

# Investigation of the Effects of University Field Courses on Distance Education

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**Abstract**—This research focuses on examining the effects of university field courses on distance education and the integration of distance education into courses. A group of 357 university students studying biomedical engineering Health and Physical Education students from Kosovo at universities in the Kosovo region and the Russian Federation volunteered to participate in the research. A quantitative research method was used in the study. In the research, the "Distance Education" measurement tool developed by the researchers was used as a data collection tool. The questionnaire was developed and edited by experts in the field. Data were collected using an online survey. The collected data were analysed using the SPSS program. Frequency, percentage, mean, standard deviation, minimum and maximum values, one-way ANOVA and T-test were applied to analyse the data obtained from the Distance Education measurement tool. This re-search concluded that the majority of university students consider them-selves competent enough to use distance education technologies in the learning environment in the field courses, and they do not have difficulty using the systems in the field courses and their universities do not have sufficient equipment for the use of distance education technologies.

**Keywords**—biomedical engineering, distance education, use of technology, physical education

## 1 Introduction

In ancient times, when information tools were not discovered in education, while the spread of knowledge took a long time, it is seen that the information we receive today turns into old knowledge in a very short time [2]. It is known that the concept of education is explained in similar ways by scientists [24] [26]. Learning is the change in thought, perception and behaviour that occur as a result of people's interaction with their environment [19]. In other words, learning is nothing but behavioural changes that occur as a result of activities that are the product of life and tend to continue throughout

life [9]. It is known that the continuity of learning gains more importance as well as the effectiveness of the auditory, visual or applied learning process [25] [13]. In addition, one of the most important functions required by the life we live in is continuous learning. While teaching activities are given formally in educational institutions, it is known that the teaching function can be performed with different teaching methods with the developing technology [4] [29]. At the moment of using information and technology, while tools such as letters, newspapers, radio, and television are used, it is known that computers, smartphones, especially the internet have a much more important place at the moment [15]. Thanks to the development of technology, people who cannot find formal (face-to-face) education opportunities thanks to the internet, which is used as an educational tool, can receive education with the distance education method, and it is known that they do not fall behind in their lives, which makes distance education advantageous [28] [20]. Diploma and certificate programs obtained by distance education method are considered equivalent to programs completed as formal education. It is known that distance education applications, which first started with letters in the UK in the world, then went through a development process with the use of communication and media tools such as telephone, television and video. With institutionalised distance education applications, open universities were established in England in 1969 for people who could not have formal education [10]. There are 150000 undergraduate students, more than 30000 postgraduate students and 10000 students with disabilities in distance education, where registration is required to be over the age of 16 [14]. Teaching activities, which are independent of time and place, using all visual and auditory elements, can become attractive for people. If the developing distance education method can be applied effectively, it can be widely used in universities, state institutions and private companies, in-service trainings and certificate program trainings [30]. The aim of this study is to analyse the effects of formal education and distance education on student success and to compare these two education methods.

The sense of community can be defined as the sense of belonging of the members of a group, the sense of being important to the other members of the group, and their beliefs about meeting each other's needs. In distance education, learners complain about the feeling of being left out and not being included in the community [23]. If we think about the separation of physical spaces, we can say that it has a significant impact on education. In order to cope with this situation, it becomes important to develop a sense of community [15]. The low sense of community negatively affects participation in classes and learning activities. For these reasons, increasing the sense of community is important for the quality education of learners [18]. Distance education, which was initially applied in basic education, started to be used in courses, personnel training and higher education over time. Today, it can be used in all kinds of educational processes [22]. Especially in the use and development of higher education, there are factors such as putting forward digital teaching designs, constructing the infrastructure, establishing a system that can address the level of the student and suitable for individualization, and facilitating the accessibility and sharing of information [1] [6]. However, access to information gains importance without being dependent on time and space. Distance edu-

cation facilitates the student's access to information, creates teaching environments regardless of time and place factors and offers the opportunity to access information even on the go [3] [7].

### **1.1 Related studies**

Karaca and Kelam (2020) aimed to examine the effect of distance education service quality in the shadow of covid-19 in their study and as a result, they concluded that teachers consider themselves competent in the distance education system and try to provide a quality education service by making special efforts to participate in the practice. According to the results, the lessons given by distance education are of interest to the teachers as well as the students, it is important to give the right education to both teachers and students with the right method [11].

Cicha et al. (2021) aimed to investigate the expectations of first-year students about the transition of education to distance education, and they concluded that the level of knowledge about e-learning models, including understanding the expectations of university students about distance learning, is in place [8]. It can be said that distance education is in favor of students.

While it is seen that the studies in the related research section benefit the field, it should not be forgotten that the concepts of distance education are always at the forefront. While it is expected that each study designed on distance education will be a guide for both the field and university students, this study is expected to contribute to the studies of the future.

### **1.2 Purpose of research**

In this study, it is aimed to examine the effects of university field courses on distance education and to integrate distance education into courses. Answers were sought to the following questions regarding the general purpose determined.

1. What are the Daily Internet Usage Times of University Students?
2. What are the Daily Technology Usage Times of University Students?
3. What are the Views of University Students on Distance Education?
4. What are the opinions of university students about Adobe Connect application?
5. Is There a Difference Between University Students' Distance Education Status According to Gender Criteria?
6. What are the Distance Education Situations by Age Criteria?

## **2 Method**

In this section, information about which method was used in the study, which student groups participated in the study, the type and source of the data in the research, the data collection tool and the statistics used in the research were included and explained.

## 2.1 Research model

A quantitative research model was used in the research. The quantitative research method is known to be used by most researchers. Quantitative research is one that examines social phenomena through statistical analysis of numerically measurable data and aims to discover the laws of social order by revealing the cause-effect relationships between these phenomena [27].

## 2.2 Working group/participants

Participation groups included in the study consisted of 357 volunteer university students studying at various Russian Federation and Kosovo region universities. The measurement tool used in the research was applied to 357 university students with the help of an online questionnaire and was accepted.

**Gender.** In this section, the distinctions of university students according to their gender are given in Table 1.

**Table 1.** Distribution of university students by gender variable

Gender	Male		Female	
	<i>F</i>	%	<i>F</i>	%
Variable	181	50.70	176	49.30

When Table 1 is considered, the distribution of university students participating in the research according to the gender variable was determined and the information was examined and added to the table. In this context, 50.70% (181 people) were male students, while 49.30% (176 people) were female students. The findings of this section reflect the actual gender distribution.

**Daily internet usage times of university students in the process of distance education.** In this section, the situations related to the distance education environments of university students during the pandemic process according to the daily internet usage time periods were researched and examined (Table 2).

**Table 2.** The distribution of the university students on the daily internet use

Daily Internet Usage	1-3 Time		4-7 Time		8 or more hours	
	<i>F</i>	%	<i>F</i>	%	<i>F</i>	%
Variable	11	3.08	170	47.62	175	49.30

Table 2 gives an account of the usage status of the internet time that university students use daily during the distance education process. From Table 2 it is known that 3.08% (11 people) stated that they use the internet for 1-3 hours, 47.62% (170 people) stated that they use the internet between 4 and 7 hours and finally 49.30% (175 people) stated that they use the internet for 8 hours or more.

**Daily Technology Usage times of university students in distance education process.** In this section, the situations related to the distance education environments of

university students during the pandemic process according to the daily technology usage time periods were researched and examined (Table 3).

**Table 3.** Distribution of university students regarding the time they use technology daily

Daily Technology Use	1-3 Time		4-7 Time		8 or more hours	
	<i>F</i>	%	<i>F</i>	%	<i>F</i>	%
Variable	8	2.24	151	42.29	198	55.47

Table 3 gives the usage situations of the technology times that university students use daily during the distance education process. 2.24% (8 people) stated that they use technology for 1-3 hours, 42.29% (151 people) stated that they use technology for 4-7 hours, and finally 55.47% (198 people) stated that they use technology for 8 hours or more, in this context, it is seen that university students prefer 8 hours or more of daily technology use during the pandemic process.

**Age status.** The age status of the university students in the study group was examined and detailed information is given in Table 4.

**Table 4.** Distribution of university students by age

Age	18-20		21-23		24 and above	
	<i>F</i>	%	<i>F</i>	%	<i>F</i>	%
Variable	258	72.27	86	24.09	13	3.64

Table 4 gives the distribution of university students in the study group according to their age status is taken into consideration and the relevant information is added to the table according to the age scale. 72.27% (258 people) are between the ages of 18-20, 24.09% (86 people) are between the ages of 21 and 23 and finally 3.64% (13 people) are 24 and appears to be in the older age range. In the age status section, the findings reflect the actual distribution.

### 2.3 Data collection tools

When the data collection tool part is considered, it is seen that it is a measurement tool developed by the people who created the problem situation of the research within the research. The data collection tool, on the other hand, was examined by experts in the field of distance education, and unsuitable items were removed from the study and corrected. A personal information form called "Distance Education" measurement tool, which was applied to university students and developed by the researchers, was used. The content validity of the developed measurement tool was examined by experts with the title of 7 professors working on distance education platforms and distance education, and unnecessary items were removed from the measurement tool and rearranged.

**Personal information form (demographic data).** Includes age, gender, internet usage and daily technology usage environments are included.

**Distance education data collection tool.** A 5-point Likert-type questionnaire was prepared to get information about Distance Education and Adobe Connect opinions. 20

items of the measurement tool consisting of 22 items in total were used and 2 items were extracted from the measurement tool thanks to expert opinion. University students' opinions were sought from two factorial dimensions, such as "Distance Education" and "Adobe Connect". The Cronbach Alpha reliability coefficient of the measurement tool as a whole was calculated as 0.99. Measuring tool; "strongly disagree" (1), "disagree" (2), "undecided" (3), "agree" (4) and "strongly agree" (5). The measurement tool was also collected from university students online.

## **2.4 Application**

In the implementation part of the study, 357 volunteer university students from various universities of the Kosovo region and Russian Federation were selected by the researchers and it was planned to prepare live events with the help of the adobe connect program. When the activity part of the research is finished, it is planned to show videos and content for university students using distance education and adobe connect dimensions. Within 4 weeks of training, live lessons related to field courses "use of distance education", "Adobe Connect", etc. were offered to university students during the pandemic process. information such as distance education was given to university students in the form of distance education and university students were expected to participate every week on this subject. After the 4-week training, the online measurement tool and information form were applied to the university students and the data were given in the findings section in tables.

The education was distributed as 5 sections over the Adobe Connect application program used by most universities, and each determined section was arranged to be distributed over weeks to be limited to a maximum of 74 university students. The program was covered in a total of 50 minutes, with 45 minutes of training and 5 minutes of question-answer, and in the case of online education, university students were expected to participate in the training using devices such as tablets, phones, computers, with video and microphone. The measurement tool applied to university students was collected by means of an online questionnaire and transferred to the spss program by coding in the computing software environment.

## **2.5 Analysis of data**

Statistical data obtained from university students were analysed in the Statistics program using frequency (f), percentage (%), mean (M), standard deviation (SD), t-test, one-way ANOVA. The numerical values of the data obtained from the program are given in tables, accompanied by comments in the findings section.

## **3 Results**

The numerical findings obtained as a result of the analysis of the statistical data obtained in the research have been added to this section in tables and various interpretations have been included in the direction of the findings.

### 3.1 University students' views of distance education

Findings related to distance education of university students are given in Table 5.

**Table 5.** Views of university students on distance education

No	Distance Education Opinions		
		M	S
1	It is easy to open an account through the Distance Education system.	4.34	0.69
2	It is easy to access classes via Distance Education.	4.41	0.54
3	It is easy to access course materials through the distance education system.	4.39	0.66
4	Distance Education courses are easy to use via smartphones	4.43	0.59
5	Lessons taught using Distance Learning become more effective in cooperative learning	4.39	0.66
6	Events can be created easily via Distance Education	4.51	0.59
7	It is very easy to share what I learned through Distance Education.	4.43	0.63
8	Online exam results via Distance Education can be easily shared.	4.60	0.49
9	I had no difficulty in following the course through Distance Education.	4.58	0.59
10	Distance Education design is simple and convenient	4.53	0.50
	Overall Average	4.46	0.45

From Table 5, it is seen that there are statistical findings regarding the distance education views of university students. Although it is seen that each answer has a different meaning, it can be said based on Table 5 that university students' views on distance education after the activity are high. The results of the online exam can be shared easily, which was found to be  $M=4.60$ . In addition, it was found that  $M=4.58$ , which is one of the most prominent expressions of the research, "I had no difficulty in following the course through Distance Education". While it was seen that university students' views on distance education were quite high, another finding was that "Distance Education design is simple and useful"  $M=4.53$ . Another finding of the research is that "It is easy to reach the lessons through Distance Education"  $M=4.41$  and "Activities can be created easily through Distance Education"  $M=4.51$ . In addition, another value of the research is "It is very easy to share what I have learned through Distance Education". It has been found that  $M=4.43$ , and finally, it is seen that the general average is  $M=4.46$ .

From Table 5, it is seen that university students do not have difficulty in field courses with distance education systems, they can easily take electronic exams with distance education systems, they feel happier by using distance education systems, and they find distance education systems simple and useful. In this context, it can be said based on the findings that university students have positive distance education since all the values in Table 5 have a positive meaning.

### 3.2 University students' views on adobe connect application

The findings regarding the Adobe Connect application of University Students are given in Table 6.

**Table 6.** University students' opinions on Adobe Connect Application

No	Opinions on Adobe Connect Application		
		M	S
1	Online courses run in Adobe Connect environments are more effective	4.58	0.55
2	Taking lessons in Adobe Connect environments provides the opportunity to devote more time to my social life.	4.76	0.63
3	Instant correspondence and asking questions with the teacher who teaches the lesson in the Adobe Connect environment is a very effective method.	4.53	0.59
4	Accessing the recording of the lesson taught in the Adobe Connect environment is more effective in reinforcing the lesson.	4.71	0.63
5	With the Adobe Connect application, it is an advantage for me to learn the information in my field courses whenever and wherever I want.	4.64	0.61
6	In the virtual classroom environment, I do not experience any disconnection during the course.	4.56	0.63
7	I have the opportunity to learn how information technologies are used by taking courses in the Adobe Connect environment.	4.53	0.63
8	Messaging with my friends while taking lessons in Adobe Connect gives me pleasure.	4.54	0.69
9	I can watch course video recordings in Adobe Connect environment when they are uploaded.	4.55	0.60
10	I can download the contents of the course taught in the Adobe Connect environment from the system whenever I want.	4.58	0.73
	Overall Average	4.60	0.63

From Table 6, it is seen that there are statistical findings regarding the views of university students on adobe connect applications. Although it is seen that each answer has a different meaning, it can be said based on Table 6 that university students' views on distance education after the activities are high. Taking lessons in Connect environments provides the opportunity to devote more time to my social life. It has been found that M=4.76. In addition, it was found that one of the most prominent statements of the research, "Reaching the recording of the lesson taught in Adobe Connect is more effective in reinforcing the lesson" M=4.71. While it is seen that university students' opinions about the Adobe Connect application are quite high, another finding is that "It is an advantage for me to be able to learn the information in my field courses with the Adobe Connect application, whenever and wherever I want." M=4.64. Another finding of the research is that "I can watch the video recordings of the lessons in Adobe Connect when they are uploaded" M=4.55 and "I can download the contents of the lesson taught in Adobe Connect from the system whenever I want" M=4.58. In addition, another value of the research is the finding that "Online courses conducted in Adobe Connect environments are more effective" M=4.58, and finally, it is seen that the general average is M= 4.60.

From Table 6, it is seen that university students have a high opinion of the adobe connect application. They stated that they enjoyed texting with them.

In this context, it can be said based on the findings that university students have positive adobe connect because all the values in Table 6 have a positive meaning.



### 3.3 Distance education status of university students by gender

In this section, the distance education status of university students according to the gender variable is examined and the information whether there is a significant difference is given in Table 7.

**Table 7.** Distance education status by gender criteria

Distance Education Situations	Gender	N	M	SD	Df	t	p
	Male	181	85.9	9.7	357	-1.428	.149
	Female	176	85.1	10.8			

From Table 7, the distance education status of the students according to the gender variable was examined and it was seen that there was no significant difference according to the gender criterion. [ $t(357) = -1.428, p < .05$ ]. When the distance education status of university students is examined, it is seen that male students have an average score in this field ( $M=85.9$ ), while female students have an average score in distance education ( $M=85.1$ ). In this context, it can be said in the findings part of the research that there is no difference between the distance education scores of male students compared to female students in this study.

### 3.4 Distance education situations by age criteria

In this section, the use of distance education according to age criteria has been examined and detailed findings are given in Table 8.

**Table 8.** Distance education status by age criteria

Age	N	Rank Average	SD	X <sup>2</sup>	P
18-20	258	72.27	3	1.875	.137
21-23	86	24.09			
24 and above	13	3.64			

From Table 8, it was found that there was no significant difference between the results of comparing the distance education status of university students according to age criteria. ( $\chi^2 (3) = 1.875; P = .137; P > 0.05$ ). When the distance education results of university students are considered according to the age criteria, it is seen that the highest value is between the ages of 18-20, the second highest value is between the ages of 21-23, and finally the age range is 24 and above. It can be said that there is no significant difference between the distance education status of university students regarding the age criterion.

## **4 Results**

It is seen that the number of study group participants is primary, and it was concluded that 357 university students volunteered to participate in this research. It is also known that the number of participants is important for the course of the research and its interpretation. The determination of internet usage was investigated, and as a result, it was concluded that they use the internet for 8 hours or more at most. Considering the pandemic period, it is concluded that university students staying on the internet for their education will always take them one step further. In this case, it is important for them to use the internet. If we consider another result of the research, the daily technology usage times of university students were investigated and as a result, it was concluded that they used the internet for 8 hours or more. Considering that this result is the same as getting technology help to meet their needs and combining them with their courses, it is once again expressed that the usage of the internet and technology in education is high for university students. It is also known as the most important and the most beautiful result.

It is known that opinions are always important for a purpose, expressing an opinion on an event or a factor always shows that a positive arrangement will be made. In this context, if we consider another result of the research, the opinions of university students on distance education were taken after the education, examined and added to the research. It was concluded that they had no difficulty in following the course, that they found the Distance Education design simple and useful, that it was easy to access the courses through Distance Education, that it was easy to create activities through Distance Education, that it was very easy to share what I learned through Distance Education. In addition, another result is that the statistical results regarding the views of university students on Adobe Connect applications were discussed and university students' taking courses in Adobe Connect environments benefited their social lives, accessing the recording of the lesson taught in Adobe Connect was more effective in reinforcing the lesson. they can access information whenever they want, they can watch the video recordings of the lectures in Adobe Connect when they are uploaded, they have no problems in the adobe connect application, they do not experience any disconnection in their life lessons about adobe connect environments, they can join the live classes whenever and wherever they want with adobe connect, they can join their friends in the adobe connect application. It is seen that the result was achieved by expressing that they enjoyed messaging with them.

In addition, among the results of the research, the distance education status of the students according to the gender variable was examined, and it was concluded that there was no significant difference according to the gender criterion. In this context, it is stated in the results of the study that there is no difference between the distance education scores of male students compared to female students in this study. Finally, if the final result of the research is taken into consideration, it has been concluded that there is no significant difference between the results of comparing the distance education status of university students according to age criteria. It is stated that university students' achievement in distance education is high even in terms of age and gender. It was concluded that they did not have the equipment, they thought.

## **5 Discussion**

Nadeak et al. (2020) aimed to analyse the effectiveness of distance education by using social media during the Covid-19 Pandemic, and as a result, they concluded that distance learning is effective only for theoretical and theoretical applied courses [17]. It was concluded that the students studying engineering were successful in the field courses with distance education. It is seen that distance education provides benefits to university students in line with its correct goals, which means that it will positively benefit the field and leave a better future for future generations [21].

Korkmaz and Toroman (2020) aimed to analyse the problems experienced by educators in their distance practices during the COVID-19 pandemic, the changes they expect in educational practices in the post-COVID-19 world, and the precautions to be taken in education against a possible epidemic [12]. It has been determined that they have some problems during their implementation, they expect some changes in educational practices in the post-COVID-19 world and they think that necessary precautions should be taken in education. This context does not mean that even if it is concluded that they did not experience any difficulties in distance education within the results of the research, it does not mean that they will not, the selection of the audience to which the research will be applied is always directly proportional to the problem situation of the research. It is known that both educators and university students will change positively when appropriate methods and techniques are used in the research, and this provides benefits and contributions to the field [16].

Basaran et al. (2020) aimed to evaluate the attitudes of university students towards using interactive web conferencing systems in distance education courses, and they continued to work on adobe connect. They concluded that they are the user preference for the web conferencing system [5]. In this context, among the results of the research, it is seen that there are positive answers about the adobe connect application, it is known that the adobe connect application is preferred among many platforms because it makes students feel like they are in their own classroom environment, it is thought that the adobe connect platform benefits university students among distance education applications. When all these studies are considered, it can be said that university students benefit positively, while giving more space to studies on adobe connect will benefit both the field and university students. While it is aimed to support university students at all times, it should be remembered once again that the method to be applied should be well adjusted. It is thought that with the combination of the applied method and technique, it will benefit university students in education as well as the concepts of distance education will benefit educators.

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## 7 References

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