



## Dental Education in Transition: A Case Study of Online Learning Adoption

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### ABSTRACT

#### Introduction

The COVID-19 pandemic has significantly altered the educational system. During the quarantine time, the transmutation from classroom lectures to online learning had a significant impact on dental education. The purpose of this study was to determine the perceptions of undergraduate dental students at Libyan International Medical University (LIUM) toward e-learning.

#### Materials and Methods

A cross-sectional survey was conducted on 3rd, 4th, and 5th year LIMU undergraduate dental students, the questionnaire was designed and validated by Said Abbadi et al. The survey link was distributed on Moodle using Microsoft forms. All statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS), version 26.

#### Results

Among the 156 students, 111 students completed the questionnaire, this represents a response rate of 71.15%. The vast majority of students prefer traditional classroom lectures. Most of the students (47.7%) disagreed that online learning met their demands and expectations, (65.7%) also disagreed that they feel motivated with online learning. A higher percentage of the students (56.7%) disagreed that online learning enables the students to determine learning progress and current level of learning and (44.1 %) of the students disagreed that online learning helps the student to accommodate different types of learning styles.

#### Conclusion

Many students were dissatisfied with the program's interruption of traditional classroom lectures also, many students believe that face-to-face learning cannot be replaced by online classes. These results need to be linked to quality department feedback and assessment, and further studies will be carried on this area.

**Keywords:** COVID-19, Dental students, e-learning

### Introduction

E-learning is described as the delivery of information using electronic means such as the Internet, audio, video, and so on. <sup>(1)</sup>

Faculty of Dentistry at Libyan International Medical University (LIMU) has implemented e-learning during the Coronavirus (COVID-19) pandemic outbreak. In December 2019 the novel coronavirus SARS-CoV-2 was identified after a recent outbreak in Wuhan, China. <sup>(2)</sup>

On 30. In January 2020, the WHO Emergency Committee declared a worldwide health emergency, and on March 11, 2020, the WHO Committee affirmed that the COVID-19 crisis is a pandemic supported by growing case notification rates at Chinese and international locations. <sup>(3)</sup>

Pandemics are seen in many periods throughout life, Pandemics were defined as diseases that occur at several periods throughout human history, causing millions of people in several a part of the world to die and they also hurt several aspects of life like public psychological state and education. <sup>(4)</sup>

The Libyan government has taken a very important step to increase the prevention measures and to prevent the spread. The Government of National Accord (GNA) announced the closure of the country's borders and suspended flights. Furthermore, schools, universities, cafes, restaurants, mosques, and public gatherings have also been closed. <sup>(5)</sup>

In response to the design of GNA to close the education centers and all universities, the academic dental council at (LIMU) needs to establish a response to make time-sensitive decisions through the pandemic interval.

The Key decisions of the dental faculty council of LIMU were focusing on the continued learning process likewise preserving students' health.

Quickly the academic dental committee held an urgent meeting to set a plan to continue the study program, and the following was done:

Approval of ZOOM program and Moodle as a tool for e-learning for third, fourth- and fifth-year courses.

A download link and demo video were sent to all students through Moodle and contact groups.

Training of tutors and staff members on how to use the Zoom app.

Lab and clinical training were suspended, only some videos and demos for clinical and lab procedures were uploaded to Moodle.

Periodic faculty council meetings to monitor e-learning processes and solve problems.

When all course objectives (Theoretical part) were fulfilled, the plan for final examinations was set in cooperation with the Information Technology department at LIMU

After this transmutation from a campus-based educational process to an e-learning process, the academic dental council decided to skim the student experience throughout the entire e-learning process, therefore, this study aimed to analyze perceptions of undergraduate Dental students at LIMU towards e-learning.

## Materials and Methods

A 30-item cross-sectional survey was conducted on the 3rd, 4th, and 5th years of LIMU undergraduate dental students, using a questionnaire previously used in similar studies. The survey link was distributed anonymously on Moodle using Microsoft Forms, The questionnaire was divided into 3 sections. In the 1st section of the questionnaire, students were asked about demographic details which include (age, gender, and Academic year). In the 2nd section, the students had to reflect on their opinions and respond by indicating how much they agreed or disagreed, while in the third section, the students were asked about Online learning resources, Interactive communication in online learning, and Future learning recommendations.

Each item was measured using a 5point Likert scale ranging from 0 = strongly disagree, 1 = disagree, 2 = Neutral, 3 = agree to 4 = strongly agree

## Statistical Analysis

All statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS), Version 25, and as applicable, descriptive statistics were used in the form of tables.

## Results

To assess the reliability of the questionnaire, Cronbach's alpha was calculated for each construct and was found above the minimum threshold (0.7). Among the 156 students, 111 students completed the questionnaire, giving a response rate of 71.15%.

As shown in Table 1, most students (47.7%) disagreed that e-learning meets their needs and expectations, and (56.7%) of them said that e-learning does not motivate them and doesn't enable them to determine their learning progress and current level of learning. Moreover, (44.1 %) of the respondents disagreed that e-learning helps them to accommodate different types of learning styles.

while e-learning provided (47.4%) of students with the flexibility of time and space, (42.3%) of them disagreed that e-learning enables the student to reach educational materials easily and quickly.

Table1	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Do you feel that e-learning meets your demands and expectations?	25.2%	22.5%	27.0%	21.6%	3.6%
Do you feel motivated with e-learning?	29.7	27.0	24.3	15.3	3.6
Do you find that e-learning enable the student to determine learning progress and current level of Learning?	20.7	36.0	24.3	18.0	0.9
Do find that e-learning helps the student to accommodate different types of learning styles?	18.0	26.1	25.2	27.9	2.7
Do find that e-learning provides the student with the flexibility of time and space?	16.2	14.4	21.6	33.3	14.4

<b>Does e-learning enable the student to reach educational materials easily and quickly?</b>	20.7	21.6	23.4	26.1	8.1
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Although (45%) of the respondents said that they did not receive sufficient guidance when dealing with e-learning (technical and scientific) and (51.3%) disagreed e-learning provides greater interaction between instructions, (48.6%) agreed that Moodle is an easy-to-use interface during e-learning and provides access to the system at any time. (Table 2).

The study found that (45%) of students' answers did not agree that e-learning provides students with sufficient follow-up and support from tutors, 43.2% of the respondents objected that e-learning enables the tutors to use different e-learning approaches, and 37.8% disagreed that the tutors were able to succeed in e-learning. When the students were asked about the fact that e-learning provides a quick response by the staff to the students' inquiries, 40.5 of them answered that they were not satisfied. (Table 2).

While 32.4% of them agreed that the purpose of e-learning is clearly stated, the majority of students (47.7%) disagreed that e-learning helps them to achieve the course's learning outcomes and 39.3% were against e-learning providing learning content in an organized and useful manner. Although 45.9% of students said that e-learning didn't provide a good balance of sufficient variety of different activities, 42.3% of them agreed that e-learning includes assessments based on clearly defined criteria for successful performance. Most of the respondents (40.5%) agreed that e-learning helps the student to include self-assessments and reflections on what has been learned. (Table 2).

<b>Table 2</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
<b>Do you receive enough guidance when dealing with e-learning? (Technical and scientific)</b>	17.1	27.9	25.2	26.1	3.6
<b>Does e-learning provide greater interaction between instructions?</b>	27.0	24.3	27.0	19.8	1.8
<b>Do you find that e-learning Provide availability access to the system at any time?</b>	10.8	11.7	28.8	36.0	12.6
<b>Does e-learning Provide the students with sufficient tutor follow-up and support with their learning?</b>	19.8	25.2	28.8	19.8	6.3
<b>Does e-learning enable the teacher to use various online teaching approaches?</b>	20.7	22.5	30.6	20.7	5.4
<b>Do you find that the tutor can make successful e-learning?</b>	20.7	17.1	34.2	21.6	6.3
<b>Do you find e-learning provide a rapid responsiveness of staff to students inquires?</b>	14.4	26.1	31.5	22.5	5.4
<b>Is the Purpose of e-learning clearly stated?</b>	13.5	18.0	36.0	26.1	6.3
<b>Does e-learning provide learning content in an organized and useful manner?</b>	18.0	21.6	28.8	28.8	2.7
<b>Does e-learning offer a good balance between a sufficient varieties of different activities?</b>	18.9	27.0	26.1	24.3	3.6
<b>Does e-learning include assessments based on clearly stated criteria for a successful performance? (Does e-learning enable the student to include assessments and submit assignments electronically?)</b>	15.3	14.4	27.9	34.2	8.1
<b>Can e-learning help the student to include self-evaluations and reflections on what was learned?</b>	13.5	17.1	35.1	32.4	1.8

As shown in Table 3, (48.6%) of the students agreed that e-learning provides easy access to study resources and 41.2% found that e-learning provides the student with updated learning materials. Regarding good communication and interaction between the student and the teacher, 45% of the respondents agreed that e-learning provides good interactive communication between the student and the e-teacher while 43.3% of them disagreed. When they were asked about their future recommendations on the use of e-learning, (49.5%) of the students recommended using blended learning in the future, while 54.9% did not agree to use e-learning alone, and 37.8% agreed to use face-to-face learning only in the future.

<b>Table 3</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
<b>Do you find Online learning provides easy access to study resources?</b>	13.5	12.6	25.2	42.3	6.3
<b>Do you find Online learning provides the student with Updated learning materials?</b>	11.7	15.3	31.5	34.2	7.2
<b>Do you find that Online learning provides good interactive communication between the student and the e-tutor?</b>	21.6	23.4	32.4	18.0	4.5
<b>Do you recommend learning using Blended learning in the future?</b>	7.2	14.4	28.8	34.2	15.3

<b>Do you recommend learning using Only Online learning in the future?</b>	33.3	21.6	27.0	15.3	2.7
<b>Do you recommend learning using Only Face to face traditional learning in the future?</b>	11.7	18.9	31.5	19.8	18.0

#### 4. Discussion

e-learning is considered to be a new experience for LIMU dental students and consistently implementing this way of learning could suddenly have an impact on students' educational success.

Due to the outbreak of COVID-19, colleges and universities have switched to e-learning. While e-learning has helped to flatten the curve and prevent the spread of the virus. In general, dental students do not like e-learning as much as traditional, in-person learning, the reason for this is that e-learning is more isolating and less engaging than in-person learning also difficult to stay motivated when taking courses online, and there is often a disconnect between students and their instructors. In addition, there are usually technical issues that can make e-learning even more challenging. The present study was conducted to analyze students' perceptions and feedback on online learning.

In the present study, students indicated that they were unmotivated when having an e-learning process, the reasons given were a lack of human interaction, feeling isolated, and struggling to stay on task when there was no one to hold them accountable, and similar findings were reported by Hayes C et al, who stated that (lack of interaction between students and faculty peers, therefore, lack of motivation to e-learning approach).<sup>(6)</sup>

Moreover, Song et al. stated that for students to evaluate the online learning source material, they must have the appropriate computer skills and a high-quality internet connection, this finding is worth mentioning and revealed that our participants were able to use Moodle and find it user-friendly for their study contents.<sup>(7)</sup>

It is also important to note that e-learning allows students to interact with instructors in a way that is not possible in a traditional campus-based setting. By being able to ask questions and get help when needed, students can get the most out of their education, most of the students disagreed that online learning provides greater interaction between instructions and it's in congruency with Abbadi et al, and This finding is also consistent with the course evaluation results.<sup>(8)</sup>

Most of the study materials are uploaded on Moodle immediately after any given lecture, to provide easy access to the study resources, most of the students agreed that this approach helps them to reach quickly and gives them availability to access the system at any time, our findings are in agreement with Bahanan L.<sup>(9)</sup>

The integration of online learning into dental education has significantly transformed the landscape of teaching and assessing students. A majority of dental students agreed that online learning enables them to access a wide range of assessment tools and submit assignments electronically.<sup>(10)</sup>

The majority of our participants had a negative response toward their e-learning experience, and they recommend campus-based courses, this is because dental education involves several components such as lectures/tutorials, interactive seminars, research-based teaching, simulated training courses, clinical skills training, this explains why they disagreed with e-learning, our findings are in agreement [Susan Hattar](#) et al.<sup>(11)</sup>

These findings reflect that more alterations may be necessary to prepare dental students to adopt an e-learning approach..

#### 5. Conclusion

The majority of the students were dissatisfied with the program's interruption of campus-based teaching and learning. Also, many students believe that face-to-face learning cannot be replaced by online classes. These results need to be linked to quality department feedback and assessment, and further studies will be carried out on this area.

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