Evaluation of Transition to Distance Education in COVID-19 Pandemic

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Abstract

Background: As in the rest of the world, distance education methods have been introduced in higher education in our country. The aim of the study is to evaluate the satisfaction of the learning management system.

Methods: The study was designed as a cross-sectional study with mixed research design. 467 students stated their opinions for the questionnaire (n: 467).

Results: In the evaluation of the scale total scores, the mean was calculated as 17.72 ± 5.49 (min: 5, max: 25). Between the preclinical term and the clinical term, t-test was performed in independent groups, and there was a statistically significant difference between the averages.

In the qualitative component of the study, students were asked to express their views on the positive and aspects that should be improved regarding distance education. In the content analysis of the open-ended question, 4 themes (LMS, Learning Process, Student-educator interaction, Assessment and evaluation).

Conclusions: Our faculty evaluated distance education as an opportunity for change during the pandemic process and quickly adapted to the process. This reaction was positively perceived by students and expressed as satisfaction. In line with this satisfaction and effectiveness, we believe that the experience of pandemics can bring educational programs closer to blended learning by enriching with distance learning.

Background

With the COVID-19 pandemic, formal education in higher education processes was interrupted on 23.05.2020 by the Presidency of the Council of Higher Education (CoHE) and the distance education process was initiated. (1). In this context, transition to distance education and assessment methods has been proposed. Our faculty has determined three main principles in this process. It has drawn a roadmap with the said three principles; first is ensuring the safety of students, second is the contribution to healthcare provision by reducing the educational burden on faculty, and third is the organization of the teaching process and student motivation.

In our faculty, formal education initially was interrupted in line with the decision of LMS. Then, during and after the pandemic training program, the process of determining new approaches and strategies started. In this context, various searches were initiated to facilitate the contribution of faculty members to the education process, to ensure that students were motivated, and to ensure the continuity of the teaching process. Applied trainings have been planned as "remedial education" for the next academic year. For the last year students, the remaining 2 months are devoted to distance education related to COVID-19 and they are prepared for the health service after graduating. MOODLE, which has been used in our faculty since 2016 to conduct the teaching process remotely for theoretical trainings, has continued to be utilized as a learning management system. (2). ADOBE CONNECT software, which allows synchronous and asynchronous lectures to be added in addition to the LMS, was integrated and distance learning was initiated on 06/04/2020 (3). With these two software, learning resources were shared with the students, classroom lessons were moved to distanced environments and their feedbacks were taken.

Our faculty started the online assessment and evaluation process with the neurosurgery and emergency medicine internship exams on 15.04.2020, and subsequently carried out a total of 40 measurement/evaluation applications including 37 terms, 5 internship exams and 3 preclinical board exams within a span of one month. In addition to this process, the demand made by and epidemic process followed by the Ministry of Health was evaluated at the Higher Education Executive Board meeting on 11.05.2020; It was decided not to perform final exams and other exams of this academic year face-to-face, but using "digital possibilities" or alternative methods such as "homework, projects" to be preferred by university authorities (4). Our faculty has adapted to this decision with its experience and planned its implementations appropriately.

In order to manage this sudden change in both teaching process and assessment & evaluation, coordination was ensured between faculty management, education teaching coordinators, Medical Education and Informatics Department by holding regular and sustained meetings.

The aim of our study is to evaluate the satisfaction of the learning management system during the transition to distance education due to the COVID-19 pandemic in Süleyman Demirel University Faculty of Medicine's Medical Education Program.

Methods

The study was designed as a cross-sectional descriptor in the screening model in mixed research design. Süleyman Demirel University students were selected for the study (N: 1645). Permission was obtained from Süleyman Demirel University Faculty of Medicine Clinical Research Ethics Committee for our study. The questionnaire was delivered to all students online. In the study, informed consent was obtained from all participants online. 467 students stated their opinions for the questionnaire (n: 467).

In the study The "Anadolum" eCampus System Satisfaction Questionnaire used in Anadolu University Open Education System was used in the study (5). The questionnaire consists of tree parts. First part contains demographic data. Second part contains the questions are structured in the form of a five-point Likert, where the answers vary between "I am not satisfied" and "I am very satisfied" options in order to determine, in the first part, the term students were active in and, in the second part, the satisfaction level of students in relation to SDU Facult of Medicine (SDUFM) - LMS. These questions are; "To which extent were you satisfied with the system?", "To which extent do you think the system helped you learn?", "How easy was it for you to access the information and resources you were looking for in the system?", "To which extent did you find the support services offered about the system useful?" and "To which extent was the system beneficial in preparing you for the exam?", In the third part, opinions about the positive and required aspects for LMS were taken.

MS-Excel, SPSS, Amos, EduG, Maxquda, Consider.ly software were used in the analysis of the study data.

In the reliability analysis of the scale, Cronbach alpha was calculated as 0.92 according to the classical test theory, and the G-coefficient was calculated as 0.93 according to the G-theory. The relative value of the variance component percentage predicted for individuals being the highest indicates that the discrimination and generalization ability of the scale is high, the variance component percentage predicted for items being the lowest indicates that the item difficulty is at a good level, and the relative value of the variance component percentage predicted for individual-item being moderate indicates that the systematic/non-systematic errors are few (Table 1).

Table 1. Variance analysis of the scale

				Components				
Source	SS	df	MS	Random	Mixed	Corrected	%	SE
B	2854.62278	473	6.03514	1.11780	1.11780	1.11780	69.4	0.07838
M	91.92658	4	22.98165	0.04754	0.04754	0.04754	3.0	0.02799
BM	844.07342	1892	0.44613	0.44613	0.44613	0.44613	27.7	0.01450
Total	3790.62278	2369					100%	

Based on these findings, it was decided that the scale fit the population and that generalization could be made.

Results

474 students expressed their opinions for the study (n: 474). Looking at the distribution by terms, 103 (21.7%) students stated their opinion in term 1, 102 (21.5%) in term 2, 90 (19%) in term 3, 27 (5.7%) in term 4, 118 (24.9%) in term 5 and 35 (7.4%) in term 6.

In evaluating the elements belonging to the LMS used by the students, it was seen that the system was primarily used for course videos, learning resources apart from course videos, and assessment and evaluation (Chart 1).

58.1% of the participants answered to the question of how satisfying the system was as 'satisfied' or 'very satisfied', 49.2% answered the same to the question about how helpful the system was, and 43.6% answered the same to the question of how much

the system contributed to measurement/evaluation. The average score of the question about satisfaction from the system was calculated as 3.56 ± 1.22 , the average score of the question about how helpful the system was in learning was 3.30 ± 1.29 , and the average score of the question about system's contribution to measurement/evaluation was 3.15 ± 1.30 .

60.5% of the participants answered the question of access to information and resources you are looking for in the system as 'satisfied' and 'very satisfied', and 53% answered the same to the question of support services related to the system. The average score of the question of access to information and resource you are looking for in the system was calculated as 3.71 ± 1.19 , and the average score of the question about support services was 3.46 ± 1.22 (Table 2).

Table 2. Descriptive analysis of the scale

		Very dissatisfied	Unsatisfied	Undecided	Satisfied	Very satisfied	Mean	±	SD
Learning/Measurement process	To which extent are you satisfied with the system?	40 (8.4%)	53 (11.2%)	106 (22.4%)	151 (31.9%)	124 (26.2%)	3.56	±	1.22
	To which extent do you think the system helped you learn?	59 (12.4%)	71 (15.0%)	111 (23.4%)	136 (28.7%)	97 (20.5%)	3.30	±	1.29
	To which extent was the system beneficial in preparing you for the exam?	66 (13.9%)	90 (19.0%)	111 (23.4%)	121 (25.5%)	86 (18.1%)	3.15	±	1.30
Access to information	How easy was it for you to access the information and resources you were looking for in the system?	27 (5.7%)	52 (11.0%)	108 (22.8%)	130 (27.4%)	157 (33.1%)	3.71	±	1.19
	To which extent did you find the support services offered about the system useful?	45 (9.5%)	54 (11.4%)	124 (26.2%)	142 (30.0%)	109 (23.0%)	3.46	±	1.22

Term 1 score was calculated as 16.84 ± 5.38 , term 2 score as 16.55 ± 5.56 , term 3 score as 15.60 ± 5.70 , term 4 score as 14.53 ± 6.76 , term 5 score as 18.93 ± 4.34 and the term 6 was as 20.25 ± 4.64 . In the evaluation of the scale total scores, the mean was calculated as 17.72 ± 5.49 (min: 5, max: 25).

When the normal distribution fit of the preclinical mid-term responses was evaluated, it was seen to be normal distribution according to kurtosis and skewness values and parametric tests were performed. Between the preclinical term and the clinical term,

t-test was performed in independent groups, and there was a statistically significant difference between the averages ($p < 0.05$) (Table 3).

Table 3. Analysis of scores

	To which extent are you satisfied with the system?	To which extent do you think the system helped you learn?	To which extent was the system beneficial in preparing you for the exam?	How easy was it for you to access the information and resources you were looking for in the system?	To which extent did you find the support services offered about the system useful?	Total Score	Preclinical/clinical scores	P value
Term 1	3.59 ± 1.27	3.28 ± 1.33	2.99 ± 1.31	3.54 ± 1.16	3.44 ± 1.11	16.84 ± 5.38	16.36 ± 5.55	$p < 0.05$
Term 2	3.44 ± 1.16	3.36 ± 1.28	2.91 ± 1.38	3.55 ± 1.27	3.30 ± 1.25	16.55 ± 5.56		
Term 3	3.14 ± 1.22	3.04 ± 1.28	2.90 ± 1.24	3.43 ± 1.17	3.08 ± 1.39	15.60 ± 5.70		
Term 4	2.89 ± 1.49	2.71 ± 1.58	2.64 ± 1.49	3.29 ± 1.35	3.00 ± 1.41	14.53 ± 6.76	18.50 ± 5.13	
Term 5	3.92 ± 1.03	3.37 ± 1.14	3.58 ± 1.09	4.23 ± 0.91	3.83 ± 1.01	18.93 ± 4.34		
Term 6	4.23 ± 0.94	4.06 ± 1.08	3.91 ± 1.06	4.00 ± 1.00	4.06 ± 0.99	20.25 ± 4.64		
Total	3.56 ± 1.22	3.30 ± 1.29	3.15 ± 1.30	3.71 ± 1.19	3.46 ± 1.22	17.72 ± 5.49		

In the qualitative component of the study, students were asked to express their views on the positive and aspects that should be improved regarding distance education. In the content analysis of the open-ended question, 4 themes (LMS, Learning Process, Student-educator interaction, Assessment and evaluation) and 18 codes of these themes were created from 267 answers (Chart-2).

Students evaluated the system as "user friendly" in terms of access and ease of use under the LMS theme. While these students consider the content and organization of the educational material shared in LMS as "instructive", "satisfying" and "positive"; They stated that the types of learning resources should be supported and the notification to users about the newly added materials to the system should be improved.

Under the Learning Process theme, it was positively stated that the faculty made decisions to ensure the safety of the student in the COVID-19 pandemic, adapts to the distance education process quickly and effectively, and that LMS supports learning; On the other hand, students who are accustomed to didactic lesson based learning stated that they have difficulty in controlling the learning process and that they have difficulty in the learning process because this transition is very fast.

Under the theme of student-educator interaction, the opportunity of asking the lecturer in online lessons and interacting with "forums" are expressed as positive and motivating; The existence of courses without interactive content is stated as the areas of distance education that should be developed.

While the online organization of the measurement / evaluation process is expressed satisfactorily under the theme of measurement and evaluation; As an application with a new transition, there are concerns about the infrastructure in the exam process and the

problems that need to be experienced in order to eliminate these concerns.

Discussion

The COVID-19 pandemic has sparked controversy in medical education worldwide (7). In this process, all institutions providing medical education are attempting to produce solutions for continuing education and for contributing to combating pandemic. (8). During the COVID-19 pandemic, our faculty conducted a process, in which the education program was organized by evaluating the suggestions of the university rectorate, faculty management, the Department of Medical Education and Informatics, boards, coordinators, faculty members, students and the Association of Medical Education Programs Evaluation and Accreditation (AMEPEA). Opinions of stakeholders such as university management, Faculty management, Medical Education and Informatics, Faculty members, Students and Non-Governmental Organizations facilitated the process management and thus contributed to satisfaction being high.

All data collected from 189 universities were evaluated and analyzed in a data analysis study, in order to determine the current status of the distance education processes initiated during the COVID-19 epidemic by universities by the Turkey Council of Higher Education on May 3rd 2020 and contribute to the further improvement of these processes. According to the results of this study, universities have provided rapid transition to distance education. (9). Our faculty also switched to distance education on April 6th 2020 during this period. (10). In this process, almost all of the theoretical courses were made available for distance education, in line with other faculties in Turkey.

In Turkey, during the process of live class implementation realized for 22% of the courses that were opened to distance education in all higher education, 115 lectures, 1 forum, 1023 sources, 589 live lectures were made and 345 hours long recording taken between 17.04.2020 and 09.05.2020 with 1738 students, 198 lecturers. After the live lesson application, the course was transferred to the learning management system and made accessible to students. These applications are reflected in student satisfaction.

In the global epidemic period in Turkey, it is seen that universities finalized their mid-term applications in the scope of measurement and evaluation in distance education, and apply different online evaluation methods such as homework, project, online exam and quiz. Our universities have found it appropriate to mainly use "Homework" (90.5%) and "Project" (83.10%) in the measurement and evaluation of mid-term exams. 44 online exams were carried out in our faculty. Students expressed the contribution of the system to measurement and evaluation as well as their satisfaction with measurement and evaluation applications.

It is observed that universities have made serious efforts to ensure the integration of faculty members into distance education applications that are rapidly implemented. In the global epidemic process, 97% of universities have provided lecturers with "technical support" about distance education practices, while 79% have provided online training. In addition, 39% of universities offer pedagogical support to lecturers. In this process, faculty members were provided with the technical support service and their integration to the system was made possible.

American Association of Medical Colleges (AAMC) recommends all medical schools to communicate openly with their students and update communication with the correct information as regularly as possible in this very rapidly changing environment (11). While 95% of the universities in Turkey informed their students about the process via "SMS, e-mail", 91% provided "technical support service", 83% created "contact points" and 70% made "new assignments". Our faculty has been in constant communication with our students by using most of the communication methods usable via social media. This support system has satisfied the students. It also strengthened the interaction between the student and the faculty.

The difference in satisfaction between the preclinical period and the clinical period has determined the measurement and evaluation area. The fact that measurement evaluation was started in the clinical period has increased student satisfaction in an environment where online measurement is discussed. This view supports the faculty in the field of "adapting to the process" in student views.

Although having only taken student views is a limitation of this study, evaluating the end user views of the distance education process is very valuable.

Conclusions

The COVID-19 pandemic has created opportunities for major changes in the field of medical education, as in all fields. This paradigm shift basically provides the opportunity to re-evaluate many approaches expected from higher education, such as a student-centered education approach, self-directed learning approach, lifelong learning approach. We believe that this process, which starts with distance learning resource sharing and holding distant lectures, will evolve into a "blended learning" approach and will be very beneficial for the future of medical education.

Declarations

Ethics approval and consent to participate

Written ethical approval was taken from the Süleyman Demirel University's local ethics committee and written informed consent obtained from all the participants.

Consent for publication

Not applicable.

Competing interest

The authors declare that they have no competing interests.

Availability of data and material

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interest

There is no conflict of interest among the authors of this study.

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No financial resources (funding) were used in this study.

Authors' contributions

GK conducted the literature search for the background of the study, analyzed and interpreted statistical data, and wrote the majority of the article, SD collected data for the study, analyzed statistical data, study planning, data processing, and revising the article, KG and TA contributed to writing the article, MİBK conducted the literature search, collected data for the study, analyzed statistical data, and contributed to writing the article, AK contributed to writing the article and revising the article. All authors read and approved the final manuscript.

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Figures

Figure 1

LMS Areas of Usage

Distribution of codes on each themes

Figure 2

Distribution of codes