

Evaluation of learning management system in medical education in time of COVID-19

Giray Kolcu^{1,2}, Mukadder İnci Başer Kolcu¹, Sadettin Demir¹, Kanat Gülle^{3,4}

¹ Department of Medical Education and Informatics, Suleyman Demirel University Faculty of Medicine, Isparta, Turkey

² Süleyman Demirel University Vice Director of Institute of Health Sciences, Isparta, Turkey

³ Vice Dean of Suleyman Demirel University Faculty of Medicine

⁴ Department of Histology and Embryology, Suleyman Demirel University Faculty of Medicine, Isparta, Turkey

Abstract: *Study Objectives:* Learning management systems (LMS) are the most popular educational technology system used in distance education. In our study, it was aimed to evaluate the acceptance levels of Süleyman Demirel University Faculty of Medicine students regarding the learning management system. *Methods:* Learning management system acceptance scale (LMSAS) developed by Sezer was preferred for the study. The scale was delivered to all students online, 941 students expressed their opinions (n: 941). *Results:* In the analysis of scale scores for all students, performance expectation for students is 22.70 ± 9.48 , effort expectation is 15.50 ± 5.79 , facilitating situations 14.92 ± 5.61 , social impact 6.70 ± 3.37 and total score. It was measured as 59.84 ± 21.61 . In comparing the preclinic and clinic years, it was seen that there was a statistically significant difference between the preclinical students and the clinical students in both total scores and all sub-dimensions. *Conclusion:* In the analysis of scale scores for all students, performance expectation, effort expectation, facilitating situations, social impact and total score are evaluated at the “medium” level for our students. As a result, we believe that the addition of informative and awareness-raising activities related to the LMS within the education program will increase the students’ intention to use a technological innovation in order to improve the acceptance level of the pre-graduate medical education program of the Suleyman Demirel University Faculty of Medicine, which has started the distance education process during the COVID-19 pandemic.

Keywords: Medical Education, Learning Management System, Evaluation

Introduction

Learning Management Systems (LMS) is the most preferred system used in distance learning (1,2). LMS is built on social constructivist theories and provide rich learning environment for distance learners (3,4). Program evaluation is recommended by many international medical education institutions (5-7). Generally, LMS is seen as one of the quality indicators for higher education institutions (8). In this context LMSs provide lots of data for program evaluation.

After the COVID-19 pandemic the implementation of distance learning started to maintain the

continuum of higher education based on the decision of the Turkish Council of Higher Education. In this context, many applications related to distance education systems are being tested in many universities in our country. Also students are end-users of LMS and their feedback is very valuable for the system. This study addresses how students perceive the use of LMS in medical education.

Technology acceptance is a structure consisting of cognitive and psychological factors related to the use of technology (9,10). Venkatesh turned this concept into a model named “unified theory of acceptance and use of technology (UTAUT)” (10). UTAUT expresses

the intention to use technological innovation. This model utilized eight different theories (social cognitive theory, diffusion of innovations theory, technology acceptance model, planned behavior theory, combined technology acceptance, and planned behavior theory, motivation model, PC usage model, and reasoned action theory), and described four basic dimensions determining behavioral intention, namely “performance expectancy, effort expectancy, facilitating conditions, and social” (10). The “Learning Management System Acceptance Scale” (LMSAS) has been developed in this context, by Sezer and Yilmaz (11).

In our faculty, the learning management system MOODLE has been in use since 2016 (12). The rights of the LMS are given to the faculty administration, and its management is left to the Department of Medical Education and Informatics. All of our faculty members and students are registered in the LMS. Via the learning management system, the curriculum and resources are shared with students, debate forums for students are provided, homework and task management are made, feedback is received from the students and lecturers, and assessment and evaluation are made accordingly.

With the COVID-19 pandemic, formal education in higher education processes was interrupted on 23/03/2020 by the Presidency of the Council of Higher Education (CoHE) and the distance education process was initiated (13). In this context, the transition to distance education and assessment methods has been proposed. Our faculty has determined three main principles in this process with several meetings. 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 to manage this sudden change in both teaching process and assessment & evaluation, coordination was ensured between faculty management, education teaching coordinatorships, Medical Education and Informatics Department by holding regular and sustained meetings. Formal education initially was interrupted in line with the decision of the learning management system (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 training have been planned as “remedial education” for the next academic year. For the final 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 training, has continued to be utilized as a learning management system. (14). 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 (15). With this two software, learning resources were shared with the students, classroom lessons were moved to distanced environments and their feedbacks was taken.

In Turkey, during the process of live class implementation realized for 22% of the courses were opened to distance education in all higher education. In our medical school 1023 learning sources, 589 live lectures were made and total 345 hours of video records taken between 17.04.2020 and 09.05.2020 with 1738 students, 198 lecturers. After the live lessons, the video was transferred to the learning management system and made accessible for students.

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 shelf exams, 5 internship exams, and 3 preclinical board exams within one month. In addition to this process, the demand made by and the 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 and projects” to be preferred by university authorities (16). Our faculty has adapted to this decision with its experience and planned its implementations appropriately.

This study aimed to evaluate the students' acceptance and satisfaction about 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.

Material and Method

Participants

The study population was determined as the students of Süleyman Demirel University, School of Medicine (SDUSM) (N: 1645). The scale was sent to all students online, and 941 students reported opinions (n: 941) (access rate 57.20%).

Experimental Design

The study was designed as a descriptive cross-sectional study in the quantitative research design. Permission was obtained from the researchers for the use of the scale. For this study, approval was obtained from the Süleyman Demirel University, School of Medicine, Ethical Committee of Clinical Research. Also this study was presented as an oral presentation in "III. International Health Sciences and Life Congress Burdur / TURKEY" held on 04-06 June 2020.

Collection of Data

In the study, the LMSAS developed by Sezer was used (11). The LMSAS consists of 21 questions. The scale consists of four subdimensions, the performance expectancy (PE) represents the expectation of an increase in performance with the use of technology; effort expectancy (EE) represents the belief that the use of technology will be easy; facilitating conditions (FC) represents the conviction that there are several supportive elements in the use of technology, and social influence (SI) represents the opinions of the important persons in the environment where the mentioned technology shall be used. The scale has 8 questions for performance expectancy (question 1, 2, 3, 4, 5, 6, 7, and 8), 5 questions for effort expectancy (question 9,

10, 11, 12, and 13), 5 questions for facilitating conditions (question 14, 15, 16, 17, and 18), and 3 questions for social influence (question 19, 20, and 21). The scale was answered using a Likert scale. The names of the options in the scale and their scores are: totally disagree (1 point), disagree (2 points), undecided (3 points), agree (4 points), and totally agree (5 points). The reverse scoring method is not used in the scale. The minimum and maximum scores that can be obtained from the scale are 21 and 105, respectively. High scores indicate a high level of acceptance of LMS by the students.

For evaluating satisfaction "Anadolum eCampus System Satisfaction Questionnaire" preferred which was used in Anadolu University Open Education System (17). The questionnaire consists of two parts. The first part 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?", The answers structured in the form of a five-point Likert, where the answers vary between "I am not satisfied" and "I am very satisfied". In the second part, opinions about the positive and required aspects of LMS were taken. In the qualitative component of the study, in the third part, students were asked open-ended two questions to express their views on the positive and aspects that should be improved regarding distance education. Answers coded under themes by researchers.

Statistical Analysis

Microsoft Excel, EduG and IBM SPSS Statistics 24 package program was used to analyze the obtained data. Descriptive statistics of the obtained data were given as mean and standard deviation. And t-test was performed for the comparison of the means of the two groups. The confidence interval was chosen as 95% and values below $p < 0.05$ were considered statistically significant. Additionally variance analysis was performed for the G-theory.

Acceptance scale estimated rate of variance component for the population was the highest possible relative value (56.3%) in the evaluation of compatibility with the population, reliability, and generalizability of the scale indicates that the level of representation of the scale (discrimination) is high. The 7.3% variance component estimated for the items indicates that the item difficulties are similar. The fact that the estimated rate of the individual-item variance component (36.3%) is high indicates that systematic/non-systematic errors were few.

In reliability analysis of acceptance scale, Cronbach alpha was calculated as 0.97, and in line with the generalizability theory, the G-coefficient was calculated as 0.97. In line with this information, it was decided that the population is suitable for the scale and generalization can be made through this data.

Results

In the descriptive analysis of the population, 222 of the first-year students, 170 of the second-year students, 147 of the third-year students, 121 of the fourth-year students, 181 of the fifth-year students, and 100 of the sixth-year students expressed their opinions regarding the LMS. A total of 941 students of the faculty reported opinions (n: 941) (Table 1).

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 (Figure 1).

In the descriptive analysis of the scale, 22.75% of student participants chose the option "totally disagree," 17.10% of student participants chose the option

Table 1. Descriptive analysis of the population

	Number of students	Number of students who can access the LMS (12.03.2020)	Number of students who can access the LMS (19.03.2020)	Number of students giving opinions for the study	Percentages of students who express their opinions during the term
Year 1	301	236	271	222	73,75%
Year 2	308	177	262	170	85,06%
Year 3	275	202	248	147	53,45%
Year 4	284	74	257	121	42,60%
Year 5	262	48	240	181	69,08%
Year 6	215	48	184	100	46,51%
Total	1645	785	1462	941	57,20%

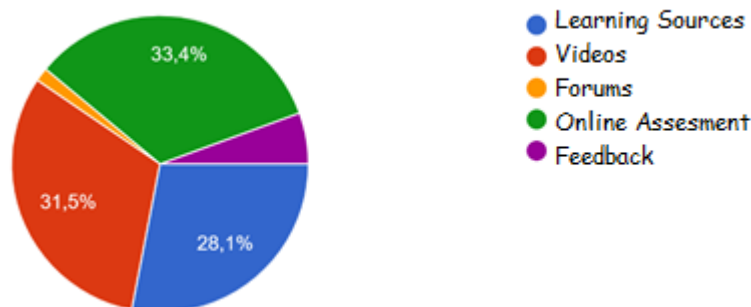


Figure 1. LMS Areas of Usage

“disagree,” 26.73% of student participants chose the option “undecided,” 19.34% of student participants chose the option “agree,” and 14.12% of student participants chose the option “totally agree.” The mean of the students’ answers was calculated as 2.85 ± 1.30 (Table 2).

In the analysis of the scale scores of the first-year students, performance expectancy was calculated as 19.36 ± 8.94 , effort expectancy as 13.66 ± 6.07 , facilitating conditions as 13.04 ± 5.73 , social influence as 5.36 ± 2.80 , and the total score was calculated as 51.42 ± 21.13 (Table 3). In the analysis of the scale scores of the second-year students, performance expectancy was calculated as 23.27 ± 9.50 , effort expectancy as $15.21 \pm$, facilitating conditions as 15.04 ± 5.52 , social influence as 6.76 ± 3.25 , and the total score was

calculated as 60.30 ± 21.32 . In the analysis of the scale scores of the third-year students, performance expectancy was calculated as 20.16 ± 9.19 , effort expectancy was calculated as 13.91 ± 6.13 , facilitating conditions as 13.65 ± 6.00 , social influence as 6.16 ± 3.32 , and the total score was calculated as 53.90 ± 22.17 . In the analysis of the scale scores of the fourth-year students, performance expectancy was calculated as 22.17 ± 9.97 , effort expectancy as 15.30 ± 5.68 , facilitating conditions as 15.03 ± 5.29 , social influence as 6.90 ± 3.30 , and the total score was calculated as 59.41 ± 21.44 . In the analysis of the scale scores of the fifth-year students, performance expectancy was calculated as 25.39 ± 8.57 , effort expectancy as 17.87 ± 4.33 , facilitating conditions as 16.77 ± 4.66 , social influence as 7.46 ± 3.42 , and the total score was calculated as 67.51 ± 17.63 . In the

Table 2. Descriptive analysis of the scale

		Totally disagree	Disagree	Undecided	Agree	Totally agree	Mean	±	Sd
Performance expectancy (PE)	Item1	16,3%	13,5%	30,2%	24,8%	15,3%	3,09	±	1,28
	Item2	21,5%	18,7%	28,9%	19,6%	11,4%	2,81	±	1,28
	Item3	23,8%	20,9%	29,0%	14,3%	11,9%	2,70	±	1,30
	Item4	25,7%	20,5%	27,2%	14,6%	12,0%	2,67	±	1,32
	Item5	21,7%	16,2%	27,0%	22,4%	12,8%	2,88	±	1,32
	Item6	23,5%	19,2%	29,9%	16,6%	10,8%	2,72	±	1,28
	Item7	19,7%	15,6%	25,9%	22,7%	16,0%	3,00	±	1,34
	Item8	20,7%	19,9%	26,8%	19,7%	13,0%	2,84	±	1,31
Effort expectancy (EE)	Item9	14,5%	9,8%	19,7%	29,4%	26,7%	3,44	±	1,35
	Item10	13,1%	9,6%	19,8%	28,1%	29,5%	3,51	±	1,34
	Item11	17,1%	15,8%	29,2%	22,1%	15,7%	3,04	±	1,30
	Item12	20,8%	16,4%	25,3%	21,4%	16,2%	2,96	±	1,36
	Item13	25,6%	23,3%	30,2%	11,4%	9,6%	2,56	±	1,25
Facilitating conditions (FC)	Item14	16,2%	15,7%	30,4%	21,7%	16,0%	3,06	±	1,28
	Item15	18,7%	18,3%	22,3%	22,6%	18,1%	3,03	±	1,37
	Item16	12,8%	13,0%	28,5%	29,0%	16,8%	3,24	±	1,24
	Item17	22,0%	17,3%	24,7%	22,3%	13,7%	2,88	±	1,34
	Item18	22,4%	16,5%	38,2%	13,5%	9,5%	2,71	±	1,22
Social influence (SI)	Item19	25,7%	19,1%	30,9%	15,5%	8,7%	2,62	±	1,25
	Item20	46,0%	19,9%	20,5%	6,9%	6,7%	2,08	±	1,24
	Item21	49,9%	19,8%	16,7%	7,5%	6,1%	2,00	±	1,23
	Total	22,75%	17,10%	26,73%	19,34%	14,12%	2,85	±	1,30

analysis of the scale scores of the sixth-year students, performance expectancy was calculated as 28.69 ± 7.57 , effort expectancy as 18.40 ± 4.55 , facilitating conditions as 17.28 ± 4.95 , social influence as 8.79 ± 3.36 , and the total score was calculated as 73.16 ± 17.72 .

In the analysis of the scale scores of students, performance expectancy was calculated as 22.70 ± 9.48 , effort expectancy as 15.50 ± 5.79 , facilitating conditions as 14.92 ± 5.61 , social influence as 6.70 ± 3.37 , and the total score was calculated as 59.84 ± 21.61 (Table 3).

In the evaluation of the scale percentage of the first-year students, the performance expectancy rate was calculated as 48.40%, effort expectancy rate as 54.64%, facilitating conditions rate as 52.16%, social influence rate as 35.73%, and the total score rate was calculated as 48.97%. In the evaluation of the scale percentage of the second-year students, the performance expectancy rate was calculated as 58.18%, effort expectancy rate as 60.84%, facilitating conditions rate as 60.16%, social influence rate as 45.07%, and the total score rate was calculated as 57.43%. In the evaluation of the scale percentage of the third-year students, the performance expectancy rate was calculated as 50.40%, effort expectancy rate as 55.64%, facilitating conditions rate as 54.60%, social influence rate as 41.07%, and the total score rate was calculated as 51.33%. In the evaluation of the scale percentage of the fourth-year students, the performance expectancy rate was calculated as 55.43%, effort expectancy rate as 61.20%, facilitating conditions rate as 60.12%, social influence rate as 46.00%, and the total score rate was calculated

as 56.58%. In the evaluation of the scale percentage of the fifth-year students, the performance expectancy rate was calculated as 63.48%, effort expectancy rate as 71.48%, facilitating conditions rate as 67.08%, social influence rate as 49.73%, and the total score rate was calculated as 64.30%. In the evaluation of the scale percentage of the sixth-year students, the performance expectancy rate was calculated as 71.73%, effort expectancy rate as 73.60%, facilitating conditions rate as 69.12%, social influence rate as 58.60%, and the total score rate was calculated as 69.68% (Table 3).

In the evaluation of the scale percentage of all students, the performance expectancy rate was calculated as 56.75%, effort expectancy rate as 62.00%, facilitating conditions rate as 59.68%, social influence rate as 44.67%, and the total score rate was calculated as 56.99%.

In the comparison made between students from different years, it is seen that there is a significant statistical difference between preclinical and clinical students both in terms of total scores and all sub-dimensions (Table 4).

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

Table 3. Analysis of LMSAS scores/percentages

	Performance expectancy (PE)	PE / 40	Effort expectancy (EE)	EE/25	Facilitating conditions (FC)	FC/25	Social influence (SI)	SI/ 15	Total Score	TS/ 105
Year1	19,36±8,94	48,40%	13,66±6,07	54,64%	13,04±5,73	52,16%	5,36±2,80	35,73%	51,42±21,13	48,97%
Year2	23,27±9,50	58,18%	15,21±5,74	60,84%	15,04±5,52	60,16%	6,76±3,25	45,07%	60,30±21,32	57,43%
Year3	20,16±9,19	50,40%	13,91±6,13	55,64%	13,65±6,00	54,60%	6,16±3,32	41,07%	53,90±22,17	51,33%
Year4	22,17±9,97	55,43%	15,30±5,68	61,20%	15,03±5,29	60,12%	6,90±3,30	46,00%	59,41±21,44	56,58%
Year5	25,39±8,57	63,48%	17,87±4,33	71,48%	16,77±4,66	67,08%	7,46±3,42	49,73%	67,51±17,63	64,30%
Year6	28,69±7,57	71,73%	18,40±4,55	73,60%	17,28±4,95	69,12%	8,79±3,36	58,60%	73,16±17,72	69,68%
Total	22,70±9,48	56,75%	15,50±5,79	62,00%	14,92±5,61	59,68%	6,70±3,37	44,67%	59,84±21,61	56,99%

Table 4. Comparison of preclinical and clinical years

	Performance expectancy (PE)		Effort expectancy (EE)		Facilitating conditions (FC)		Social influence (SI)		Total Score	
	Mean±Sd		Mean±Sd		Mean±Sd		Mean±Sd		Mean±Sd	
Preclinical Years	20,81±9,33	P<0,005	14,22±6,01	P<0,005	13,84±5,79	P<0,005	6,02±3,14	P<0,005	54,90±21,77	P<0,005
Clinical Years	25,24±9,09		17,23±4,98		16,37±5,00		7,62±3,44		66,48±19,53	

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 5).

In the second part 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 (Figure 2).

Table 5. Descriptive analysis of satisfaction questionnaire

		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

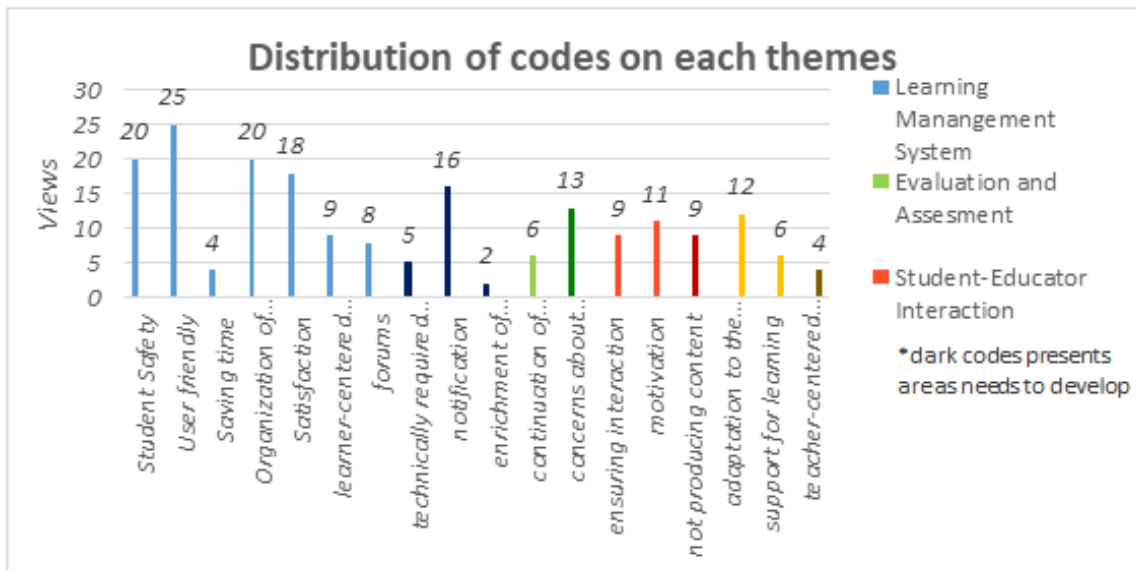


Figure 2. Distribution of codes

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 to eliminate these concerns.

Discussion

LMS is one of the distance education tools used in modern higher education and perceived as a quality indicator for higher education institutions (8,9). These systems have many functions, such as curriculum and resource sharing, debate conducting, classroom management, assignment of homework or tasks, archiving exams, receiving feedback, material editing, and keeping student, professor and system logs, and reporting (4,18,19). The four main features of an ideal LMS were identified by Dabbagh and Bannan-Ritland (3). Within this scope, it is recommended that an LMS should have the ability to upload and download electronic documents, e-sheets, presentations, images, animations, and visual and audio content; to make various assessments, including diagnostic, formative, summative and self-assessments to test, evaluate and observe the success of the students; to improve student-professor interaction by using nonsynchronous and synchronous tools for communication; and, to monitor

and manage the classes and materials by the academic administration (3,4). The LMS currently used in our faculty offers all of those functions.

The COVID-19 pandemic has sparked controversy in medical education worldwide (20). In this process, all institutions providing medical education are attempting to produce solutions for continuing education and for contributing to combating pandemic. (21).

LMSAS is a valid and reliable tool used to measure the students' intentions to use innovations in learning and is compatible with the study population. In the descriptive analysis of the population, a total of 941 students of the faculty reported opinions. In the descriptive analysis of the scale, it was seen that the students gave moderate answers to the scale.

This study offers valuable experience sharing with other faculties to evaluate the LMS. Although sharing a situation specific to our faculty is a limitation of the study, it suggest the evaluation of other faculties.

In the analysis of the scale scores and percentages, the performance expectancy, effort expectancy, facilitating conditions, social influence, and the total score of the first-year students were found to be lower. The scores of these sub-dimensions and the total scores were found to be higher for second, third, fourth, and fifth-year students. In the analysis, the scale scores of the performance expectancy, effort expectancy, facilitating conditions, social influence, and the total score of the sixth-year students were found to be the highest.

Computer literacy of students is among the important factors in technology acceptance (22). In the analysis, the scale scores, the performance expectancy, effort expectancy, facilitating conditions, social influence, and the total score of all students were evaluated to be "moderate." Due to these results, we can give suggestions for additions related to computer literacy to our curriculum in our faculty.

In the comparison made between students from different years, it is seen that there is a significant statistical difference between preclinical and clinical students both in terms of total scores and all sub-dimensions. In this context, the strong intentions of the clinical students regarding the use of LMS are considered to be positive, and the reluctance of the

nonclinical students to these systems should be considered as an important area of research within the framework of program evaluation.

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 (23). 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.

When the opinions about the satisfaction of the students are evaluated, it supports especially the students in the field of "adaptation to the process" of the faculty. Three main limitations have been identified in this study. First, the data and analyses are derived from a cross-sectional design, so causal inferences are difficult to draw. Second, because formal education was interrupted due to the pandemic, we used an online data collection method in the study, which resulted in the sampling of our study being voluntary. Therefore, the possibility of selection bias should be considered. Thirdly, although, the fact that the study was applied specifically to Suleyman Demirel University, Faculty of Medicine is considered as a limitation of the study, the current state of the study also produces valuable information for other medical faculties in our country.

Conclusion

Along with the impact of the COVID-19 pandemic, solutions are discussed in medical education all over the world (24–29). In this study, in which students' satisfaction and acceptance were evaluated, it is seen that almost half of the students were satisfied with the system and accepted the system. This situation can be considered as an important opportunity for transformation in education after COVID-19.

Conflicts of Interest

The authors declare that there is no conflict of interest in this manuscript.

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Correspondence:

Assist. Prof. Dr. Giray Kolcu, MD

Department of Medical Education and Informatics, Süleyman Demirel University Faculty of Medicine

E-mail: giraykolcu@gmail.com