

Original Research Article

# Effects of training module regarding learning management system (LMS) on knowledge and attitude of dental undergraduates toward use of LMS

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## ABSTRACT

**Objectives:** The objective of this study was to evaluate the differences in knowledge and attitude of dental students regarding learning management system (LMS) after receiving a specific training regarding the same.

**Material and Methods:** A questionnaire-based cross-sectional study was done among the 2<sup>nd</sup> and 3<sup>rd</sup>-year students of Ranjit Deshmukh Dental College and Research Centre, Nagpur. Data were collected by a questionnaire containing ten questions. The training module was designed including a didactic session and trouble shooting session for the students.

**Results:** When analyzed, a maximum number of students showed increased knowledge and positive attitude toward LMS after the module. Few students were not using LMS but a maximum number of questions were with a higher percentage of positive responses. There is much awareness and knowledge about LMS after the module.

**Conclusion:** It is critical to train the students regarding various aspects of LMS and its technical details to make navigation easier. The use of information communication technologies in learning involves efforts from not only teachers but also students to make it an effective way of learning. Regular follow-ups and troubleshooting will help maximize students' active participation in online learning using LMS. Students' feedback and necessary upgradation of the system are strongly recommended to achieve optimum learning output using LMS.

**Keywords:** Attitude, Training module, Knowledge, Learning management system, Dental undergraduate students

## INTRODUCTION

A learning management system (LMS) is a software application or a web-based technology that is used to plan, implement, and assess a specific learning process, which is a form of e-learning.<sup>[1,2]</sup> A well-developed and ideal LMS aims at addressing these three domains of learning: cognitive (thinking), affective (emotions), and psychomotor (skills). Online learning is becoming a crucial part of the educational process worldwide mainly after COVID-19. The concept of online learning involves implementing advanced technologies, introducing computers and internet to deliver course content, and engaging the learner in this program. Dental students' education, practice, career progression, and mental health were affected after COVID-19. The concept of online learning involves implementing Information and Communication Technologies (ICT), including computers and the Internet, to deliver course content and engage

learners. Online learning, especially using LMS, allows instructors to manage and deliver course materials more efficiently, and it is becoming a crucial part of the educational process worldwide, mainly after the COVID-19 pandemic. However, there has been mixed feedback reported in the literature.<sup>[1-10]</sup> Many students have cited a lack of technical skills and a need for training to facilitate ease of use of LMS in our set-up. Therefore, it was deemed necessary to make a sensitization/training module to educate them regarding the use of LMS so that they can navigate through it in a better way. This interventional study was conducted to assess the effect of training modules about LMS.

### Aim

The aim of the study was to evaluate the knowledge and attitude of dental undergraduates about LMS after the training module.

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## MATERIAL AND METHODS

This is an analytical cross-sectional study which is carried out on 2<sup>nd</sup> and 3<sup>rd</sup> year dental students of Ranjit Deshmukh Dental College and Research Center, Nagpur, Maharashtra, India. A questionnaire containing a set of 10 questions about attitude and knowledge of the use of LMS after taking a module was sent online through Google Forms among the study population. The study protocol was approved by the institutional ethics committee with reference no. IEC/VSPMDCRC/12/2023.

### Study design

A cross-sectional, questionnaire-based study was taken to assess the attitude and knowledge of undergraduate dental students about the use of LMS after taking the module for six months.

### Study population

A total of 101 undergraduate dental students who were willing to participate in the study were included in the study.

### Study procedure

A questionnaire was prepared and validated. A questionnaire containing a set of 10 questions, along with an academic year of students about the attitude and knowledge of students regarding the use of LMS after taking the module was distributed among the study population. The inclusion criteria for the study were undergraduate dental students who were willing to participate in the study. The exclusion criteria for the study were the undergraduate dental students who were not willing to participate in the study. The questionnaire was uploaded to online survey administration software, Google Forms, and was distributed among the sample population.

### Statistical analysis

The collected data from the questionnaire were analyzed, and the information was also recorded in the excel sheet.

## RESULTS

A total of 150 questionnaires were distributed among the dental undergraduate students, out of which 101 valid responses were received. This represented a 67.33% response rate. Out of the number of participants, 49.5% were 2<sup>nd</sup>-year students, and 50.5% were 3<sup>rd</sup>-year students [Tables 1 and 2].

## DISCUSSION

Studying online and the shift from pen and paper to the digital world is a trend that has been on the rise over the past decade. With this growth arises the need to effectively design and implement LMSs in the current scenario. LMS

is a software application or a web-based technology that is used to plan, implement, and assess a specific learning process, which is a form of e-learning. In some studies, students have reported dissatisfaction and negative attitudes toward online learning, due to limited knowledge about information communication technology (ICT) and lack of opportunities to learn practical skills due to online learning. The present module consisted of online training sessions and troubleshooting on a case-to-case basis to resolve difficulties. There was an improvement in students' responses after this training module.

In the present investigation, the knowledge and attitude of dental undergraduate students were assessed after taking a module about LMS and its differential diagnosis. Among 101 students, 50 were from 2<sup>nd</sup> year, and 51 were from 3<sup>rd</sup> year.

When asked about have you logged in or registered into college LMS 19.8% said No and 80.2% said Yes [Figure 1a]. It shows that a maximum number of students were logged into LMS after taking the module.

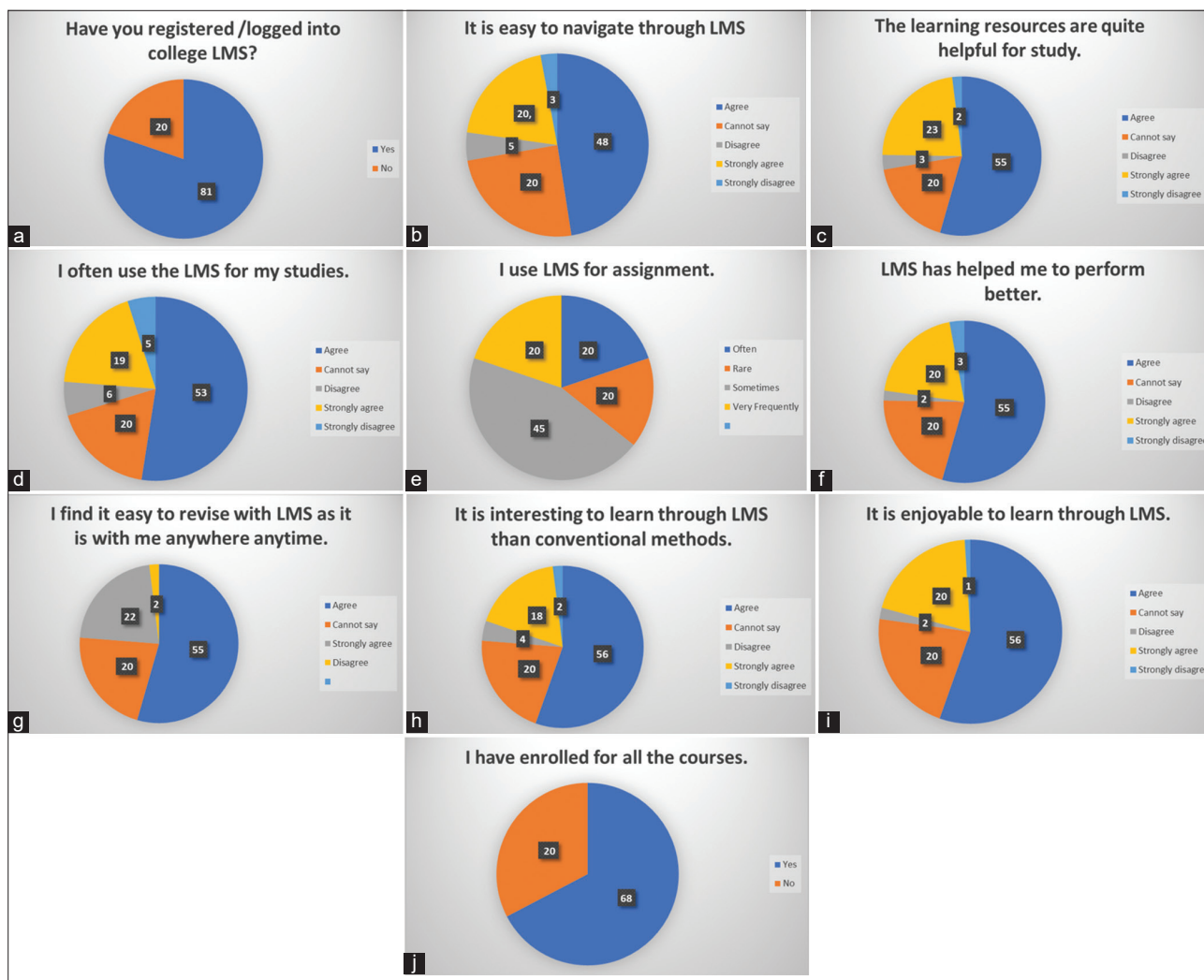
When asked about whether is it easy to navigate through LMS, 19.8% said strongly agree, 47.5% said agree, 24.8% students were uncertain about their answers, 5% said disagree, and 3% said strongly disagree [Figure 1b]. It shows that after taking LMS, students were finding it easy to navigate through LMS as dental students do not have much knowledge about ICT or computers they need a training module for easy navigation.

When asked about learning resources, are they quite helpful for study? About 22.8% said strongly agree, 54.5% said agree, 17.8% said cannot say, 3% disagree, and 2% said strongly disagree [Figure 1c]. It shows that the module has significantly changed their perspective about LMS for using it to watch videos and to get notes in the form of PDFs. They

**Table 1:** Suggestions to make LMS better.

	42	44	86	15.03	0.131
Easy navigation is required; login is present on the homepage	1	0	1		
It's a good approach.	2	0	2		
More interactive	0	1	1		
Solve technical problems most of the time site does not open	0	1	1		
Sometimes difficult to enter but other than that quite good	1	0	1		
Sometimes, the site will not open.	0	1	1		
The long chapters make PDF in short PDF	1	0	1		
To bookmark should be made possible	0	1	1		
Update the study material	0	3	3		
Yes	3	0	3		

LMS: Learning management system



**Figure 1:** Participants' responses. LMS: Learning management system.

were able to watch the videos of the lectures which they had missed due to some reason.

When asked about do they use LMS for their studies very often? 18.8% of students strongly agree, 52.5% agree, 17.8% cannot say, 5.9% disagree, and 5% strongly disagree [Figure 1d]. It shows that the number of students using LMS for their studies is very high as compared to the ones who were not using it.

When asked about, do they use LMS for their assignment? 19.8% said very frequently, 19.8% said often, 44.6% said sometimes, 15.8% said rarely [Figure 1e]. It shows that students are not using LMS for their assignments. The reason behind it may not affect their academic grades. Hence, we need to do some activities to increase their interest in LMS assignments.

When asked about is LMS helping them to perform better? 19.8% said strongly agree, 54.5% said agree, 20.8% said

cannot say, 2% said disagree, and 3% said strongly disagree [Figure 1f]. It shows that the online method of learning is useful for students to perform better.

When asked about it, do they find it easy to revise with LMS as it is with them anytime, anywhere? 54.5% said agree, 21.8% said strongly agree, 21.8% said cannot say, and 2% said strongly disagree [Figure 1g]. It shows that students can use it anytime, anywhere, due to its availability. LMS is a study tool that is present 24/7 to everyone and anyone who has a phone, laptop, or tablet and their login ID. This brings us to the biggest advantage of the LMS platform, which is increased convenience. There is constant access to resources regardless of the time or location.

When asked about, is it more interesting to learn through LMS than conventional methods? 17.8% said strongly agree, 55.4% said agree, 20.8% said cannot say, 4% said disagree, and 2% said strongly disagree [Figure 1h]. It

**Table 2:** Association between the year of study and responses

	Year of study		Total
	Second year	Third year	
1. It is easy to navigate through LMS			
Agree	29	19	48
Cannot say	12	13	25
Disagree	1	4	5
Strongly agree	7	13	20
Strongly disagree	1	2	3
Total	50	51	101
2. The learning resources (links to videos and PDF of lectures) are quite helpful for the study			
Agree	33	22	55
Cannot say	6	12	18
Disagree	1	2	3
Strongly agree	9	14	23
Strongly disagree	1	1	2
Total	50	51	101
3. I often use the LMS for my studies			
Agree	28	25	53
Cannot say	10	8	18
Disagree	3	3	6
Strongly agree	7	12	19
Strongly disagree	2	3	5
Total	50	51	101
4. I use LMS for my assignments			
Often	10	10	20
Rarely	8	8	16
Sometimes	25	20	45
Very frequently	7	13	20
Total	50	51	101
5. LMS has helped me to perform better			
Agree	33	22	55
Cannot say	7	14	21
Disagree	1	1	2
Strongly agree	8	12	20
Strongly disagree	1	2	3
Total	50	51	101
6. I find it easy to revise with LMS as it is with me anywhere anytime.			
Agree	31	24	55
Cannot Say	9	13	22
Strongly agree	10	12	22
Strongly disagree	0	2	2
Total	50	51	101
7. It is more interesting to learn through LMS than conventional methods.			
Agree	34	22	56
Cannot say	6	15	21
Disagree	1	3	4
Strongly agree	8	10	18
Strongly disagree	1	1	2
Total	50	51	101
8. It is enjoyable to learn through LMS			
Agree	31	25	56
Cannot say	7	15	22
Disagree	1	1	2
Strongly agree	11	9	20
Strongly disagree	0	1	1
Total	50	51	101
9. I have enrolled in all the courses			
No	17	16	33
Yes	33	35	68
Total	50	51	101

LMS: Learning management system

shows that students were finding it more interesting through LMS after the module than conventional methods. Most studies show that LMS/e-learning can be compared to traditional systems,<sup>[4,5]</sup> but as of now, there is still no clear superior learning modality but a preference for e-learning due to flexible learning styles is seen, although without improved didactic performance.

When asked about, is it enjoyable to learn through LMS? 19.8% said strongly agree, 55.4% said agree, 21.8% said cannot say, 2% said disagree, and 1% said strongly agree [Figure 1i]. It shows that a larger percentage of students were enjoying learning through the LMS than the conventional method.

When asked about, have they enrolled in all the courses? 32.7% said No, and 67.3% said Yes [Figure 1j]. It shows that a maximum number of students are enrolled for all the courses. This module has helped students to perform better, easy navigation, enjoyable study, and made it interesting to use LMS.

## CONCLUSION

It is critical to train the students regarding various aspects of LMS, and its technical details to make navigation easier. The use of ICT in learning involves efforts from not only teachers but also students to make it an effective way of learning. Regular follow-ups and troubleshooting will help maximize students' active participation in online learning using LMS. Students' feedback and necessary upgradation of the system are strongly recommended to achieve optimum learning output using LMS.

## Ethical approval

Institutional Ethics committee approval was obtained for this study with reference no. IEC/VSPMDCRC/12/2023.

## Declaration of patient consent

Patient's consent is not required as there are no patients in this study.

## Financial support and sponsorship

Nil.

## Conflicts of interest

Dr. Saeed Deshpande is on the Editorial Board of the Journal.

## Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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