ATTITUDES OF HIGHER EDUCATION STUDENTS ABOUT THE USE OF DISTANCE EDUCATION ENVIRONMENTS DURING THE COVID-19 OUTBREAK PROCESS

Covid-19 Salgın Sürecinde Uzaktan Eğitim Ortamlarının Kullanımına İlişkin Yükseköğretim Öğrencilerinin Tutumları

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ABSTRACT

The aim of this research is to examine the attitudes of students studying in undergraduate departments of universities towards the use of distance education environments due to the COVID-19 epidemic detected in the city of Wuhan, Hubei province of the People's Republic of China. The method of the research; mixed method. The population of the research consists of 152 undergraduate students. Data collection tools of the research; the first vehicle; "Attitude scale regarding the use of distance education environments in the pandemic process" is the second tool in the research; it consists of a semi-structured interview form prepared by the researcher. Analysis of data; the data were analyzed in two ways. Firstly, ward technique, one of the hierarchical clustering analysis methods, was used and square Euclidean distance was chosen as a distance measure. Differences in attitudes towards the use of distance education environments according to ward's cluster analysis technique; it is classified into three clusters: Effectiveness and Satisfaction, Motivation and Dissatisfaction. After the classification, a random semi-structured interview form was applied to two students in each cluster formed. As a result; it has been concluded that students have positive and negative opinions about distance education activities.

ÖZ

Bu araştırmanın amacı, Çin Halk Cumhuriyeti'nin Hubei eyaletine bağlı Wuhan şehrinde tespit edilen COVID-19 salgın nedeniyle üniversitelerin lisans bölümlerinde okuyan öğrencilerin uzaktan eğitim ortamlarının kullanımına ilişkin tutumlarını incelemektir. Araştırmanın yöntemi; karma yöntemdir. Araştırmanın evrenini 152 lisans öğrencisi oluşturmaktadır. Araştırmanın veri toplama araçları; İlk araç; Araştırmada "Pandemi sürecinde uzaktan eğitim ortamlarının kullanımına ilişkin tutum ölçeği" ikinci araç; araştırmacı tarafından hazırlanan yarı yapılandırılmış görüşme formundan oluşmaktadır. Verilerin analizi; veriler iki şekilde analiz edilmiştir. İlk olarak hiyerarşik kümeleme analiz yöntemlerinden ward tekniği kullanılmış ve uzaklık ölçüsü olarak kare öklid uzaklığı seçilmiştir. ward'ın kümeleme analizi tekniğine göre uzaktan eğitim ortamlarının kullanımına yönelik tutum farklılıkları; Üç kümede sınıflandırılmıştır: Etkililik ve Memnuniyet, Motivasyon ve Memnuniyetsizliktir. Sınıflandırmadan sonra oluşturulan her kümede ikişer öğrenciye rastgele yarı yapılandırılmış görüşme formu uygulanmıştır. Sonuç olarak; öğrencilerin uzaktan eğitim etkinlikleri hakkında olumlu ve olumsuz görüşlere sahip oldukları sonucuna ulaşılmıştır.

1. Introductıon

On 31 December 2019, the World Health Organization (WHO) was informed about the cases of pneumonia of unknown cause in Wuhan City, China. The increase in pneumonia (pneumonia) cases was determined by the Chinese authorities on 7 January 2020 to be caused by a new coronavirus, tentatively named "2019-nCoV" (WHO, 2021). Coronaviruses (CoV) are a family of broad-spectrum viruses with many types ranging from the symptoms of the common cold to diseases with more severe symptoms. It has been determined that this virus is a new strain of K oronavirus (nCoV) and has not been detected in humans until now (2019 and onwards) . This new virus was later named -COVID-19 virus- (WHO, 2021).

On 30.01.2020, the Director-General of the World Health Organization (WHO), Dr. Tedros Adhanom Ghebreyesus, said; "The new coronavirus (Covid-19) is a source of international concern, which is the highest level of alarm of WHO, therefore it is a public health emergency. Of international concern [PHEIC]." The virus, which can be transmitted quickly from person to person, developed in mid-January 2020 and spread rapidly in various countries in Europe, North America and Asia-Pacific in the following time period. With the reporting of the experienced virus cases , a global epidemic was declared by the World Health Organization (WHO) on March 11, 2020 (Shih, Gerry; Lynch, David J.; Denyer, Simon. 2020) . After the World Health Organization announced the Covid-19 virus as a global disease (epidemic), countries closed their borders to all neighboring and non-neighboring states, and took various measures to prevent the spread of the virus among people. They had reduced mobility as follows; restrictions have been brought in the service sector, and in some sectors (eating and drinking, shopping, etc.), they have taken precautions such as ordering by phone, making ecommerce and applying flexible working models. Undoubtedly, the biggest limitations have been in the field of education and training. Not stopping students' learning activities completely, states have switched to distance education (online) method. In parallel with the new situation in the world, various measures have been taken in our country.

Undoubtedly, scientists are making extraordinary efforts to stop the Covid-19 epidemic that has taken the world by storm. In the light of these efforts, a vaccine treatment method has finally been developed for the Covid 19 virus. There are several vaccines currently in use. The initial vaccination schedule began in early December 2020, and as of February 15, 2021; 175,3 million vaccine doses have been administered. According to WHO, at least 7 different vaccines (3 platforms) have been developed. WHO on 31 December 2020 for the Pfizer COVID-19 vaccine (BNT162b2); On February 15, 2021, WHO published EUL for two versions of the AstraZeneca/Oxford COVID-19 vaccine produced by the Serum Institute. India and SKBio. On March 12, 2021, WHO published an EUL for the COVID-19 vaccine Ad26.COV2.S, developed by Janssen (Johnson & Johnson). WHO is moving towards other vaccine products of EUL by June 2021 (WHO, 2020). However, despite this, the global threat is not over yet. In order not to interrupt the education during the epidemic process, the distance education model, which will be used as an alternative to face-to-face education, has been started. In this sense, universities in many parts of the world have decided to continue the 2020-2021 academic year with the distance online method. As of June 2020, many of the world's leading universities, especially Harvard and Cambridge, have decided to continue the 2020-2021 academic year (for the fall semester) in the digital environment. Parallel to these developments in the world, some situations have occurred in our country as well. In this sense,

According to the official data of the Ministry of Health of the Republic of Turkey, the first detected case of the Coronavirus (Covid 19) epidemic was seen on March 12, 2020. Turkey has closely followed the developing situations since the first day of the epidemic (Covid-19) and has taken the necessary measures. From March 16, 2020 until April 30, 2020, education was suspended at all levels of education (from pre-school to higher education) with the instruction of the presidency (YÖK, 2020 a). In this context, both foundation and state universities operating in the field of higher education in our country have suspended education for three weeks from 16 March 2020 (YÖK, 2020 a).

Later, in line with these decisions, by YÖK (Higher Education Institution); "As of March 26, 2020, it has been reported that the 2019-2020 Spring semester will be completed with the distance education method" in order not to restrict the education and training activities and to prevent possible disruptions (YÖK, 2020b). Therefore, 123 universities operating in Turkey, which have the opportunity to implement the distance education method, have started the education and training process in the digital environment; however, universities that lack distance education method opportunities have offered documents consisting of open course materials, which are an alternative method, for the benefit of their students (Orçanlı & Bekmezci,

2020). Based on this context; Turkey has closely followed the developing situations since the first day of the epidemic (Covid-19) and has taken the necessary measures. From 16 March 2020 to 30 April 2020, with the instruction of the Presidency, education was suspended at all levels of education (from pre-school to secondary education) and it is understood that they took similar decisions in higher education simultaneously. In the light of all these studies, YÖK started the distance education process in all universities that have the capacity to implement distance education method on Monday, March 23 in order not to interrupt the education processes of universities and to overcome this process with the least casualties. In addition, a cooperation was made between YÖK and TRT (Turkish Radio and Television Corporation) in order to maintain the process in a healthier way. In line with this cooperation, common courses taken by a wider student body will be published through the channel to be allocated to YÖK by TRT (YÖK, 2020 b). In addition, in Turkey, it is stated that 40% of the curricula for both semesters can only be given through distance education, provided that the senate of the relevant higher education institutions approves and notifies the Council of Higher Education for the 2020-2021 fall and spring semesters at the latest four weeks in advance (YÖK, 2020 d). Undoubtedly, it is understood that the aim of all these studies is to maintain distance education in a healthy way and to overcome this process with the least damage.

Therefore, higher education institutions quickly adapted to these new conditions; but they ignored that students might have problems in accessing distance education. At the beginning of these are the lack of internet infrastructure, technological tools and equipment. Not only these cases, but also other factors have been ignored. These; education level of parents, inexperience in online education, lack of experience in using digital mediums (Özer and Suna, 2020).

After all these studies, there will be situations caused by distance education. E.g; Tarhan (2020) stated that a new type of disease, defined as " coronaphobia " has emerged with the Covid 19 epidemic and this disease can negatively affect the individual's quality of life. From this point of view, receiving education and training in digital environments under standard conditions is not the same as studying during the Covid 19 pandemic. Undoubtedly, since the curfews experienced during epidemic periods will affect the social life and psychology of individuals, this situation will be reflected in the distance education and training process. Experienced situations in this sense will be one of the focus variances of this research. Undoubtedly, this chaotic environment is also valid for academic staff. In addition to these, education and training experiences in digital environments were experienced for the first time in this process for many instructors. From this point of view, it is stated that this process prepares the ground for the formation of a complicated environment in the first stage (Erhan and Gümüş, 2020).

Of course, the distance education method did not start with the Covid-19 process for the first time. In this sense, when the literature is examined, it will be seen that it was made for the first time in the 18th century. By letter at the beginning of the 18th century (Hassenburg, 2009; Özbay et al., 2013), by written media and letters in the second quarter of the 19th century, by written and printed materials in the first quarter of the 20th century, by radio, television and video in the second half of the 20th century. In the last quarter of the 20th century, parallel to the development of information technology, computer aided and internet network technologies were used (Özbay et al., 2013). Later, it was used more as an alternative to face-to-face education method (Altınpınar and Başar, 2020). During war and epidemic periods, natural disaster processes and other reasons; however, it has been made compulsory due to the conditions caused by the Coronavirus (Covid 19) epidemic. Of course, when we look at the studies conducted during the covid-19 process, it has been seen that most of the students, parents and educators do not approach distance education positively, that distance education cannot replace formal education, so they prefer face-to-face education (Altınpınar and Başar, 2020; Erhan and Gümüş, 2020). Undoubtedly, this online teaching process will have advantages/disadvantages. In this sense, many studies have been carried out in both national and international literature. Some of those;

1.2 Lıterature Revıew

When the relevant literature is examined, some of the researches on distance education (online) compare online education and face-to-face education; some of them are studies describing the advantages and disadvantages of distance education (Çalışkan, Süzek & Özcan, 2017; Dobbs, del Carmen & Waid-Lindberg, 2017; Horspol & Lange, 2012). In the researches carried out during the period of the Covid-19 epidemic; it

has been determined that distance education is effective in reducing people's anxiety levels and increasing knowledge with the use of distance communication networks (Chan, So, Wong, Lee & Tiwari, 2007).

The Covid-19 outbreak process has opened up more research areas to determine the effectiveness of distance education. When both national and international literature is examined; revealed the advantages and disadvantages of distance education. Some of these studies are;

Bawa (2016) revealed important findings about distance education in his research titled "Retention in online courses: Exploring issues and solutions". According to these findings; Although there are some advantages offered by online education, the fact that distance education students are not successful enough in online classrooms and the failure rates in distance education courses; it has been seen that it is 10% to 20% higher than traditional, that is, face-to-face teaching. Similarly;

Edelhauser and Lupu-Dima (2020) examined the difficulties experienced by university students in distance education during the COVID-19 pandemic in Romania, where distance education programs are frequently used.

Serçemeli and Kurnaz (2020) conducted a research on the perspectives of students who took distance education and accounting courses during the COVID-19 pandemic period. Another study is;

Yamamotu and Altun (2020), Coronavirus (Covid-19) and the Unstoppable Rise of Online Education, research was conducted. The general purpose of this research is to use distance education in the digital environment in order not to interrupt the education of the universities owned by the countries affected by the situation created by the Covid-19 epidemic and to evaluate the result of this. In the light of the findings obtained, the following conclusion was reached; It is envisaged that the education system will be transformed into a system that can be more effective in the future, instead of an alternative method only face-to-face, and the education system will evolve into the original situation as digital learning. Another study by Yıldırım (2020) is "What an Exceptional Distance Education-Teaching Experience Teach" the general purpose of this study is to focus on the differences of Covid-19 emergency distance education and teaching activities and to indicate what to do in education in the light of the findings. As a result; suggestions were made in areas such as online disruptions, screen times, internet ethics. Another study is by Bozkurt (2020) in the light of the evaluations on the Covid -19 epidemic process and post-epidemic global education. A research named "new normal and new education paradigm" has been carried out. The general purpose of this research is to examine the reflection of the situation caused by Covid -19 in the field of education and training and to create a perspective. Looking at the result of the research, the education and training process of the Covid-19 epidemic directly and indirectly In such situations (natural disaster, epidemic, war, famine and others…) new strategies and radical reforms were needed for the continuity of education and training.

Finally;

Cao, W., Fank, Z., Hou, G., et al. (2020) a study called the psychological impact of the Covid-19 epidemic on university students in China was conducted. The general aim of this research is; the Covid-19 pandemic not only increases the risk of death due to infection, but also brings with it an unbearable psychological pressure. Using cluster elimination sampling, a 7-item generalized anxiety disorder scale was applied to medical students. A positive correlation was found between the delay in academic activities and anxiety disorder.

The main purpose of all research is; the aim of this study is to examine the positive/negative effects of distance education on the education life of people on a global basis with the effect of developing and rising technology.

The aspect of this research that makes it different from the others is; the reason for this is that there has not been any study on the positive/negative situations of higher education students with the distance education method during the Covid-19 epidemic process. At this point, this is the aspect that makes this research original. In this direction, it is desired to carry out this research in order to determine the positive/negative situations experienced by higher education (undergraduate) students studying at state and foundation universities in Turkey with the distance education method during the Covid-19 epidemic process and also to find solutions to the negative situations experienced by higher education (undergraduate) students. As a result of the research, it is thought that it will contribute to the education applications in the digital environment today and in the future, based on the experiences of university students in distance education due to the covid-19 epidemic. In this research, answers to the following questions will be sought.

1. As higher education (undergraduate) students, can you tell us about your experiences (in an academic sense) about the negative situations you have experienced during the online (online) participation process?
2. As higher education (undergraduate) students, can you tell us what are the preventive efforts of your university against the negative situations you have experienced during the distance education process

2. Method

In this part of the research, information about the researcher, research design, universe, sample, data collection tools and data analysis are included.

2.1. Researcher

The planning of this research, the preparation of the data collection tool, the determination of the participants, the obtaining of permissions, the interviews, the transcription of the interviews, the analysis of the data, the reporting of the analysis results into findings were carried out by a classroom teacher working in the Ministry of National Education. The researcher continues her undergraduate education in classroom teaching, graduate special education department, and doctorate education in special education department. The researcher has 14 years of experience as a classroom teacher and 4 years of experience in the field of special education at the Ministry of National Education.

2.2. Design of the research

Mixed method was used in the research. The mixed method is the approach of using qualitative and quantitative data together to obtain more detailed data (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz and Demirel, 2018). So this method was preferred for more detailed information. According to Creswell and Plano Clark (2007), the mixed method is divided into four. Each of the mixed patterns can be divided into sub-patterns in itself. These; It consists of Enriched Pattern, Explanatory Pattern, Exploratory Pattern and Embedded Patterns. The pattern of this research was explanatory design. Descriptive Pattern; Researchers first collect and analyze quantitative data. Then, they collect qualitative data in order to complete and filter these data (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, & Demirel, 2018; p.266). In this study, quantitative data were collected first. Then, interviews were conducted with ten randomly selected participants to collect qualitative data. Instant scanning method was used from the quantitative dimension of the research. This method is expressed as research carried out with the aim of designing an existing situation in a certain time period (Karasar, 2012). In the qualitative dimension of the research, the volunteer participants who gave their e-mail addresses in the applied scale were open-ended. 9 questions were asked later. The data obtained in the context of the answers to these questions, used to support quantitative data.

2.3. Population and Sample

The universe of the research; It continued with students from both state and foundation universities who continue their four-year education and training at the Higher Education Institution (YÖK). These students are individuals who continue their education with the distance education method for the 2020-2021 academic year due to the Covid-19 epidemic. The sample of the research was carried out with the scale prepared through the "Google form" from the universe and 152 students reached through the whatsapp communication tool. It consists of 152 students (105 female, 42 male) who participated in the research arbitrarily (voluntarily) . All of the students are individuals who continue their education in the undergraduate department. The distribution of these students by grade level is described in the table below (Tablo 1).

Table 1. Obtained From 18-30 April 2021 Online Google Form, Number Of Paticipants Grade Level

Grade Level	Number Of Students	Percentile	Valid Percentage	Cumulative Percentage
1st grade	66	43.4	43.4	43.4
2nd grade	26	17.1	17.1	60.5
3rd grade	23	15.1	15.1	75.7
4th grade	37	24.3	24.3	100
Total	52	100	100	

As seen in the table, the participants; 1st grade, 66; 2nd grade, 26; 3rd grade, 23; 4th grade, 37 students and a total of 152 students participated in the research voluntarily. Percentage equivalents; 1st grade 43.4%; 2nd grade 17.1%; 3rd grade was calculated as 15.1% and 4th grade as 24.3% . The classification of the participants according to their gender is shown in Table-2.

Table 2. Obtained From 18-30 April 2021 Online Form, Gender Participant Indicator

Gender Category	Number Of Students	Percentile	Valid Percentage	Cumulative Percentage
1. Woman	105	69.1	69.1	69.1
2. Men	47	30.9	30.9	100.0
Total	152	100.0	100.0	

As seen in Table 2, 105 of the participants were women; 47 of them are men. In addition, the percentage of this situation; 69.1% women; 30.9% are men. As seen in Table 3, the youngest of the participants is 18; the eldest is understood to be 45 years old.

Table 3. Obtained Form 18-30 April 2021 Online Form, Age Statistics Of Participants

Age	The Number Of Participants	Minimum	Maximum	Total Age	Arithmetic Mean	Standard Deviation
Your Age	152	18.0	45.0	3331.0	21,914	4.4379
Valid N (listwise)	152					

When Table 4 is examined, one male and one female participant were interviewed in the "Effectiveness and Satisfaction" cluster. The ages of these participants were 22-23 (Eve K); it is understood that the classes they study are 1st and 4th grades. In the "Motivation" cluster, one male and one female participant were interviewed. The ages of these participants were 36-20 (Eve K); it is understood that the classes they study are 4th and 1st grades. In the "Discontent" cluster, one male and one female participant were interviewed. The ages of these participants were 20-23 (M and F); It is understood that the classes they study are 3rd and 4th grades.

Table 4. Obtained From 18-30 April 2021 Online Form, Demographic Characteristics Of The Participants

clusters	Participants		Participants Ages		Education Level of Participants	
Male and Woman						
	Male Code Name	Woman Code Name	Male	Woman	Male	Woman
Effectiveness and Satisfaction	S1	S2	22	23	1	4
Motivation	S3	S4	36	20	4	1
Discontent	S5	S6	20	23	3	4

2.4. Data collection tool

Two types of data collection tools were used. First; "Attitude scale regarding the use of distance education environments during the pandemic process" was used in the research. Yıldız, EP, Çengel, M. and Alkan, A. (2021). The validity and reliability study was carried out by the researchers who developed the scale. The scale used has a structure of 4 factors and 25 items. This scale has a 5-point Likert type structure (strongly agree =5, agree = 4, undecided =3, disagree = 2, strongly disagree = 1). The scale consists of four dimensions. The first dimension is "competence and motivation" and seven consists of variables. The second dimension is "usability" and eight consists of variables. The third dimension is "effectiveness" and the five consists of variable. The final sized fourth dimension is "satisfaction" and consists of five variables. Data collection tool, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (DFA) data are described below.
Reliability data;

In order to test the reliability of the scale, the internal consistency coefficient determined by Cronbach Alpha was calculated. Accordingly, Cronbach Alpha. It was found to be 93. The results of the reliability statistical analyzes for the sub-dimensions of the scale are; internal consistency coefficients calculated with Cronbach Alpha are for competence and motivation. 94; for the usability dimension. 81 for the effectiveness dimension. 88 and for the satisfaction dimension. It was found to be 84. According to statistics, when the reliability coefficient approaches 1, the reliability increases. (Huang, Ryan, Zaber, & Palmer, 2014; Sekaran, 2003). In this context, it was interpreted that the reliability coefficients of each of the relevant dimensions of the scale were "excellent".

exploratory factor analysis (EFA)

Factor analysis data of the scale used in the research; The Kaiser-Meyer-Olkin (KMO) test was examined. KMO value. It was found to be 93. KMO limit value according to Field (2000). A value greater than 80 indicates "perfect fit". In addition, the results of the Barlett sphericity test show that the chi-square (X2 (321)=3022.014; p<.01) value is significant.

Confirmatory factor analysis (CFA)

Confirmatory factor analysis results, fit index values of the 25-item 4-dimensional model; competence and motivation factor CFA; χ^2/ sd=269/ 14, GFI= .910, AGFI= .921, TLI= .918, CFI= .979, RMSEA= .039; Usability Factor DFA fit index values; χ^2/ sd=149/ 20, GFI= .900, AGFI= .870, TLI= .910 , CFI= .929, RMSEA= .014; Effectiveness factor CFA fit index values; χ^2/ sd=118/ 14, GFI= .879, AGFI= .907 , TLI= .927 , CFI= .968, RMSEA= .088; Satisfaction factor fit index values; It is described as χ^2/ sd= 112/11, GFI= .868, AGFI= .891 , TLI= .876, CFI= .906, RMSEA= .041.

The second means of data collection; it consists of a semi-structured interview form prepared by the researcher. This form was prepared separately for the three groups formed as a result of the cluster analysis. This stage is the second stage of the research and it was carried out by applying the qualitative method. Open-ended questions in which qualitative data were collected;

1. As higher education (undergraduate) students, can you tell us about your experiences (in an academic sense) about the negative situations you have experienced during the online participation process?
2. As higher education (undergraduate) students, can you tell us what are the preventive efforts of your university against the negative situations you have experienced during the distance education process?

Questions were asked and the answers received were used to support the quantitative data.

2.5. Data collection

The data required for this research were collected in two stages. The first one was collected digitally from 152 students studying in undergraduate departments of universities (foundation or state) via Google form. Second, six (6) students selected randomly from groups separated by clustering method were collected by online interview method.

2.6. Analysis of Data

The data obtained in the study were analyzed in two ways. Quantitative data were analyzed using the IBM SPSS 22 package program. First, the collected data (data) was loaded into the SPSS 22 database. Subsequently hierarchical cluster analysis was conducted for the research problem. Hierarchical cluster analysis method; the general purpose of cluster analysis, which is one of the multivariate analysis methods; is to group them by taking into account the main (basic) characteristics of individuals or objects. In other words, cluster analysis; it is a method of presenting information to the researcher in the form of summarizing by grouping ungrouped data together according to their similarities (Kalaycı, 2010, p. 349). Cluster analysis related to ward's method was performed. Then, the number of clusters was determined by means of the tree branching shape graph (dendrogram) and the agglomeration table (Agglomeration Schedule). Among the cluster analysis methods in the literature, the most preferred method and giving the best results is known as ward's (Ferreira and Hitchcock, 2009).

In the qualitative phase of the research, it was conducted with the group of students who were attributed to the participants and only accepted to be interviewed voluntarily. Pre-prepared semi-structured open-ended questions were asked to these students, and a descriptive analysis was made in line with the answers they received.

2.7. Implementation Process of the Research

This research was conducted in order to reveal the positive/negative attitudes of undergraduate students studying at a foundation/state university in Turkey in distance education method during the Covid-19 epidemic process, to determine the causes of negative situations and to develop the necessary solutions. In this sense, a hierarchical analysis was conducted to determine the clustering tendencies of students studying in undergraduate departments of universities regarding distance education. Ward's technique, one of the methods, was applied. Hierarchical cluster analysis: Hierarchical cluster analysis methods are a method used for small-scale samples (typically n<250-300). Researchers performing hierarchical cluster analysis; in order to make similarity for groups and heterogeneous between groups, he should decide how to define similarity or distance (Everitt and Landau, 2001; Hair et al., 2006). Also, according to Anderberg (1973), hierarchical it is not known how many categories the clustering analysis methods initially formed according to the data set used by the researcher. Therefore, it is stated that this method is useful for researchers in revealing previously undiscovered relationships in the data set they collected. In this context, the technique used in the research was ward's technique.

Among the existing techniques in hierarchical clustering analysis methods, ward's technique is generally regarded as the method that produces the best results (Hands and Everitt, 1987; Ferreira and Hitchcock, 2009). Among the agglomerative clustering analysis methods, ward's method is accepted as the only method that ensures the formation of clusters by minimizing the intra-group distribution of each pairwise association based on the sum of squares criteria (Murtagh & Legendre, 2014). As a result, the average distance of the observations gathered in the center of a cluster is based on the average distance of the other observations in the same cluster (Cited by Tekin and Gümüş, 2017). For this reason, ward's method was preferred in this study with the thought that it would give the best results. Along with ward's method, "square euclidean" distance was chosen as a distance measure. The reason for choosing this criterion; It is a technique that presents the distances between observations and objects directly as a square distance in the unit of measurement (Kalaycı, 2009). For this reason, this technique is preferred.

3. Results

Quantitative Data Findings: Ward's method, one of the gradual clustering methods, was used to determine the clustering tendencies of the study. The square Euclidean distance was chosen as the similarity/difference measurement in standardizing the data and calculating the distances between the variables. The relationships between the variables in the scale are presented in dendograms. "SPSS 22.0" statistical package program was used in the analysis of the data.

According to the dendogram in figure 1, which emerged as a result of the application, it was seen that the group variables were gathered in three categories, namely three clusters. These were found to include "effectiveness and satisfaction", "motivation" and "Discontentment" variables, respectively.

1. Category (cluster) Effectiveness and Satisfaction: The number of students who chose the first category was 52. It is understood that the equivalent in percentage is 34%. When the variables of the scale are examined, it is understood that the students who prefer the first category think positively about distance education. Based on this context, it has been seen that the common features of the variables that make up this category are "effectiveness and satisfaction". In this sense, this naming has been given to the category. The variables specified in the first category are given below.

M3. Through this platform, educational processes can be managed independently of time and place.
        Realization encourages me to work at my own learning pace.
M7. I think this platform is easy to use.
M11. I feel equipped to use the platform.
M13. The platform's modules (homework, forum, discussion, resource, live lesson, etc.)
        I think it is.
M14. I am looking for services (screen sharing, file services, recording,
        file sharing, audio-video systems, etc.)
M15. The learning-teaching process from the online studies offered by the platform
        I can use it effectively.

M16. Learning-teaching process from offline studies offered by the platform
       I can use it effectively.
M18. With this platform, I can effectively access the course contents in virtual classroom environments.
M19. With this platform, you can interact effectively with the instructors who conduct the course in virtual classroom environments.
       way I can communicate.
M20. I am pleased to be able to communicate with the lecturers on this platform.
M21. I am pleased to be able to communicate with the lecturers on this platform.
M22. On this platform, the course contents are provided by the instructors with video.
       I am happy to be explained.
M23. I am satisfied with the design of online courses conducted through the platform.
M24. Technical support and/or assistance when there is a problem with the platform that I cannot solve
       I am glad to receive it.
M25. I am happy to be able to communicate with my friends in the platform environment.

2. Category (cluster) Motivation: The number of students who chose the second category was 39, it is understood that the equivalent as a percentage is 25%, when the variables of the scale are examined, it is understood that the students who prefer the first category think positively about distance education. Based on this context, it has been seen that the common features of the variables that make up this category are "Motivation". In this sense, this naming has been given to the category. The variables in the second category are listed below.

M1. I enjoy using this platform.
M2. The lessons that will be given after the pandemic process are also available online (online).
       I would like to buy on the platform.
M4. Using this platform has increased my self-confidence.
M5. Using this platform, don't ask questions that I hesitate to ask in the classroom environment
       Being able to find the opportunity increased my courage towards the course.
M6. I am motivated to success by the learning activities organized on this platform.
M10. I think I will use the platform often after the pandemic process.
M17. The distance education provided by the platform is the traditional face-to-face
       I think it is more effective on the learning process than teaching.

3. Category (cluster) Discontent: The number of students who preferred the third category was 61. It is understood to be 41% as a percentage. When the variables of the scale are examined, it is understood that the students who prefer the third category think negatively about distance education. Based on this context, it has been seen that the common features of the variables that make up this category are "Discontentment". In this sense, this naming has been given to the category. The variables in the third category are listed below.
M8. I had to learn a lot of things before logging into this platform.
M9. I found this platform unnecessarily complicated.
M.12. I need the support of a technical person to use this platform
I think it might

University Students' "Distance Education Environments During the Pandemic Process" Dendogram, Ward's Technique Results of the Variables "Scale of Use and Psychometric Characteristics on Individuals"
Figure 1 shows the figure graph or dendrogram, obtained using the hierarchical ward's clustering analysis method. The horizontal line shown in the graph represents the distance between the clusters; vertical lines represent segment (factor) clusters. When the chart in Figure 1 is carefully examined, it seems appropriate to gather it in three clusters. Based on this idea, the dendrogram consists of three clusters according to the answers given by the participants in the study. The first set is " m3, m7, m11, m13, m14, m15, m16, m18, m19, m20, m21, m22, m23, m24, m25", second set; " m1, m2, m4, m5, m6, m10, m17" and the third set consists of "m8, m9, m12" variables.
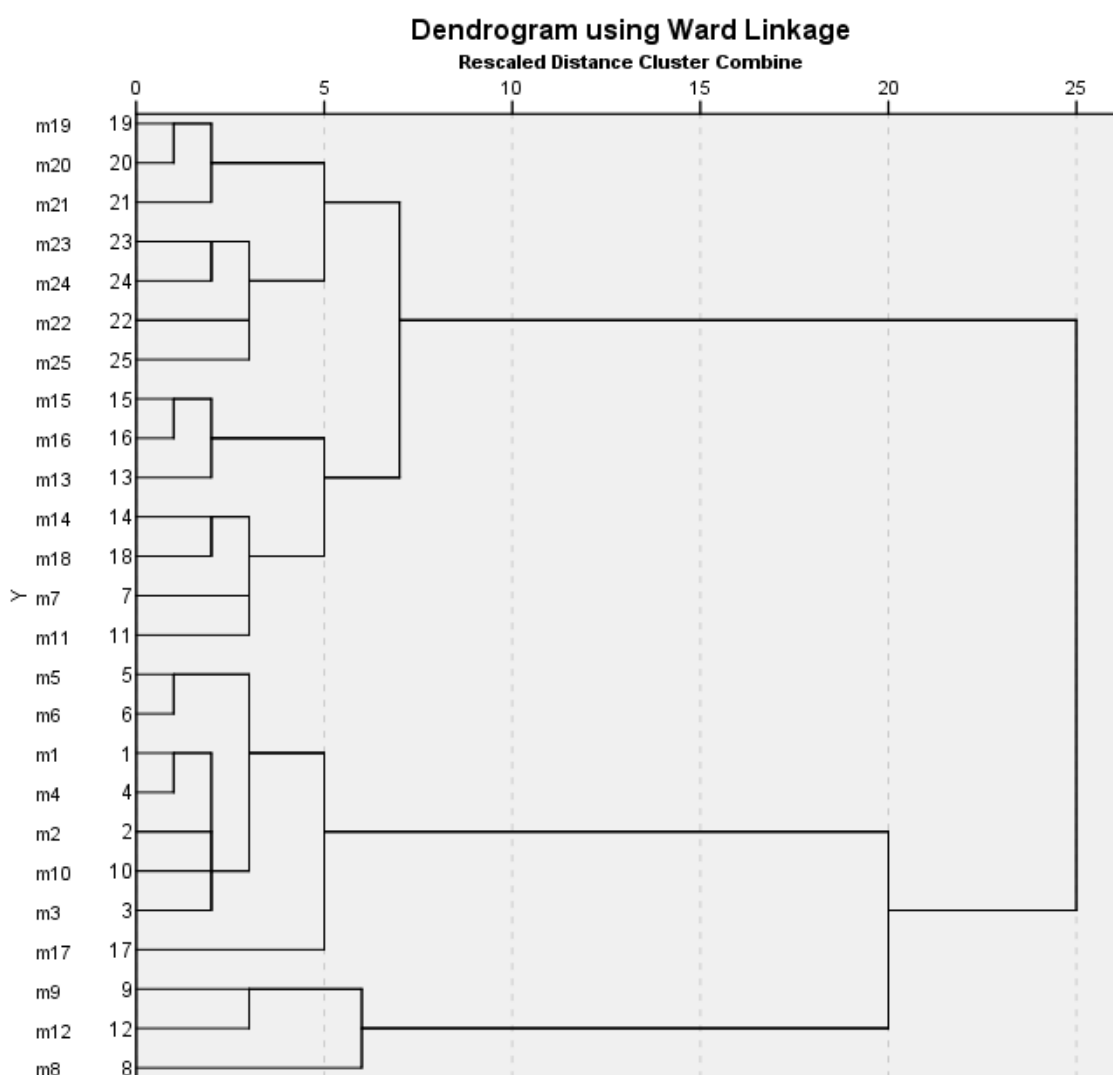
Figure 1 Hierarchical (staged) clustering analysis ward's method dendogram results

Qualitative Data Findings: This is the stage that forms the basic part of the research. In line with the general purpose of the research, three clusters were formed as a result of the hierarchical clustering analysis made within the framework of the answers given by the students studying in the undergraduate departments of the universities about the "The Use of Distance Education Environments in the Pandemic Process and the Scale of Psychometric Properties on Individuals". When the variables that make up these clusters are examined; In the first cluster, it was seen that there was a group with common characteristics of *"Effectiveness and Satisfaction"* when the second cluster is examined, it is seen that there is a group with common characteristics of *"Motivation"* . Finally, when the third cluster is examined; It has been observed that a group with common characteristics of *"discontent" has formed*. In order to explain the general purpose of the research in detail, qualitative interviews were conducted with the students in these clusters. These interviews; It was made via telephone method and took 112 minutes. In addition, 30 pages of transcripts were produced as a result of the interviews. The individuals to be interviewed were determined by the random method. coincidence method; it is a way that includes the meaning of giving the probability of being selected at an equal distance to each sample unit (Büyüköztürk et al., 2018, p.88). In this direction, two students were selected. A semi-structured interview form was applied to these students. Semi-structured interview; it is an interview method in which participants express their feelings and ideas in their own words, the questions are open-ended and flexible, different opinions can arise during the interview (Merriam, 2013). Accordingly, four open-ended questions were asked to the first group in the interview form. These questions are; 1) Can

you explain what kind of contributions the distance education method has made for you? 2) Can you tell us what you experienced in the context of communication and interaction with your lecturers and friends in the distance education method? 3) Were you able to access the necessary documents in distance education 4) Could you explain a little bit about why you are satisfied with the platforms you use to participate in online education? It is made up of questions. As a result of the analysis of the findings, the main and sub-themes of the findings formed in line with these questions are given in table 5.

Table 5. Obtained From 18-30 April 2021 Online Form, Effectiveness And Satisfaction

Main Theme	Child Theme
Effectiveness and Satisfaction	Economical Use Of Time
	Document Access
	Teaching Satisfaction İn Digital Environment

The students studying in the undergraduate departments of the universities about "The Use of Distance Education Environments in the Pandemic Process and the Scale of Psychometric Properties on Individuals"; *"Efficiency and Satisfaction"* were collected in the first cluster. Qualitative interviews were conducted with the students in this cluster. The individuals to be interviewed were determined by the random method. coincidence method; it is a way that includes the meaning of giving the probability of being selected at an equal distance to each sample unit (Büyüköztürk et al., 2018, p.88). In this direction, two students were selected. A semi-structured interview form was applied to these students. Semi-structured interview; it is an interview method in which participants express their feelings and ideas in their own words, the questions are open-ended and flexible and different opinions on the subject can arise during the interview (Merriam, 2013). Accordingly, four open-ended questions were asked to the first group in the interview form. These questions are; 1) Can you explain what kind of contributions the distance education method has made for you? 2) Can you tell us what you experienced in the context of communication and interaction with your lecturers and friends in the distance education method? 3) Were you able to access the necessary documents in distance education 4) Could you explain a little bit about why you are satisfied with the platforms you use to participate in online education? It is made up of questions. The main theme created in line with these questions; effectiveness and satisfaction; sub-themes; economical use of time, document access, ease of communication and interaction, and teaching satisfaction in digital environment.

Under the main theme of effectiveness and satisfaction, undergraduate students stated that the most important variable of the distance education method during the epidemic was the use of "time" to be economical. In this direction,

Student 1: *" It was helpful in terms of timing. Considering the issue of commuting to school, it was a huge waste of time. In this case, there was road fatigue, so I could not complete the homework ."* During the face-to-face education process, I was able to obtain some of the course documents by photocopying. However, with distance education, more resources and documents were shared by our teachers. *"* . Therefore, it can be said that the distance education system facilitates access to resources related to courses. For another subcategory, *"communication and interaction"*

Student 2; *" In face-to-face training, I could not ask questions to our teachers. I was afraid to go to their room. However, I can ask questions more easily in distance education. "* he said. Another participant,

Student 1; *" Each teacher's course has a whatsapp group. We are communicating on that group. In addition, a student president was elected in each class. When we need to communicate with the teachers, we can communicate through the chairmen. In this sense, we can use online platforms to communicate with both faculty members and friends. "* he stated. It is understood that faculty members working at universities generally set up a group on WhatsApp in order to coordinate their lessons and communicate with students through this channel. In the last sub-theme of the first cluster, entitled *" Satisfaction with Teaching in Digital Environment "* participant

Student 1 : *" I am satisfied with distance education because I have the opportunity to listen to the lessons I missed again from the archive. In this respect, I can understand my lessons better."* He expressed his thoughts. It has been stated by the students that distance education is one of the most important contributions. In summary; Qualitative interviews were conducted in order to obtain more detailed information about the first cluster formed as a result of cluster analysis. When the results of the qualitative interviews were

examined, the students expressed their satisfaction with the distance education method. The effectiveness of distance education; Components such as saving in time, economic expenses (no rent due to not going to school, not using the minibus and metro for the city, etc.), comfort for living and easier communication with remote methods are seen.

The "motivational" qualitative findings of the second cluster:

Three (3) open-ended questions in the semi-structured interview form were asked to the students in the second cluster. These questions are; 1) Can you explain how participating in distance education increased your confidence and motivation? 2) Would you like to take advantage of distance education again after the covid-19 attack? If yes, can you explain why? 3) Why do you think distance education is more effective than face-to-face education? The main and sub-themes that emerged as a result of the analysis of the findings are given in table 6.

Table 6. Obtained From 18-30 April 2021 Online Form, Motivation

Main theme	Child Theme
	Academic Success
Motivation	Decreased Anxiety Level
	Attendance-Absence

In the main theme of motivation, undergraduate students stated that *"Academic success"* is the first of the most important variables of the distance education method during the epidemic process. In this direction,

Student $_3$: *" I think the most important aspect of distance education is that it offers the opportunity to watch and listen to the lessons taught by the teachers from the archive. This situation has a positive reflection on my course success. Therefore, I can say that it naturally increases my motivation for the lessons."* he stated. It is understood that being able to watch the lessons repeatedly from the archive increases the students' understanding, and this situation reflects positively on success. Here are the participants' views on another sub-category, *" Reducing anxiety "*

Student $_4$: *" In distance education, we got points in line with homework and projects in lessons, so our exam anxiety decreased. Therefore, our success increased."*

Student $_4$: *" My parents are elderly, I was worried about their catching the corona virus. I was worried about who would take care of them if they got sick. Being with my family during this process reduced my anxiety.''* he stated.

Considering the statements of the participants; It is understood that high level of anxiety affects success negatively. In addition, it is understood that the family factor also triggers the level of anxiety. In this sense, it is understood that not being able to take the exams in the distance education method reduces the level of anxiety and this situation reflects positively on success. Opinions of the participants on another sub-category *"Absence-absenteeism"*

Student $_3$: *"We do not experience attendance and absenteeism problems either. What more can I ask, teacher! However, we should not forget that our teachers wanted full participation in the lesson. However, due to internet problems, our instructors tolerated attendance and absenteeism. "* Another participant had a similar view;

Student $_4$: *" During this epidemic, our teachers have been more flexible about absenteeism. "* form expressed.

In summary; Qualitative interviews were conducted in order to obtain more detailed information about the second cluster formed as a result of cluster analysis. When the results of the qualitative interviews were examined, they stated that the distance education method increased the motivation of the students. Components that increase motivation the most; academic success is the flexible understanding applied to attendance and absenteeism and the disappearance of the reasons that reduce anxiety levels.

Qualitative findings of the third cluster "discontent"

Two (2) open-ended questions in the semi-structured interview form were asked to the students in the third cluster. These questions are; 1) Can you explain why the platform you used in distance education was difficult and complex? 2) What kind of support (in terms of technical and equipment) do you need in order to benefit from distance education more efficiently, can you explain? The main and sub-themes that emerged as a result of the analysis of the findings are given in table 7.

Table 7 . Obtained from 18-30 April 2021 online form, Discontent

Main Theme	Child Theme
Discontent	Internet Problem and Lack Of Resources
	The Complexity Of Digital Platforms

Under the main theme of discontent, undergraduate students stated that the first of the most important variables of the distance education method during the epidemic was *"Internet problem and lack of resources"* In this direction,

Student ₅ : *" Teacher, first of all, I can participate in distance education through my phone. Because I do not have a computer. Because of this, I have a serious problem with the Internet. The voices of our teachers are intermittent, so I do not understand the lesson."* he stated. When this explanation is examined, it can be said that internet infrastructure should be developed and devices compatible with the digital program used should be used in order to maintain distance education in a healthy way. The last sub-theme of this set is *" The complexity of digital platforms "* is seen as one of the areas where students have the most problems. Considering the opinions of the participants;

Student ₆ : *" Our teachers were inexperienced in using the distance education application platform because they were teaching from distance education for the first time, so our lesson hours were not used economically. "* Another participant in similar parallels,

Student ₅ : *" The distance education program used by our university is very complex. At first, I had a hard time deciding where to open the image and sound, how to find the courses again, and how to send homework to our professors. Now I'm struggling too; but I was able to solve it a little bit."* He expressed his thoughts.
In summary;

Qualitative interviews were conducted in order to obtain more detailed information about the third cluster formed as a result of cluster analysis. When the results of the qualitative interviews were examined it was stated that the students were not satisfied with the distance education method, in other words, they were dissatisfied. At the beginning of the components that cause discontent; they expressed it as the internet problem and lack of resources and the complexity of digital platforms.

4. Dıscussıon

The general purpose of the research is to determine the positive/negative situations experienced by higher education (undergraduate) students studying at state and foundation universities in Turkey with the distance education method during the Covid-19 epidemic process, and to develop solutions to the negative situations experienced by higher education (undergraduate) students. For this purpose, the method to be applied has been determined. It was decided that the method that could best analyze the purpose was the mixed method. Because the mixed method; It is the approach of using qualitative and quantitative data together to obtain more detailed data in research (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2018). Based on his statement, this method was chosen. In the first stage of the research, the participant group was determined. Participants consisted of 152 students studying in undergraduate departments of universities. "The Use of Distance Education Environments in the Pandemic Process and the Psychometric Characteristics of Individuals Scale" , which was adapted from Google forms, was applied to these students. The data obtained at the end of the application were clustered in the SPSS 22 package program. The reason for the cluster analysis is to determine the main study group. Hierarchical method and ward's technique, which are cluster analysis methods, were applied. As a result of the operations, three clusters were formed. These sets are; it consisted of three main components: "effectiveness and satisfaction, motivation and discontentment". The first cluster, "effectiveness and satisfaction"; prominent sub-themes emerged with expert opinions as economical use of time, document access, ease of communication and interaction, and teaching satisfaction in the digital environment. When Basilaia and Kvavadze (2020) compare the results of their research, it will be understood that they are similar. That research; it is a study conducted in Georgia, as a result of the study, it was revealed that the online education method was quickly adopted by the students and quickly adapted. One of the important findings of the research is that positive statements have emerged in terms of saving time, providing access to necessary documents and creating equality of opportunity among students. Similar

findings, in the study of Horspol and Lange (2012), online education method one of its components has emerged as not being needed spatially and saving time in terms of going to and from the university. Supporting these findings are the studies of Li, Zhou and Fan (2014). In that study, they stated that distance education provides an equal opportunity for individuals and is an important element of distance education.

It is known by many researchers that a high level of interaction and social communication cannot be achieved in distance education. In the study conducted by Arora and Srinivasan (2020), it was concluded that the most important problem of distance education is the lack of communication and interaction. However, two different views emerged in this study: The common opinion of 34% of the participants gathered in the first cluster stated that distance education is positive in the context of communication and interaction. The second opinion is that 41% of the participants stated that distance education is insufficient in communication and interaction. It is thought that it is important that these two views emerge in the research.

Interesting findings were obtained in the theme of "motivation" which is the second set of the research. Some of these findings are; increased academic success, decreased anxiety level, and flexible behavior of faculty members in terms of attendance and absenteeism. Increasing academic achievement, which is one of the sub-themes of this cluster, is one of the important variants of important research. In this sense, when the literature is examined, similar results are encountered. In a study examining the experiences of university students in connection with the online (online) education method, Yolcu (2020) has found that one of the most important factors that arise in connection with the online (online) education method of the students is the ability to watch the lessons repeatedly and attend in a suitable place. When both the Yolcu (2020) research and the studies on similar topics in the literature are examined and the results are examined, it is seen that this research is consistent with the results. One of the other important findings of the research is that faculty members prefer a flexible method in terms of attendance and absenteeism. In this case, the findings obtained in various studies in the literature; it is understood that distance education is consistent with those that are flexible, accessible, independent of time and place, provide equal opportunities and support the individual's learning at his own pace. The research conducted by Fidan (2020) on this subject examined the experiences of classroom teachers working in primary schools regarding online education. The findings in this study; teachers stated that the most important advantage of distance education is that students do not break away from their lessons, and that it offers them comfortably and without time concerns. Similarly, it is understood to support the findings of this study.

Interesting findings were obtained in the theme of "discontent", which is the third. That is, the last set of the research. Some of these findings are; the problem of the internet, the lack of resources and the complexity of digital platforms. There are many scientific publications supporting the findings of the third cluster of research. The biggest problems of this research and distance education in general; internet infrastructure problem and lack of resources are among the findings of the research. There are many studies supporting this situation. Some of these studies are; the attitudes of Pakistani higher education students towards their participation in compulsory university courses during the Coronavirus (Covid-19) were examined. Undergraduate and postgraduate students were surveyed to find their perspectives on online education in Pakistan. The findings of the study stated that the majority of the students could not access the internet due to technical and financial problems, therefore distance learning could not produce the desired results (Muhammed and Kainat, 2020, p.45). Considering the findings of this research, it is seen that it is consistent with the findings of the study of Muhammed and Kainat (2020). In another study, Keskin and Kaya (2020) stated in their study on the evaluation of distance education method that students experienced technical problems during the course, they had difficulties in communication and interaction, they felt inadequate in communicating, and they also experienced technical problems during education. It is understood that this study is in parallel with the findings of this study.

Another component in the third set; it has come to the fore that digital platforms have complexity and difficulty. When the studies in the literature are examined, it is seen that there are similar results. Özonur, Kamışlı, Yelken, and Tokmak (2019) conducted a study called "Fuzzy Multi-Criteria Decision Analysis Approach in the Selection of Cloud Based Learning Management System". Considering the results of the research, there were some negative opinions as well as positive statements by the students about the learning method system. Especially the difficulties experienced in the service functions in student affairs came to the fore. Therefore, it is understood that there is a parallelism between the findings of the study and the findings of this study.

5. Conclusıon

COVID-19, which started in december 2019 and became an epidemic all over the world in a short time, has affected the whole world. In addition to the education sector, areas such as health, economy and tourism have been adversely affected. Many countries around the world have temporarily closed their educational institutions in order to control the spread of the COVID-19 epidemic. These situations, experienced on a country basis, have affected more than 91% of the student population in the world. As of April 30, 2020, approximately 1.6 billion students in the world are affected (UNESCO, 2020). The results of the research show that university students' perceptions of distance education differ from each other. Considering the findings of the study, it was remarkable that the rate of those who were satisfied was higher. These results show that university students have adapted to distance education during the Covid-19 process. The research conducted during the Covid-19 epidemic has been examined. In this context, the educational activities in the process were evaluated by taking the opinions of the students studying in the undergraduate departments of the universities. Accordingly, since the distance education method is thought to have an important place in education and training activities, it is foreseen that the results of this research will shed light on the studies to be carried out on the design and use.

6. Recommendatıons

In this context, the following suggestions can be made; 1) Distance education environments should become widespread at all levels of education even after the epidemic process, 2) A strong technological infrastructure should be developed in order to obtain maximum benefit from distance education, 3) Electronic device (computer, tablet, etc.) support should be provided to students with financial problems, 4) In distance education, easy-to-use and accessible platforms should be used, 5) It is recommended that the necessary support be provided by the senate institution of the universities so that the faculty members can use the platforms used in the distance education method more effectively.

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Etik, Beyan ve Açıklamalar

1. Etik Kurul izni ile ilgili;

☑ Bu çalışmanın yazar/yazarları, Hasan Kalyoncu Üniversitesi Sosyal ve Beşeri Bilimler Etik Kurulu'nun tarih 07/06/2021 sayı E--804.01-BABBFCF3 ve karar ile etik kurul izin belgesi almış olduklarını beyan etmektedir.

2. Bu çalışmanın yazar/yazarları, araştırma ve yayın etiği ilkelerine uyduklarını kabul etmektedir.

3. Bu çalışmanın yazar/yazarları kullanmış oldukları resim, şekil, fotoğraf ve benzeri belgelerin kullanımında tüm sorumlulukları kabul etmektedir.

4. Bu çalışmanın benzerlik raporu bulunmaktadır.