools (Skype, WhatsApp, Zoom, etc.) intensively in a global crisis such as COVID-19 (He and Harris, 2020). It is thought that the quality and quantity of shares in social media will be important for the structuring of the post-pandemic normalization process. Within the scope of distance education, it is important in terms of process management to address social dimensions such as determining the motivation of students

towards education and the factors that affect the process positively or negatively. This process also revealed the understanding that there are different ways of learning and the roles of the school outside of education (socializing, coaching, sharing). In addition to the difficulty of planning the distance education process, it has come to the fore that it should focus on education from different perspectives around the world with its equal opportunity dimensions. The COVID-19 pandemic has revealed the necessity of distance education applications not only in normal times or to support formal education, but also in some crisis situations (epidemics, wars, disasters, forced migrations, etc.) (Can, 2020).

History has shown that irreversible changes occur in the world after every pandemic. This process is called the "New World Order" in the literature (Arı and Kanat, 2020). In the new world order expected after the COVID-19 pandemic, it is thought that teacher and teacher education, which is the leading role in education process, will differ. With the pandemic process, it is important to determine the effects of providing teacher training with emergency distance education on both students and prospective teachers who are the teachers of the future. In our country, it is seen that programs are created within the framework of the integrated program approach. In this context, social and science lessons were considered as axis lessons. Having axis lessons means that other lessons (Turkish, Mathematics, Physical Education, Music, which are expression and skill lessons) are shaped around these lessons. However, even if this is the case, in practice, the lessons are taught independently and disconnected from each other (Tertemiz, 2004). In this context, the branches in which students encounter scientific knowledge for the first time as a different discipline are science and social sciences. Therefore, in this study, it was deemed appropriate to work with science and social studies teacher candidates. Due to the pandemic, it was found appropriate to give the "Instructional Technologies" course, which the branch teacher candidates took in the fourth semester of their undergraduate education, with emergency distance education. Because this course also allows teacher candidates to transform some of the education they received in the process into practice. The instructional technologies course provided a basis for prospective teachers to bring together alternative educational environments and field knowledge that can be used in the management of this process. In addition, the process also revealed the importance of current digital literacy as a requirement of the course content of all components of the teaching process (YÖK, 2018). Teachers candidates, who appear to be consumers of this knowledge today, will appear as both producers and users of knowledge in the future. Therefore, the purpose of this study is to determine the views of the faculty of education science and social studies teacher candidates in the emergency remote education process (their motivation for education, educational activities, and social media usage preferences) during the COVID-19 pandemic process.

In this context, the sub-problems of the study are presented below;

COVID-19 pandemic process, science/social studies teacher candidates;

1. What are their views on educational motivations?

2. What are their views on educational activities?

3. What are the purposes of using social media and social media usage preferences?

METHOD

This research is a qualitatively prepared study. As a research design, it is a descriptive research that is also included in qualitative studies. Descriptive methods try to reveal the existing situation quantitatively or qualitatively. Since the aim of the related research is to determine the effect of the COVID-19 pandemic process on the education process of pre-service science and social studies teachers, it is a descriptive research. The main purpose of descriptive research is to explain the situation examined in detail (Çepni, 2007). According to Simon and Burstein (1985); descriptive methods aim to classify and describe behaviors according to their common characteristics. In descriptive studies, “What is the current situation?”, “Where are we?”, and “Where should we go?” questions' response are being investigated (Kaptan, 1998). Descriptive research designs raise questions of why because descriptive research designs aim to gain in-depth information on any subject (de Vaus, 2001).

Participants of the Study

The research group of this study consists of total 120 second grade science (N = 42; 38 females, 4 males)\social studies (N = 78; 60 females, 18 males) teacher candidates teaching program in the spring semester of the 2019-2020 academic year.

Data Collection Tool

In this study, an open-ended survey developed by the researchers was used as a data collection tool. Within the scope of the validity study of the developed survey, the opinions of three field experts whose fields of study are Science Education, Social Sciences Education and Computer and Instructional Technologies Education were used. Within the scope of the validity study, a pilot application of the survey questions was made with three science/social studies teacher candidates. After the pilot application, the following arrangements were made within the framework of the opinions of the field experts in order to make the questions more understandable:

In the second question asked to the teacher candidates about the positive and negative effects of the pandemic process, the teacher candidates were asked to state three positive and negative effects each. However, considering that this expression may have a limiting effect on teacher candidates, the expression "three" was removed from the question.

While in the first case of the third question, structured options regarding social media environments were presented, these options were excluded from the question considering that these preferences limited and directed them. The final form of the survey questions is presented below.

1. How has the current COVID-19 pandemic process affected your educational motivation? Please explain.

2. What are the positive and negative effects of the COVID-19 pandemic process on your educational activities? Please explain.

3. Which social media environments did you use during the COVID-19 pandemic? Please specify.

4. What are your purposes of using social media during the COVID-19 pandemic? Please specify.

Application Steps

In the spring semester of the 2019-2020 academic year, after 5 weeks of face-to-face lessons until March 23, 2020, emergency distance education started with the pandemic. The process was completed with the distance education that lasted for nine weeks. The data collection tool was applied in the 15th week within the scope of the “Instructional Technology” course, which is common in the program of both departments. The data of the study were collected over a period of 1 week, given Moodle as a learning management system and Adobe Connect infrastructure as a live classroom platform. Verbal consent of the students was obtained during the process. The obtained data were evaluated by subjecting them to content analysis.

Data Analysis

The data obtained from the survey were subjected to content analysis. With content analysis, it is aimed to reach the relationships and concepts that can explain the data collected (Yıldırım and Şimşek, 2011). In the content analysis, the meaningful parts between the data was coded. The data obtained within the scope of coding were divided into sections and comparisons and associations were made between the data (Strauss and Corbin, 1990). The data were categorized by means of codes and given with frequencies by creating common themes. The data is organized according to codes and themes. At the last stage, the meaning integrity of the themes derived from the data was provided and interpreted. By re-examining the data that were written down in the content analysis, attention was paid to ensure that the themes were at an equal distance from each other and that the codes did not overlap.

In qualitative research, the reliability of data analysis depends especially on the coding process. For the reliability of the analysis of the survey data, the data obtained were analyzed by three different coders. The analyzes made independently of each other were examined by bringing three different coders together. The aspects that stand out and are considered important in the analyzed data were determined, and first the codes and then the categories were obtained. Then, the codes and categories produced separately by each of the three researchers were compared and the codes and categories were clarified. In this context, coding reliability was examined to determine how consistent the researchers' categories. Consistency index was used in the study and coding reliability was calculated. The agreement rate is “an index found by calculating the coding situations where the same coding is done, on which agreement is reached and cannot be reached”. The consistency value calculated using the agreement rate was found to be 0.80. The coding that was not agreed upon was resolved by negotiation. As stated by Tavşancıl and Aslan (2001), the agreement rate used to determine inter-rater reliability is expected to be higher than 0.70. In this study, it can be stated that the coding reliability is at an acceptable level. In terms of research ethics, science teachers candidates were coded as F1, F2…F42. Social studies teacher candidates were coded as S1, S2…S78.

FINDINGS

The first question in the survey is below. Then, the findings obtained from the analysis of this question is presented. Question asked in the survey was; “How has the current COVID-19 pandemic process affected your educational motivation? Please explain.” The findings obtained for the question are presented in Figure 1.

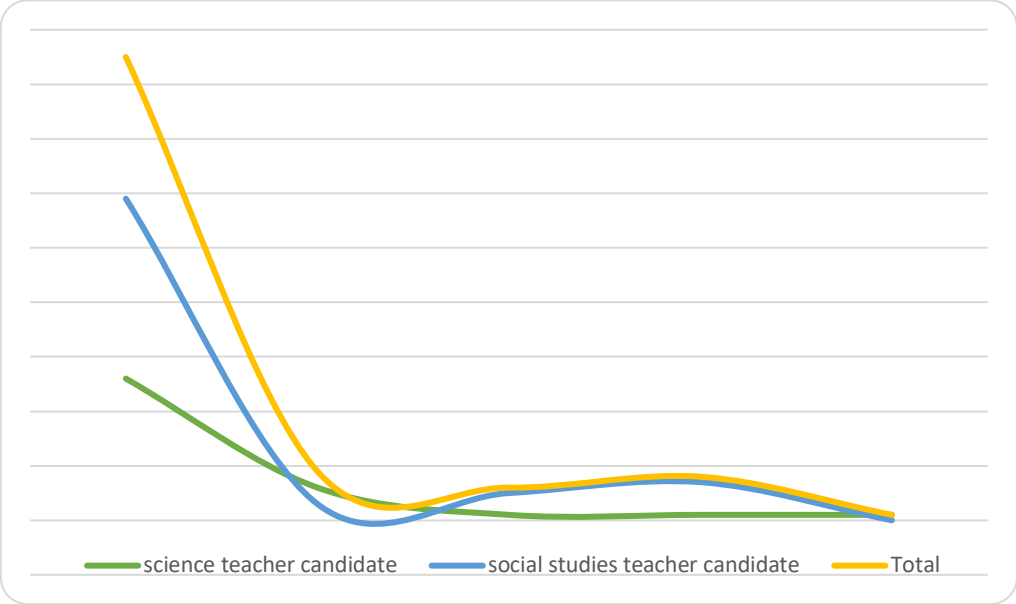


Figure 1. The effect of the pandemic period on the motivation of teacher candidates towards education

When the motivations of the teacher candidates given in Figure 1 during the pandemic period are examined, it is seen that the general motivation of the majority of them (f=85) has decreased. It is seen that the motivation of the science (f=26) and social studies teacher candidates (f=59) decreased in the process. A total of 11 pre-service teachers did not comment on this question.

The factors that positively and negatively affect the motivation of teacher candidates towards education during the COVID-19 epidemic are summarized in Figure 2.

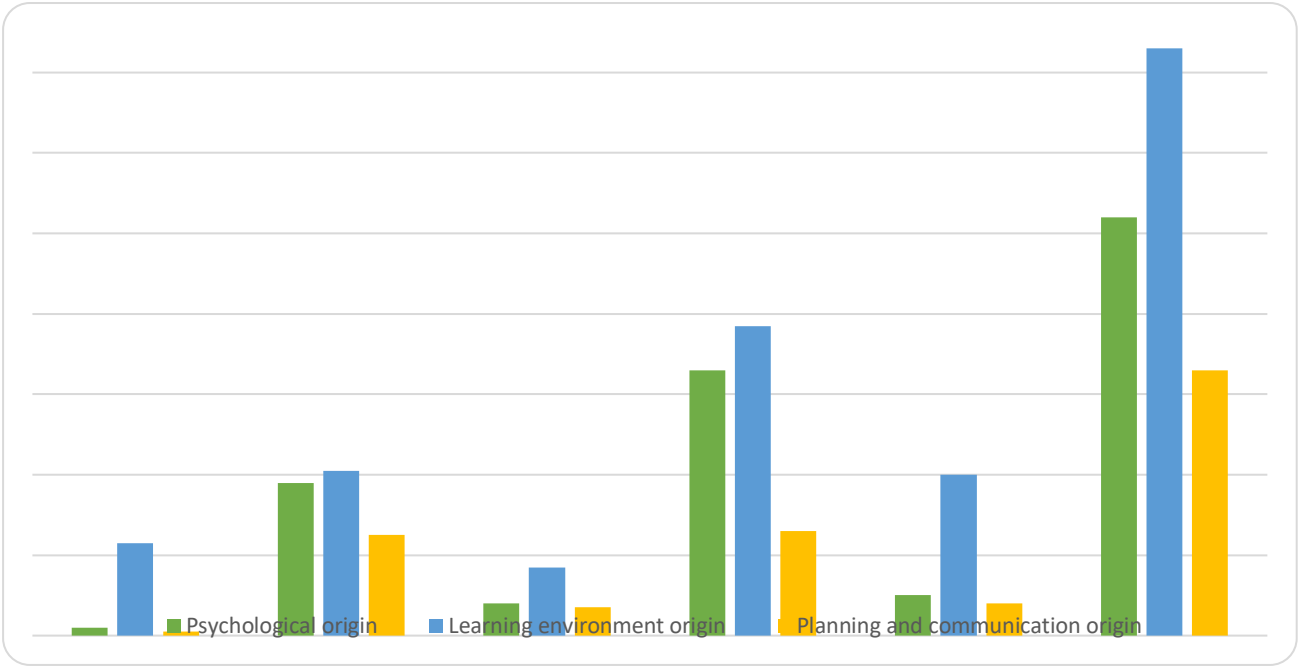


Figure 2. Factors that positively and negatively affect teacher candidates' motivation towards education during the COVID-19 epidemic process

When Figure 2 is examined, it is seen that the negatives that the teacher candidates stated that they experienced during the pandemic process are similar on the basis of branches are grouped under certain basic components. Accordingly, at the beginning of the problems that pre-service teachers stated that they experienced the most in this process, "psychological origin" and "learning environment origin" are the ones.

The positive and negative factors of the COVID-19 epidemic process on the motivation of teacher candidates in the process are summarized in Figure 3 on the basis of frequency.

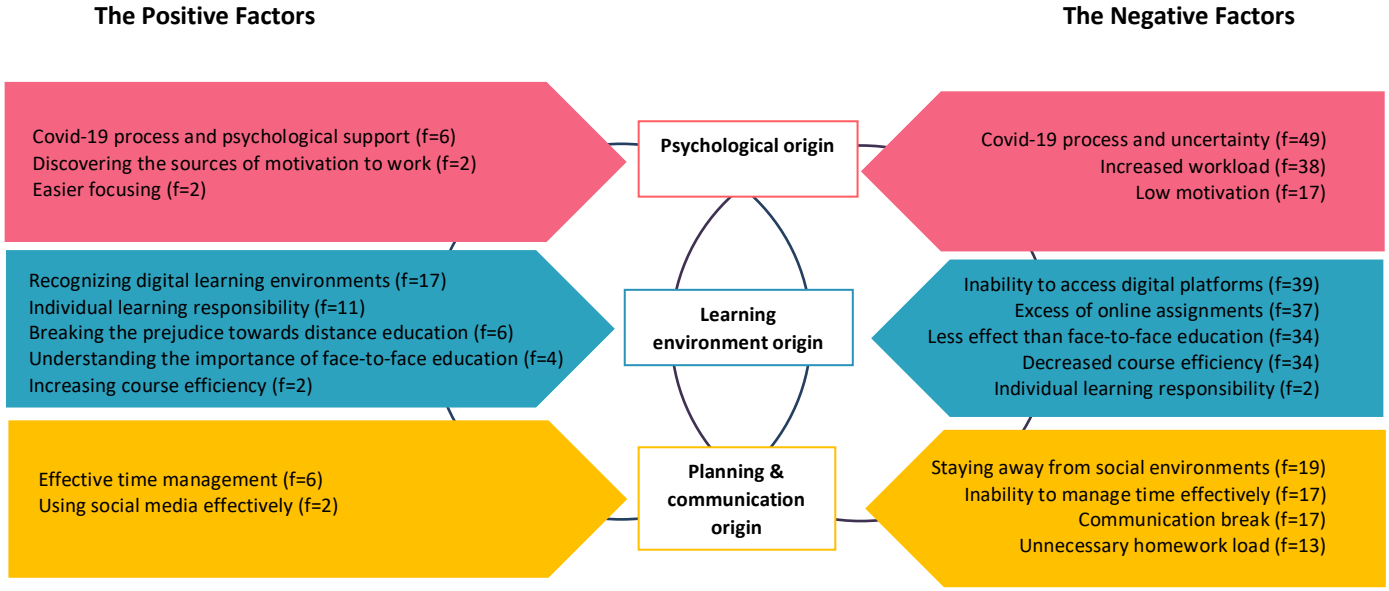


Figure 3. Factors that positively and negatively affect teacher candidates' motivation towards education during the COVID-19 epidemic process

When Figure 3 is examined, it is revealed that pre-service teachers were affected by same factors but in different ways. Accordingly, it is sawn that teacher candidates are grouped under the themes of "learning environment origin", "psychological origin" and "planning and communication origin", respectively, during the COVID-19 epidemic process. Social studies and science teacher candidates are affected by psychological problems. Most of the pre-service teachers stated that their psychology deteriorated due to the uncertainty of the process and that they had problems focusing on the lesson. The other problem under this title is that as a result of the distance education, the teacher candidates increasing workload and finding this process boring. Another reflection of the process is observed as low motivation in teacher candidates.

Asked in the survey; “What are the positive and negative effects of the COVID-19 pandemic process on your educational activities? Please explain." Findings for the question are given below.

The opinions of pre-service teachers on the positive effects on educational activities during the COVID-19 epidemic are presented in Table 1.

Table 1. The positive effects of the COVID-19 epidemic process on the educational activities of teacher candidates

Positive effects*	Science (f)	Social (f)	Total (f)
Development of digital literacy, learning different computer applications	16	24	40
Learning to do research	8	22	30
Leisure time (reading books/exploring our interests)	10	18	28
Understanding the contribution of instructional technologies to the learning-teaching process	4	14	18
Saving on time	9	9	18
Having the opportunity to follow the lessons from home and watch them again and again	9	8	17
Learning planned and programmed work	4	9	13
Learning the distance education process	6	6	12
Spending lots of fun with the family	4	7	11
Easy access to resources	4	5	9
Understanding the value of face-to-face teaching	4	4	8
Higher success	7	1	8
Not having to get up early and go to school	4	2	6
Not risking their own and others' health by staying at home	3	1	4
Sharing opinions with friends on social media	-	3	3
Increasing interest in education and training	1	1	2
Learning to be patient	1	-	1
Financial relief	-	1	1
Sharing materials for students with disabilities “while we were not aware of its existence, we met some teachers again during the pandemic process.”	-	1	1

*: Teacher candidates have declared multiple opinions.

When Table 1 is examined, it is seen that science and social studies teacher candidates mostly stated their opinions about the code of "Development of digital literacy, learning different computer applications" about the positive effects of the COVID-19 epidemic process on educational activities.

The opinions of pre-service teachers on the negative effects of their educational activities during the COVID-19 epidemic is presented in Table 2.

Table 2. The negative effects of the COVID-19 epidemic process on the educational activities of teacher candidates

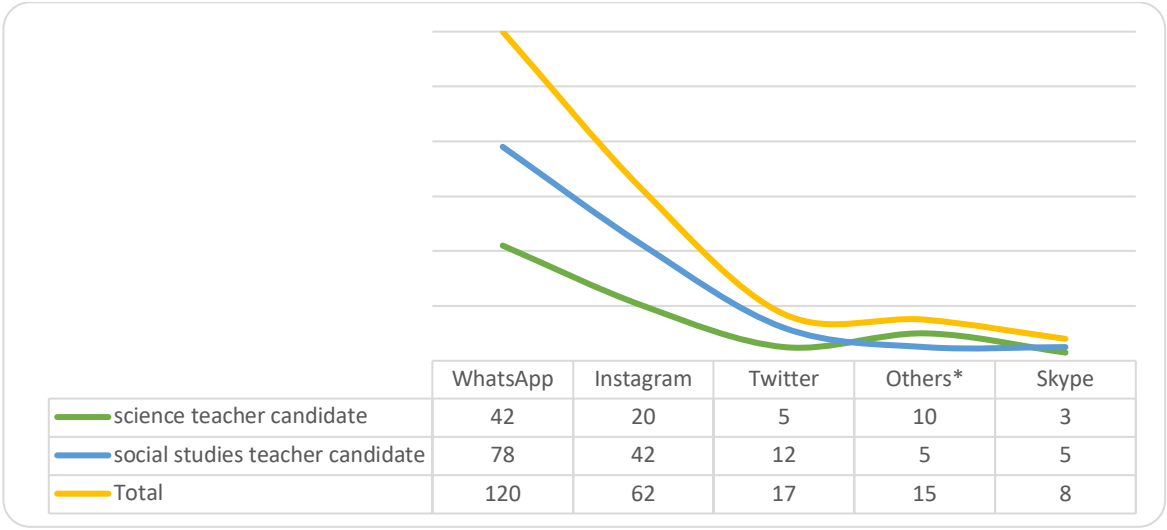
Negative Effects *	Science (f)	Social (f)	Total (f)
Lagging behind in homework/classes due to lack of internet/computer access	28	28	56
Lack of effective and efficient learning	16	33	49
Decreased interest and motivation towards the lesson	7	23	30
Excess homework	9	12	21
Failure to practice in lessons	8	8	16
Inability to communicate face-to-face with the lecturer	6	10	16
Psychological problems such as distraction / inability to focus / anxiety / stress	7	6	13
inability to socialize	7	3	10
Avoidance of face-to-face training	6	3	9
Insufficient fair assessment of exams and assignments	4	2	6
Not understanding homework/not getting feedback	1	4	5
Difficulty of group work in distance education	1	4	5
Experiencing physical pain/negative impact on health	-	3	3
Inability to spend time on my hobbies and relax myself	2	-	2
It was difficult for me to access course materials.	2	-	2
Postponement of plans	1	-	1

*: Teacher candidates have declared multiple opinions.

When Table 2 is examined, it is seen that science and social studies teacher candidates mostly stated their opinions about the code of "lacking homework/classes due to lack of internet/computer access" regarding the negative effects of the COVID-19 epidemic process on educational activities.

Question asked in the survey; “Which social media environments did you use during the COVID-19 pandemic? Please specify." The findings obtained for the question are presented in Figure 4.

Social media environments used by teacher candidates during the COVID-19 pandemic are presented in Figure 4.



***:**Google drive, Imo, Adobe connect

Figure 4. COVID-19 teacher candidates social media they use in the process of pandemic

When Figure 4 is examined, it is seen that the social media environment that teacher candidates use most during the COVID-19 pandemic is WhatsApp. This is true for both programs. After WhatsApp, the most used social media medium by science and social studies teacher candidates is Instagram.

Question asked in the survey; “What are your purposes of using social media during the COVID-19 pandemic? Please specify." The findings obtained for the question are presented in Figure 5.

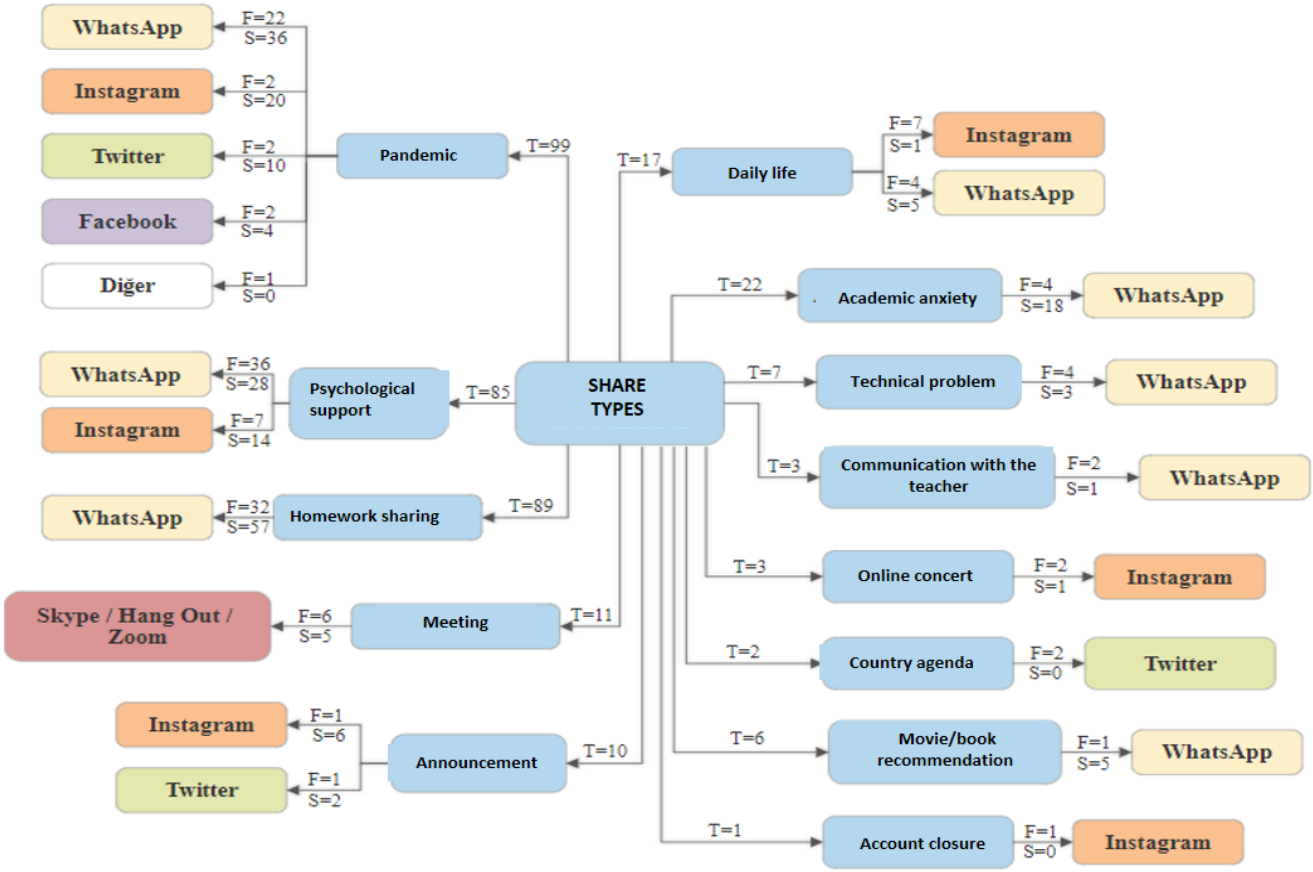


Figure 5. Posts of teacher candidates on social media during the COVID-19 pandemic

When Figure 5 is examined, it is seen that teacher candidates mostly use WhatsApp for "homework sharing" purposes. Pre-service science teachers mostly used WhatsApp for psychological support. It is seen that social studies teacher candidates mostly use WhatsApp for "Homework sharing" purposes. In addition, when the shares are examined, it is seen that they follow the posts related to the "pandemic", "homework sharing" and "psychological support". Examples of teacher candidates' views on using social media for "homework sharing" are presented below.

> *"…As for the lessons, we completed each other's deficiencies. We helped each other with our homework and shared our homework with each other. We tried to explain the subject, albeit on a small-scale, to our friends who lacked the subject or did not fully understand the subject."* (S51)

Examples of the views of teacher candidates about the "pandemic" are presented below.

> *"Recently, we shared news about what precautions and bans were taken in the transition to a controlled social life, and what we should pay attention to in our future lives."* (F17)
>
> *"We tried to help our friends stay at home by sharing the hashtag "Stay at home Turkey" on Instagram. We are trying to research and organize activities for the pandemic process."* (S21)
>
> *"With this social media tool, I made various statements about people staying at home. I stated that I support the shared announcements by liking it."* (S37)

Examples of teacher candidates' views on using social media for "psychological support" are presented below.

> *"Sometimes we shared the stress of being busy with homework and not being able to go out on WhatsApp." (F23).*
>
> *"…We mutually increased our motivation, which fell during the pandemic process." (S24)*

DISCUSSION, CONCLUSION and RECOMMENDATIONS

When the findings obtained for the first sub-problem, which deals with the motivation of teacher candidates during the pandemic period, are examined; it is seen that the majority of them (f=85) have decreased their motivation. The uncertainty of the process and the increasing workload of teacher candidates are shown as the reason for this. Decreased motivation of teacher candidates; It can be attributed to the fact that social distancing and restrictive movement policies have significantly changed traditional education practices (Altuntaş Yılmaz, 2020). When the factors that positively and negatively affect the motivation of teacher candidates towards education during the COVID-19 epidemic process (Figure 2) are examined, it is seen that the negativities that the teacher candidates stated that they experienced during the pandemic process are similar on the

basis of branches and are grouped under certain basic components. According to this, one of the problems that the teacher candidates stated that they experienced in this process is those of "psychological origin". It is thought that factors such as the fact that teacher candidates do not have the opportunity to socialize as in the school environment, the lack of interest and motivation in the lessons due to the lack of face-to-face education, and the difficulty in accessing information of students who have difficulties in using technological devices (Ağır, 2007) are effective in addressing psychological problems. Similarly, Lee (2020) found in his study that COVID-19 anxiety significantly affects social attitudes. Examining the psychological origins of the negativities that pre-service teachers stated to have experienced during the COVID-19 epidemic process, it is seen that pre-service science and social studies teachers emphasize the theme that their workload has increased.

When the findings obtained for the second sub-problem (Table 1) are examined; regarding the positive effects of the COVID-19 epidemic process on educational activities, it was observed that the science and social studies teacher candidates mostly expressed their views on the code of "Development of digital literacy, learning different computer applications". Considering the opinions of the teacher candidates, it can be said that the COVID-19 epidemic process offers important opportunities to the teacher candidates in order to explore the digital learning world. Burke and Dempsey (2020) in their study where they reported the advantages and disadvantages of school closures in Ireland along with the pandemic, stated that as an advantage of the pandemic process, teachers had the opportunity to embrace the digital learning world in this process. The same is true for teacher candidates. In this process, it is possible to say that the digital literacy and computer use skills of the teacher candidates have improved since they have to do all their homework and work on digital media. Scherer, Siddiq, and Teo (2015) stated that the most basic goal in the 21st century is to train students in terms of digital competence. It is seen that the COVID-19 epidemic process has positive effects on meeting the most basic goal in the 21st century. In this process, all students were faced with the digital world. This has contributed positively to the development of teacher candidates digital literacy. It is seen that the COVID-19 epidemic process acts as a catalyst for more effective use of digital devices, online resources, social media technology and e-learning activities (Mulenga and Marban, 2020). Another code that teacher candidates stated regarding their positive effects on educational activities is "learning to do research". It is thought that the reason for the frequency difference between social studies and science teaching in this code is due to the "Research Methods in Education" course that science teacher candidates took in the second year fall semester. Within the scope of this course, teacher candidates take the acquisitions that form the basis of the research such as literature review and article review. This situation may have been effective in social studies teacher candidates emphasis on this code. It is a fact that technological tools cannot improve a poorly-planned teaching (Borich, 2017). As Karataş (2020) stated, if the COVID-19 pandemic can be considered as an opportunity for post-traumatic growth, it has the potential to initiate many changes at the individual and society level. For this reason, education and training activities should be planned and programmed during the COVID-19 epidemic process. It is seen that teacher candidates emphasized the code of "Learning planned and programmed work" during the COVID-19 epidemic process. It can be said that this process has positive effects on pre-service teachers gaining the habit of planned and programmed work. Regarding the negative effects of the COVID-19 epidemic process on educational activities, the opinions of the science\social studies teacher candidates about the code "Lagging behind in homework/classes due to lack of internet/computer access". It was concluded that the main negative effect of the COVID-19 epidemic process on the educational activities of the teacher candidates is the lack of internet/computer access. Lack of internet and computer access negatively affects the distance education process. Pre-service teachers stated that they fell behind in classes and could not do their homework due to this reason. As Agnoletto and Queiroz (2020) point out, the logic of "Digitalization" is not simple. It is important to provide the technical infrastructure before going digital. Bakioğlu and Çevik (2020) stated in their study that students cannot access the internet/computer, that students do not participate in online or offline classes, and that students have low motivation. Considering the opinions of teacher candidates within the scope of the study, it can be concluded that providing the technical infrastructure in the distance education process plays a key role in the effective execution of the process. Among the negative effects of the COVID-19 epidemic process on the educational activities of teacher candidates, the reasons such as the inability to learn effectively and efficiently, the decrease in interest and motivation towards the lesson, and the assignment of a lot of homework attract attention. With the closure of educational institutions and the interruption of face-to-face education, the education of 1.6 billion students, which corresponds to approximately half of the student population from all education levels, has been interrupted (UNESCO, 2020). This situation has brought many problems with it. In order to achieve the right balance in distance education, using technology and pedagogy for a purpose (Anderson, 2009) is extremely important in terms of providing an effective and efficient learning process. For this reason, it is extremely important to be able to use technology and pedagogy for the purpose in order to ensure effective and efficient learning during the pandemic process. In this process, it is necessary not to limit distance education only to online materials and communication processes. It is necessary to plan the process effectively and make a balanced instructional design. In this way, positive contributions can be made to the development of effective and productive learning.

When the findings obtained for the third sub-problem are examined; it has been concluded that the social media environment that science and social studies teacher candidates use most during the COVID-19 pandemic process is WhatsApp.

The fact that WhatsApp is an instant messaging application used for both communication and teaching purposes in group communication and education as well as personal communication (Yazıcı, 2015; Uzun and Uluçay, 2017; Çetinkaya, 2017) is thought to be effective in the use of this application by all teacher candidates. In addition, the use of this application by the instructors for the purpose of instant communication with the teacher candidates during the pandemic process may have been effective in the use of this sharing environment by the teacher candidates. Therefore WhatsApp, one of the instant messaging applications, is widely used today and is a more preferred application among its peers due to its many features (Maden, 2019). When the teacher candidates posts on social media during the COVID-19 pandemic process (Figure 5) were examined, it was seen that the teacher candidates mostly used WhatsApp for "Homework sharing" purposes. In the study conducted by Maden (2019), it was determined that 72.5% of the pre-service teachers followed all the aims determined as written, visual and file sharing when asked about the purposes for which they use the WhatsApp application to Turkish teacher candidates. Similarly, in this study, it was determined that the majority of teacher candidates use WhatsApp for homework sharing purposes. It is seen in Figure 4 that after WhatsApp, the other social application that teacher candidates use the most is Instagram. It is thought that the reason for the difference in the rate of using Instagram for social sharing purposes by the pre-service science and social studies teachers is due to the awareness-raising activities of the social studies teacher candidates on social media within the scope of community service practices, which are among the lessons. In this case, it is seen that social media tools can turn into environments that support educational activities if needed.

Considering the positive effects on the development of digital literacy of teacher candidates during the COVID-19 epidemic process, it is recommended that teachers, prospective teachers, curricula and textbooks be developed in terms of digital competencies. Studies can be planned in which the positive and negative effects of teacher candidates from the process and the change in their motivation are evaluated together with the effect on teachers and students. In order to reduce the excessive workload that negatively affects the motivation of the instructors and to keep them at a reasonable level, it can be ensured that they increase their cooperation and prevent unnecessary workload and repetitions by communicating with each other about the course content and homework. In order to minimize the systemic uncertainties, which is one of the most important factors that have a negative effect on motivation in emergency distance education situations, online orientation programs can be organized by the advisors. Emphasizing the positive and strong sides of emergency distance education, with examples on different platforms, that the situations that seem like disadvantages can be turned into advantages, may minimize the negative effects of the process on motivation. Through the relevant application and research centers and departments of universities that can provide psychological support, the support they need regarding the psychological consequences of the COVID-19 epidemic, increasing psychological resilience and effective coping methods can be provided professionally through online environments.

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REFERENCES

Agnoletto, R., & Queiroz, V. (2020). COVID-19 and the challenges in education. *Centro de Estudos Sociedade e Technologia, Universidade de Sao Paulo, Bulletin*, 5(2), 1-2. http://www.cest.poli. usp.br/download/covid-19-and-the-challengesin-education/ adresinden 20.08.2020 tarihinde erişilmiştir.

Ağır, F. (2007). Özel okullarda ve devlet okullarında çalışan ilköğretim öğretmenlerinin uzaktan eğitime karşı tutumlarının belirlenmesi. (Yayınlanmamış yüksek lisans tezi). Balıkesir Üniversitesi, Balıkesir.

Akkoyunlu, B., Bardakçı, S. (2020). Pandemi döneminde uzaktan eğitim, https://portal.yokak.gov.tr/makale/pandemi-doneminde-uzaktan-egitim/ adresinden 22.08.2020 tarihinde erişilmiştir.

Altuntaş Yılmaz, N. (2020). Yükseköğretim kurumlarında Covid-19 pandemisi sürecinde uygulanan uzaktan eğitim durumu hakkında öğrencilerin tutumlarının araştırılması: Fizyoterapi ve rehabilitasyon bölümü örneği. *Necmettin Erbakan Üniversitesi Sağlık Bilimleri Fakültesi Dergisi*, *3*(1), 15-20.

Anderson, T. (2009, June). The dance of technology and pedagogy in self-paced distance education. Paper presented at the 17th ICDE World Congress. Maastricht, The Netherlands. https://auspace.athabascau.ca/handle/2149/2210 adresinden 16 Temmuz 2020 tarihinde erişilmiştir.

Arı, A. G., & Kanat, M. H. (2020) COVID-19 (Koronavirüs) üzerine öğretmen adaylarının görüşleri. *Yüzüncü Yıl Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, (Salgın Hastalıklar Özel Sayısı), 459-492.

Bakioğlu, B., & Çevik, M. (2020). COVID-19 pandemisi sürecinde fen bilimleri öğretmenlerinin uzaktan eğitime ilişkin görüşleri. *Turkish Studies, 15*(4), 109-129. https://dx.doi.org/10.7827/TurkishStudies.43502

Borich, G. D. (2017). Etkili öğretim yöntemleri (M. B. Acat, Çev.). Ankara: Nobel Yayıncılık.

Bozkurt, A. (2020). Koronavirüs (Covid-19) pandemisi sırasında ilköğretim öğrencilerinin uzaktan eğitime yönelik imge ve algıları: Bir metafor analizi. *Uşak Üniversitesi Eğitim Araştırmaları Dergisi*, *6*(2), 1-23.

Burke, J., & Dempsey, M. (2020). COVID-19 Practice in primaryschools in Ireland report. National University of Ireland Maynooth, Ireland. https://www.into.ie/app/uploads/2020/04/COVID-19-Practice-in-Primary-Schools-Report1.pdf. adresinden 06 Temmuz 2020 tarihinde erişilmiştir.

Can, E. (2020). Coronavirüs (COVID-19) pandemisi ve pedagojik yansımaları: Türkiye'de açık ve uzaktan eğitim uygulamaları. *Açıköğretim Uygulamaları ve Araştırmaları Dergisi*, *6*(2), 11-53.

Cetinkaya, L. (2017). An educational technology tool that developed in the natural flow of life among students: WhatsApp. *International Journal of Progressive Education, 13*(2), 29-47. http://ijpe.penpublishing.net/makale/234 adresinden 16 Temmuz 2020 tarihinde erişilmiştir.

Çepni, S. (2007). Araştırma ve proje çalışmalarına giriş (Gözden geçirilmiş baskı). Trabzon: Celepler Matbaacılık.

De Vaus, D. A. (2001). Research design in social research. Thousand Oaks, CA: Sage.

Dikmen S., & Bahçeci,F. (2020). COVID-19 pandemisi sürecinde yükseköğretim kurumlarının uzaktan eğitime yönelik stratejileri: Fırat üniversitesi örneği. *Turkish Journal of Educational Studies*, *7*(2), 78-98.

Gupta, A., & Goplani, M. (2020). Impact of Covid-19 on Educational Institutions in India. *UGC Care Journal*, *31*(21), 661-671. https://doi.org/10.13140/RG.2.2.32141.36321.

He, H., & Harris, L., (2020). The impact of Covid-19 pandemic on corporate social responsibility and marketing philosophy. *Journal of Business Research, 116*, 176-182.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*. DOI: 10.4236/ce.2020.117071. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remoteteaching-and-online-learning adresinden 03 Temmuz 2020 tarihinde erişilmiştir.

Honey, M., Culp, K. M., & Carrigg, F. (2000). Perspectives on technology and education research: Lessons from the past and present. *Journal of Educational Computing Research, 23*(1), 5-14.

Kaptan, S. (1998). Bilimsel araştırma ve istatistik teknikleri (BAT). Ankara: Tekışık Web Ofset Tesisleri.

Karataş, Z. (2020). COVID-19 pandemisinin toplumsal etkileri, değişim ve güçlenme. *Türkiye Sosyal Hizmet Araştırmaları Dergisi*, 4(1), 3-15.

Kırmızıgül, H. G. (2020). COVID-19 salgını ve beraberinde getirdiği eğitim süreci. *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi*, *7*(5), 283-289.

Lee, S. A. (2020). Coronavirus anxiety scale: A brief mental health screener for COVID-19 related anxiety. *Death Studies*, *44*(7), 1-9. doi.org/10.1080/07481187.2020.1748481.

Maden, A. (2019). Türkçe öğretmeni adaylarının mobil iletişim alışkanlıkları: WhatsApp örneği. *Elektronik Sosyal Bilimler Dergisi*, 18(72), 1797-1811.

Mulenga, E. M., & Marbán, J. M. (2020). Is COVID-19 the gateway for digital learning in mathematics education? *Contemporary Educational Technology, 12*(2), ep269. https://doi.org/10.30935/cedtech/7949.

Pınar, M. A., & Dönel Akgül, G. (2020). The opinions of secondary school students about giving science courses with distance education during the Covid-19 pandemic. *Journal of Current Researches on Social Sciences, 10*(2), 461-486. doi: 10.26579/jocress.377.

Scherer, R., Siddiq, F., & Teo, T. (2015). Becoming more specific: Measuring and modeling teachers' perceived usefulness of ICT in the context of teaching and learning. *Computers & Education, 88*, 202-214.

Simon, J.L., & Burstein, P. (1985). Some Principles of Measurement. New York. Random House.

Strauss, A., & Corbin, J. (1990). Basics of qualitative research: Grounded theory procedures and techniques. Newbury Park, CA: Sage.

Tavşancıl, E., & Aslan, E. (2001). Sözel, yazılı ve diğer materyaller için içerik analizi ve uygulama örnekleri. İstanbul: Epsilon Yayınevi.

Telli Yamamoto, G., & Altun D, (2020). Coronavirüs ve çevrimiçi (online) eğitimin önlenemeyen yükselişi. *Üniversite Araştırmaları Dergisi, 3*(1), 25-34. doi: 10.26701/uad.711110.

Tertemiz, N. I. (2004). Çok zekâ kuramı'na göre bütünleştirilmiş etkinliklerin öğrenci başarısı üzerindeki etkisi. Eğitim ve Bilim, 29 (134), 1-10.

UNESCO (2020). COVID-19 educational disruption and response, https://en.unesco.org/COVID19/educationresponse adresinden 06 Temmuz 2020 tarihinde erişilmiştir.

Uzun, K., & Uluçay, D. M. (2017). İş ortamında whatsapp kullanımı ve kesintiye uğrama. *Selçuk İletişim, 10*(1), 216-231. http://dergipark.gov.tr/download/article-file/328653.

Yazıcı, T. (2015). Place of interpersonal communication in the instant messaging application: A study on college students relating to the WhatsApp applications. *International Journal of Social Sciences and Education Research, 1*(4), 1102-1119. http://dergipark.gov.tr/ijsser/issue/26515/279121 adresinden 15 Mart 2020 tarihinde erişilmiştir.

Yıldırım, A., & Şimşek, H. (2011). Sosyal bilimlerde nitel araştırma yöntemleri. (9. Baskı). Ankara: Seçkin Yayıncılık.

YÖK (2018). Yeni öğretmen yetiştirme lisans programları, https://www.yok.gov.tr/kurumsal/idari-birimler/egitim-ogretim-dairesi/yeni-ogretmen-yetistirme-lisans-programlari adresinden 24.09.2020 tarihinde erişilmiştir.

YÖK (2020). Üniversitelerde uygulanacak uzaktan eğitime ilişkin açıklama. tarihinde https://www.yok.gov.tr/Sayfalar/Haberler/2020/universitelerde-uygulanacak-uzaktanegitime-iliskin-aciklama.aspx adresinden 5 Nisan 2020 tarihinde erişilmiştir.