The Educational Impact of Distance Learning during the COVID-19 Pandemic on Students' Interaction in the Educational Process

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Abstract

Due to the widespread impact of the Covid 19 pandemic, teachers and students were driven to relocate their teaching learning practices to the safety of their own homes. The goal of this research was to learn how Saudi students felt about distance learning online during the lockout of the College of Science and Humanities at Sulail, Prince Sattam Bin Abdullah University. Multiple methods were used to complete the study. Researchers collected data from 152 degree students of Management,Computer Science, English, Islamic Studies, Arabic department to rate their satisfaction with online learning settings using a Likert scale ranging from one to five points. A mixed research strategy was chosen for the study's purposes, with descriptive analysis used for the quantitative data analysis and content analysis used for the qualitative data analysis. Although some respondents expressed enthusiasm for online distance learning, the vast majority reported difficulties with the format and stated a preference for traditional in-person classes. Some students have expressed enthusiasm for this form of distance education. The study concluded that the findings can help policymakers and professors construct effective or efficient teaching ways to overcome difficult situations or pandemics, which is a summary of the study's main points.

Keywords: Covid-19 pandemic, distance learning, face-to-face education, online learning

1. Introduction

A new virus (SARS-COV-2) emerged in the last days of 2019 in Wuhan, China, and caused many people to die suddenly by getting sick all over the world. The coronavirus epidemic has adversely affected many sectors andbrought to a standstill, thereupon, on March 11, 2020, World Healthdeclared a global pandemic by the World Health Organization (WHO, 2020). Most of the countries started providing education by making use of technology as the education sector, has been greatly affected by the worldwide epidemic (Alotaibi& Kumar, 2019; Agnoletto&Queiroz, 2020; Çakmak et al., 2021). Educational institutions were closed, and face-to-face education was replaced by distance education. It has been decided to conduct the lessons synchronously/asynchronously. In the recenttimes, universities are not very unfamiliar with this practice. But there was no option and it has decided that compulsory common courses can be given through distance education and paved the way for formal education to be given together with distance education. This transition process, which was made in 2019, started with the Coronavirus seen all over the world.Suddenly accelerated due to the epidemic and universities, they sought ways to teach via distance education.

Distance education, which has been stated a lot with the global pandemic is not actually a new concept and has been used since eighteenth century for different purposes (Yildirim, 2020; Khan et al., 2022). In recent years too, with the developments in information and technology, it has been carried out somehow using different interaction tools (Clark, 2020; Pan et al., 2022).Distance education refers to a form of education where the recipient and the resources are not in the same environment (Bozkurt & Sharma, 2020). Although it is an economical and interactive form of education , which is carried out, though partly, independently of time and place, and meets individual and social needs by providing lifelong learning opportunities (Kaya, 2002). Distance education is a form of education, especially in emergencies arising from the pandemic. With the outbreak of the pandemic technical, psychological, sociological issues were covered by distance education. The difficulties cannot be ignored. The reasons such as being caught off guard by teachers and students in distance education, inadequacy of technological infrastructure, and lack of time for

effective instructional design in lessons put distance education at a disadvantage compared to normal distance education due to the pandemic.

1.1 Objective of the Study

In this study, the impact of distance education on learning engagement of the students, who had to take distance education due to the pandemic, has been explored. In this context, answers to the following problems were sought:

- What is the impact of the students who started university for distance education/online education due to the pandemic?
- What is the impact offor distance education/online education due to the pandemic according to the department they are studying?
- Doesfor distance education/online education due to the pandemic effect the reading practice?
- What arestudents' positive/negative views of students about for distance education/online education due to the pandemic?

2. Literature Review

When the studies on distance education students are examined, it is stated that students generally find oral presentations useful in distance education and they have a negative attitude towards synchronous lessons (Karatepe et al., 2020; Ghahderijani et al., 2021), on the other hand, access to courses originating from internet and technical problems, They prefer distance education (Ozyurek, 2016; Sercemely&Kurnaz, 2020) and they find distance education more economical (Olcay, &Doy, 2016; Liang et al., 2022). In another study conducted by Yildiz (2020), taking the opinions of undergraduate students, the students stated that the most important elements for an effective distance education are instructor, student characteristics, instructional design, teaching method, interaction, cooperation and orientation. Accordingly, while creating a distance education environment, the importance of training the instructors about the process, designing the necessary technical interfaces, making orientations, and determining appropriate teaching methods were emphasized. However, in a study conducted by Eroyluand Kalaycy(2020), undergraduate students stated that the course content is insufficient in distance education applications and that the instructors do not use effective teaching methods. On the other hand, there are opinions that immediate feedback is not provided in distance education, communication is insufficient and it prevents socialization (Kaya, 2002; Yurdakul, 2005). However, one of the reasons for students to choose the university is that they will attend is stated as the social and physical facilities of the university and the city it is located (Anil et al., 2017; Ceylan et al., 2017; Kumar, 2020; Kumar et al., 2021).Similarly, in a study conducted with senior high school students, the cost of living in the city where the university is located, campus life, geographical location and quality of social life have also been influential in students' preference for university (Soutar& Turner, 2002). There is no doubt to say that the students who choose universities on the basis of the infrastructure of the college, academic environment, and healthy social life for them it is hard to digest and accept teaching in distance mode due to the pandemic. Therefore, because of temporarily applied education, their positive and negative thoughts about the process and their expectations, their learning interest affected.

3. Research Methods

3.1 Research Design

This research was designed with a mixed research approach in which qualitative and quantitative research approaches were used together, considering the nature of the data collected, the data collection process and the analysis of the data.The research was shaped by the sequential explanatory model, in which studies conducted with quantitative data were supported by qualitative data (Creswell, 2003). The qualitative part of the research was designed with a case study model, since an existing situation is tried to be described in its own conditions (Merriam, 2013), and a single-instance model, which is nested with more than one unit, was used for a single situation (Yin, 1984). . In the quantitative part of the study, the descriptive method, which is one of the most common quantitative research methods in education, was used (Marshall, 1996).

3.2 Participants

The study group of the research consists of 152students of College of Science and Humanities at Sulail. They are the degree students from Management, Computer Science, English, Islamic Studies, and Arabic departments.Participants selected according to the easily accessible case samplingmethod filled in the online data collection tool on a voluntarybasis.

3.3 Data Collection Tools

The questionnaire contains weretwo sections for the purpose of data collection in this study. The questionnaire, which consists of 20 items in a 5-point Likert type, has a structure with 5 factors: "Technical Skills", "Factors Affecting Success", "Access to Technology", "Motivation and Attitude" and "Personal Characteristics".In the first section, questions related to the impact of the e-learning process during pandemic were prepared and presented online to the respondents. The second section was descriptive in nature. The participants were asked to state their negative thoughts, expectations and suggestions.

4. Data Analysis

Data analysis was done in two ways, quantitative and qualitative. For the quantitative analysis, first of all, the answers of the participantsto the impact of the e-learning process during pandemic. Five-point Likert type comprising Never (1), Rarely (2), Occasionally (3), Often (4) and Always (5) have been used for questionnaire. The data was analysedusing SPSS (Statistical Package for Social Sciences) program.

After the data processing, raw scores were obtained and since the numbers of items in the factors were different, standardization was used for ease of interpretation. In this context, raw scores were divided by the number of items in the relevant factor and multiplied by 20.Therefore, while the scores obtained from the factors varied between 20-100, in the scores obtained, 20-45were considered as low level, 46-74 as medium level, and 75 and above as high level . During the analysis of quantitative data, the normality of the distribution of the data was examined by descriptive and graphical methods, skewness and kurtosis coefficients, Kolmogorov-Smirnov test. It was observed that the arithmetic mean, mode and median values were close to each other, and the skewness and kurtosis coefficients did not differ significantly from the range of -1 to +1.In addition, it was determined that the data showed normal distribution with the help of histogram, box and QQ graphs. When the Kolmogorov-Smirnov test results were examined, it was seen that $p < .05$ anddescriptive and graphical methods are recommended to be evaluated together (Abbott, 2011; Gnanadesikan, 1997; Hair et al.,1998; Stevens, 2009; Thode, 2002).

It was concluded that the distribution of the data was normal. First of all, descriptive statistics such as frequency, mean and standard deviation were calculated for the readiness levels of students who have just started university for distance education due to the pandemic. With the t-test for independent groups; ANOVA test was used to determine whether it differs according to the department they study and the daily time they spend with the computer. Post- Hoc analysis techniques were used to determine which variables had significant differences. In cases where homogeneity of variances was achieved with Levene's test ($p > .05$); in cases where it was not provided ($p < .05$), Games-Howell multiple comparison techniques were used.

On the other hand, in this study, the positive and negative opinions of the students who have just started university towards distance education due to the pandemic. Qualitative data were collected with a structured interview form to determine the expectations and suggestions for education. The qualitative data obtained were analyzed by content analysis and inductive analysis techniques. Content analysis is explained as the identification, enumeration and interpretation of recurring issues, problems and concepts, and is greatly beneficial because it covers both qualitative and quantitative issues (Miles & Huberman, 1994; Silverman, 2000). Inductive analysis, on the other hand, is to reveal the concepts underlying the data and the relationships between these concepts through coding. The codes and categories that emerged as a result of the content analysis were extracted from the answers given by the participants and were gathered under a theme independently ofeach other by two instructors who are experts in the fields of educationprograms and teaching and measurement and evaluation. Consensus/whetherthe relevant codes represent these themes (agreement+disagreement) formula was found to be .89 and this value was found to be at a very good level. Percentage and frequency distributions of each code were calculated with the SPSS 23 program and themes such as 'individual impact' and social impact' were created.

5. Results

In this section, first of all, the impact of the e-learning process to the students during the pandemic-induced distance education were examined according to various variables , then their positive and negative thoughts about the process, as well as their expectations and suggestions were examined.Obtained findings are presented with tables.

The distance of students who have just started university due to the pandemic readiness levels for primary education. The readiness levels of the students for distance education are calculated on the basis of factors and presented in Table 3.

Table 1. Impact of the students who started university for distance education

Factors	N	SS	Min	Max	Impact level					
					Low		Middle		High	
Personal characteristics	78.8	10.8	40	100	5	1.6	34	21.6	74	77.9
Access to Technology	67.2	27.4	20	100	43	24.2	32	20.3	48	50.6
Technical Skills	72.8	17.8	20	100	22	9.2	39	37.4	51	53.7
Motivation and Attitude	63	16.5	20	100	24	16.4	46	53.4	34	35.8
Factors Affecting Success	78.9	13.3	26.7	100	6	2	37	33.1	62	65.3

It is observed from table 1 that the highest averages are in the factors "Factors Affecting Success" (= 78.9) and "Personal Traits" (= 78.8). When the factor averages of the students are examined, it is noteworthy that they have medium and high impact level in all factors (> 47). Average = 78.8 in the Personal Traits factor, and 76.7% of the students are at a high level in terms of personal traits. Again for the same factor, it is seen that 21.6% of the students are at a medium level and 1.6% are at a low level.

When the Access to Technology factor is examined, it can be said that the students are at a moderate level for this factor, while it is calculated as an average (= 67.2). While 50.6% of the students have a high level of technological access, it is seen that 20.3% ofthem are at a medium level and 27.2% of them are at a low level. On the other hand although the average of the Technical Skills factor is medium (= 72.8), 53.7% of the students have high-level technical skills, 37.4% have medium-level technical skills and 9.2% have low-level technical skills. Another important factor for distance education is motivation and attitude. The mean of the factor = 63 and it is moderate. However, 30.2% of them have a high level of motivation and attitude. Finally, when the Factors Affecting Success are examined, it is seen that the average is at a very high level (= 78.9). There is hardly a group of students (2%) at a low level.

Examining the impact of distance education due to the pandemic on the students, according to the department they study.

The one-way ANOVA test was used to examine whether the impact levels of the students for distance education due to the pandemic differed according to the department they studied, and the statistically significant results are presented in Table 2.

Table 2. the impact of distance education due to the pandemic on the students, according to the department they study

Factors	N		SS	F	p
Management	52	77.80	21.90		
Computer Science	26	66.59	27.27	3.98	.001***
English	24	66.09	30.22		
Islamic Studies	18	57.27	25.71		
Arabic	32	70.08	26.12		

Education ***:p<.001

According to the results of the one-way ANOVA test conducted to examine whether the impact levels of the students for distance education due to the pandemic differ according to the department they are studying, there is a statistically significant difference between the groups in the factors of Access to Technology and Technical Skills (p<.001); there was no significant difference in other factors (p>.05). As a result of the Post-Hoc analyzes made to look at the differences between the groups, it is seen that the differentiation for both factors is between Management subject and Arabic. When the averages of the factors are examined, in both factors, Management subject, students are at high level (77.80), Arabic students are at medium level (70.08).

Examining the impact levels of students for distance education due to the pandemic 0n book reading practices

Whether the impact levels of the students for distance education due to the pandemic differ according to their reading status, were examined by independent sample t-test and the results are presented in Table 3.

Table 3. the impact levels of students for distance education due to the pandemic on book reading practices

Factors		N		SS	t	Sd	P
Personal characteristics	I don't read regularly.	82	77.6	11.1	-2.11	151	.025*
	I read regularly.	70	80.3	10.2			
Access to Technology	I don't read regularly.	82	62.3	28.2	-3.32	151	.001**
	I read regularly.	70	72.9	25.4			
Technical Skills	I don't read regularly.	82	70.2	18.8	-2.24	151	.004**
	I read regularly.	70	75.9	16.2			
Motivation and Attitude	I don't read regularly.	82	61.1	16.7	-2.25	151	.023*
	I read regularly.	70	65.3	16.1			
Factors Affecting Success	I don't read regularly.	82	76.7	13.9	-3.28	151	.001**
	I read regularly.	70	81.6	11.9			

According to the results of the independent sample t-test conducted to examine whether the impact levels of the students for distance education due to the pandemic differ according to their reading status, there were differences between the groups at all factor levels, including Personal Characteristics, Access to Technology, Technical Skills, Motivation and Attitude, and Factors Affecting Success. A statistically significant difference is seen ($p<.01$; $p<.05$). In all factors, the averages of the students who stated that they read books regularly were significantly higher than the averages of the students who did not read regularly.

Examining students' positive/negative views on about the impact of online education due to the pandemic

In the qualitative part of the research, positive opinions of the students aboutdistance education were asked, and a total of 33 positive opinions out of a total of 152 students were asked. The views were first coded, then combined into categories and finally themes were created. The codes, categories and themes of the students' positive views on distance education that they have been exposed to due to the pandemic are presented in Table 4.

Table 4. students' positive views on about the impact of online education due to the pandemic

Points	Category	Code	f	%
individual effect	Comfortable	Easy and comfortable	17	51.5
		Economic	3	9.0
		Individual	2	6.06
	Innovative	Interactive	6	18.2
		Technological	5	15.2

When Table 4 is examined, it is seen that the positive opinions expressed by the students are grouped under the themes of individual and the opinions are mostly in the direction of individual impact (f=33 out of 152, 21.72%). In the theme of individual impact, students mostly emphasized the convenience of distance education (f=22, 66.56%). In this context, students stated that being in their own homes during the distance education process is more comfortable, more economical and more suitable for their individual working environments.

On the other hand, there are those who state that they will experience a more interactive (f=6, 18.2%) and technologically advanced period with distance education (f=5, 15.2%).

Some of the positive opinions ofstudents regarding distance education caused by the pandemic are as follows:

Student 17: "…..I think it is the best method for our health during the pandemic process." (Easy and comfortable)

Student 75: "I think that being much more active in digital life and working remotely will enable us to use technological tools better in our future professional life. (Technological)

When the negative opinions of the students about the distance education process due to the pandemic were examined, a total of 119 negative opinions were obtained. The codes, categories and themes of the negative opinions of students about distance education that they have been exposed to due to the pandemic are presented in Table 5.

Table 5. students' negative views on about the impact of online education due to the pandemic

Points	Category	Code	f	%
individual effect	Lessons	Inefficiency	61	51.3
		Non-interaction	19	15.9
		Time constraint	4	3.4
	Sociality	Away from the classroom environment	15	12.6
		Lack of social circle	5	4.3
	Psychological	Technological inadequacy	9	7.6
		Feeling of inexperience	5	4.3

When Table 5 is examined, it is seen that the negative opinions expressed by the students are grouped under the themes of individual within three dimensions lessons, sociality, and psychological. In the theme of individual impact, even in all of the negative opinions, the most emphasis was placed on the fact that the lessons would be inefficient (f=61, 51.3%). The students stated that the interaction would decrease (f=19, 15.9%) and the efficiency to be taken from the lesson would decrease, as a result, the lessons would take time constraint (f=4, 3.4%).

On the other hand, the table stated that staying away from the environment (f=15, 12.6 %) and social environment (f=5, 4.3%) would negatively affect their socialization. In this case, there are also opinions stating that the inexperience caused by being online class, technological inadequacy and fear of failure pose a psychological problem are (f=9, 7.6%) and (f=5, 4.3%) respectfully.

Some of the positive opinions they reported on distance education due to the pandemic are as follows:

> S75: "There may be problems in subjects such as access to the course and the internet." (access problem)

> S95: "I think the worst part of distance education is not being able to start our university life and not being able to be in that social environment." (lack of social circle)

> S110: "I think I will have difficulty in adapting to the lesson since we are not in face-to-face interaction with the teachers." (non-interaction)

5. Discussion

In this study, the impact of distance education on learning engagement of the students due do pandemic has discussed. The research domains were investigated and the opinions of the students about the distance education process were taken. Looking at the quantitative part of the study, it was seen that the impact distance education on learning engagement of the students were medium and high in general. In this case, it can be said that students are generally ready for distance education. Similar results were found in some studies, and it was stated that students were ready for distance education (Korkmaz, Cakyr, & Tan, 2015).

When the impact of distance education on learning engagement of the students was examined according to the department, significant differences were observed to the department they are studying. According to this, the levels of the students of the Management department are significantly higher than the Arabic students. On the other hand, the impact of distance education on learning engagement of the students was examined in terms of access to technology and technical skills. It has been observed that there is slight difference between "Factors Affecting Success" (= 78.9) and "Personal Traits" (= 78.8). Considering that a more permanent and effective learning environment will be created by integrating technology into the education system (Kuzu and Syvacy, 2018), we will make distance education anadvantage and provide students with activities, assignments, etc. where they will spend.

The impact of distance education on learning engagement of the students was also examined according to their reading status, and significant differences were found in all dimensions. Students who stated that they read books regularly had higher averages in all dimensions than students who did not read books regularly. In this context, they have higher perceptions that they have the personal characteristics, technical and technological equipment, motivation and attitude, and factors affecting success, which are necessary in parallel with the findings of Biçer and Alan (2017)

In the qualitative part of the study, students' opinions and suggestions about distance education, which they are exposed to due to the pandemic, were taken. In this context, although there are positive opinions, it is noteworthy that there are more negative opinions. Students stated that the pandemic- induced distance education is the right step towards reducing the spread of the epidemic and providing a risk-free education. However, they stated that they would have a more inexpensive, comfortable and easy education period because they were with their families.

Studies have shown that university students yearn for their family and hometown, and have a problem of adaptation to a new life due to their excessive attachment to their parents (Kutlu et al., 1997). Another situation that students see as positive is that education continues no matter whatever the mode of education. In this way, they have stated that they will not be deprived of many benefits that the university they have expected in order to improve themselves and gain a profession and career. On the other hand, some students stated that they would encounter more modern methods with distance education applications. Therefore they thought that the lessons would be more effective and they would have the opportunity to develop themselves technically and technologically. Individuals who develop themselves in this sense will be able to keep up with the digital environment required by the time so much so that the role of educational technology in education and training. It is shaped depending on the technology use proficiency of the students (Alkan, Deryakulu, &Yimyek, 1995; Çakmak et al, 2021).

When the negative opinions of the students about distance education due to the pandemic are examined, it is seen that the most repeated opinion is that the lessons will be inefficient. It is thought that mutual interaction will be insufficient, therefore it will be difficult to understand the lessons, and only a superficial learning can take place in the limit. In a study conducted with university students who previously provided face-to-face education and were exposed to distance education due to the pandemic, students stated that there is less mutual communication with the instructor in online courses than in normal education (Karatepe, Kucukgencay, &Peker, 2020). Therefore, it may be important to raise awareness among teachers about this issue by going in the direction of reducing this problem and eliminating software-related non-interactions. Another important issue emphasized by the students is the inequality of opportunity among individuals. Individuals who are inadequate in terms of technical and technological equipment due to financial impossibilities become disadvantaged in distance education. Therefore, if distance education is to another negative situation related to distance education caused by the pandemic that students emphasize is that they are in a psychologically difficult situation. They stated that they were afraid of failing in their education life when technological inadequacy was added to their inexperience as they had just entered the university. Moreover, they are deprived of the opportunity to socialize because they are away from the social environment.

Finally, the students were asked about their expectations and suggestions about distance education, and as a result, opinions that would be important from individual and social perspectives were reached. The first thing that the students emphasize is that the infrastructure of the software in which distance education will be made is solid and accessible. The recommendations made are followed by the quality, efficient and interactive conduct of the courses. They stated that this would only be possible if solid software was used and the instructor, who would teach the course, carried out this process with devotion, so that the instructors will be the ones who will carry out the lessons in the best way by turning the situations brought by distance education into an advantage.

6. Conclusion

It was concluded that the general self-efficacy of the individuals was higher. On the other hand, reading habit is one of the important factors of being a developed society and it is seen that the rate of reading is high in most of the countries considered as developed (Arslan, Çelik, &Çelik, 2009). Reading will enable individuals to compare, criticize and decide what is right (Kuy, &Turkyylmaz, 2010). Therefore, it is extremely important for young people to acquire the habit of reading in the current technology and information age (Hopper, 2005; Benyo et al., 2022). In this context, it would be appropriate to include activities that will raise awareness about gaining reading habits while providing distance education on the one hand.

Students who think that they will stay in the university stated that they will have a problem of adaptation to the university as long as distance education continues. Studies show that students especially prefer offline class with more social opportunities and they are happier there (Mok& Flynn, 1997; Ahmed et al., 2022). Considering that the social and cultural opportunities of the university affect individual independence and responsibility, and therefore self- esteem and sense of belonging (Holloway, 2002; Aslam et al., 2022). These needs of students can be tried to be met with the help of technology by developing social projects that they can participate in within the framework of education and ensuring wide participation.

When it comes to expectations and suggestions about distance education, instead of using only oral or written presentations, using methods and techniques with visual stimuli and allowing mutual interaction will increase the learning outcomes in the course (Dale, 1969; Kumar, 2021; Yu et al., 2022). Another suggestion of the students regarding distance education is that the lessons are planned and the exams are reliable. Sarÿ(2007) stated that the types of teaching methods, plans, programs and assessments applied at school affect students' perceptions about their school life. It is thought that the reliability of the exam results may be damaged since there are no sanctions during the exam due to the distance education of the students. In this context, considering the aims and objectives of the curriculum instead of traditional methods, associating the problems with daily life will pave the way for the formation of more meaningful learning. It will also lead to more positive results in terms of evaluating student performances (Ajmal, & Kumar, 2020; Parveen et al., 2022). Therefore, before the start of the course period, the learners are informed about distance education and awareness can be created about the teaching methods and techniques they can use in the process, and the types of assessment.Finally, the students mentioned a subject that concerns the society in general, providing equal opportunities for all students.

Also if a solution could not be found for this situation, face- to-face training should be started as soon as possible. Although it is aimed to minimize the inequality of opportunity and opportunity by providing students with the opportunity to participate in education from where they live, with distance education, equality of opportunity in education is prevented due to economic conditions (Can, 2004). Therefore, some students are deprived of education

due to financial difficulties. In this case, projects that will provide studentswith financial support for technical and technological materials, which are the basic need.

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