

Edmodo: An Effective Learning Management System Tool for Online Medical Education During COVID-19 Pandemic

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ABSTRACT

Covid-19 is undoubtedly this century's deadliest disease. As the preventive measures for this lethal condition involve minimization of human-to-human contact, physical classes were suspended, and globally the education system continued its function online, the same occurred in medical education. During the pandemic, Learning Management Systems were adopted by various medical institutes and Edmodo was used by most of them due to its cost-effectiveness, versatility, flexible features, user-friendly interface, and self-paced learning. The use of this virtual tool has been welcomed internationally and for developing countries like Pakistan, its use can prove a big aid to medical education in these times of crisis. Among different types of learning management systems, Edmodo has positive feedback from not only students and teachers but it is supportive to administrators as well. Besides helping teachers in sharing lecture materials, and assignments, interacting with students, and conducting quizzes, the scope of its platform can extend to promote critical thinking and conduct flipped classrooms as well. Relevant keywords from 2019-2022 studies were used to retrieve data from "PubMed" and "Google Scholar". It can be concluded that the use of a Learning Management System especially Edmodo for medical education continuation was a need of the hour in the Covid-19 crisis and they are a big aid for teachers.

Keywords: Edmodo; Medical Education; Learning Management System.

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INTRODUCTION

Covid-19 has been labeled as the twenty-first century's deadliest pandemic, as per an announcement by the most authentic healthcare authority i.e. World Health Organization (WHO) in early 2020^{1,2}. At that time, the shutdown of schools was among preliminary distinctive strategies globally followed to avoid human-to-human contact, followed by the closure of colleges and universities as well³.

The pandemic has proved to be evolutionary for medical education, resulting in a reallocation of the graduate medical education system to e-learning⁴. Institutions adapted this to conclude the academic year on time and promote students without compromising public safety⁵. Although the medical school administrators faced the challenge to answer the raised critical questions in medical education in the

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process of adapting to revised guidelines,⁶ international students proposed that the convenience and flexibility of e-learning make it an attractive option⁷.

DISCUSSION

E-learning is a modern academic approach that ensures versatility, flexibility, interaction, group effort and collaboration among the students⁸. Learning

Management Systems (LMS) is the main medium for practicing e-learning courses in education and various other fields⁹. Most widely endorsed LMS are those that are freely accessible due to their high demand and because it includes the exchange of experience and effective feedback and check and balance mechanism¹⁰. Moreover, they are cost-effective for both institutes and students.



Figure 1: Advantages of learning management system.

Two school employees from Illinois, USA: Jeff O'Hara and Nicolas Borg created Edmodo about a decade ago, which is now one of the leading open source LMS, having a record of 100 million users worldwide as per the 2020 update^{11,12}. Its distinctive advantage is that the academic assessment tools are inbuilt and support both learners and facilitators from a remote distance. Moreover, it is user-friendly and easy to understand because its interface is relatable to Facebook. This learning medium is open source, safe and regularly upgraded with technological advancements. The advantages are depicted in Figure 1.

Edmodo can contribute to becoming a good source for facilitators to superintend alliance with students, colleagues as well as parents. As the founders were school workers they designed Edmodo as a worthwhile teacher-centered aid. As with evolving era the health care community is using internet technology at maximum, especially for educational purposes, LMS like this is considered groundbreaking concerning its wide reach and

keeping up the motivation and inspiration of users¹³. Furthermore, the instructor can circulate resources, and allocate tasks, videos and fun activities at Edmodo where the participants are involved comfortable with commenting and interactive chats and they can save or submit assignments anytime, anywhere with ease. Table 1 depicts the feature in detail.

Edmodo is also found to enhance learners' encouragement towards the educational program and improve problem-solving and reasoning skills¹⁴. While most of the studies explored only students' perceptions of this virtual service, a study conducted in Indonesia inquired about the teacher's perspective on the strengths and weaknesses of this online educational tool. They used it in the domain of English language learning and found that it is economical, private, simple, and flexible and the demerits included increased time consumption, slow uploading due to poor internet connection or technical errors and easy imitation of classmate's assignments by some students¹⁵.

Table 1: Features of Edmodo in depth.

Features of Edmodo	
1.	Work activity
I.	Assignment
II.	Quiz
a.	True/ False
b.	MCQ
c.	Short Answer
d.	Fill in the Blanks
e.	Matching
f.	Multiple Answer
2.	Posting Activity
a.	Feedback
b.	Lecture (Power point)
c.	Practical Handouts
d.	Polls
3.	Interaction
a.	Chats between teachers
b.	Chat between Teacher and students
c.	Chat between students
d.	Open discussion among teachers and students on individual posts

A Turkish study that suggested how Edmodo can promote life-long learning, highlighted the fact that the library in which files, pictures and materials are kept, is very useful as resources used in training are organized systematically and students can use, download and share them with ease. They concluded, that it helps people achieve self-realization and enhances gratification and motivation in lifelong learning¹⁵.

When Edmodo was compared to other LMS in terms of characteristics and tools, namely Moodle, and Instructure; it was found to have the most academically useful features¹⁶. Another study compared Moodle and Jejak Bali with it and reported that it supports a wide range of websites as well as both android and iOS. Another unique feature is the Gradebook system which is a student record that is used by the instructor to give an assessment value; it implements an easy, efficient and enjoyable learning system and is anti-

dated for teachers, students and parents¹⁷. The reasons for choosing Edmodo as per students have been its simplicity 65%, communication 31% and easy usage 4%. Further 61% of students wanted to continue usage of this educational technology in future learning when compared with other social platforms¹⁸. Many medical institutes also use Google Classroom, however it does not support Microsoft Office tools which were considered a limitation that Edmodo does. Many medical students use Facebook and What's app for educational purposes, however, What's app has been proved to be highly distracted and low yield in terms of learning^{19,20}. It is also claimed Edmodo has minimum to no attention diverting plug-ins and no baseless endorsements or advertisements, which makes it more education-oriented in comparison to other social networking sites²¹. Table 2 depicts detailed differences between the leading LMS and SNS.

Table 2: Comparing features of other mediums with Edmodo.

Medium for LMS	 Edmodo	 Moodle	 Social Media Networks (Facebook/WhatsApp)
Usage medium	Both Web and Application	Mainly Web	Both Web and Application
Price	Free	Free	Free
Compatible file formats	Pdf, docs, pptx, html, txt, xls	Pdf, docs, pptx, html, txt, xls, mp4	Pdf, docs, pptx, txt, xls, mp4
User Interface	Simple	Complex	Simple
Distractions	None	None	Many
Privacy settings	Highly Private	Highly Private	Moderately Private
Assignment Grading and attendance marking system	Automatic	Automatic	Manual
Time-bound Quiz and assignments	Automatic	Automatic	Manual
Push notifications for reminding assignments	Automatic	Manual	Manual
Two-way Interaction between student and teacher	Possible	Not Possible	Possible
Loading time	Fast	Moderately Slow	Fast
Motivational	Yes	No	Yes
Helpful for self-directed learning and Flipped classroom	Yes	Yes	Maybe

Edmodo in Medical Education

With widespread consumption of internet technology by students, it is rational to embrace it within academics²². Internationally students are found to use LMS to obtain organizational study information and for revising lectures and constructing exam notes²³. Edmodo was in use even before the rise of the pandemic globally but its use was limited in medical education. However, now in the post-covid era medical education has become dependent upon online resources and many medical schools globally have welcomed the use of this virtual tool.

In an Indonesian study, 52.9% of undergraduate medical students agreed online learning process needs to use learning management systems like Edmodo²⁴. A study from Poland reported Edmodo made their exam preparation easy and convenient as the study material was available with a single

click throughout the semester therefore they regarded this networked learning as highly flexible²⁵. An Indian medical university evaluated the role of this social network, as an aid in imparting education; they reported statistically significant changes in the academically weaker students²⁶.

The use of e-learning has been reported in post-graduate training in medical education as well for example in the Ophthalmology residency program in Baltimore, the US and they concluded that the solution has been both cost-effective and productive. Residents were thoroughly satisfied and faculty utilization had been increasing²⁷. A study in Canada demonstrates the solutions to the current medical education crisis, as shown in Figure 2. In addition, Edmodo has proven to be helpful for the implementation of many of these solutions²⁸.

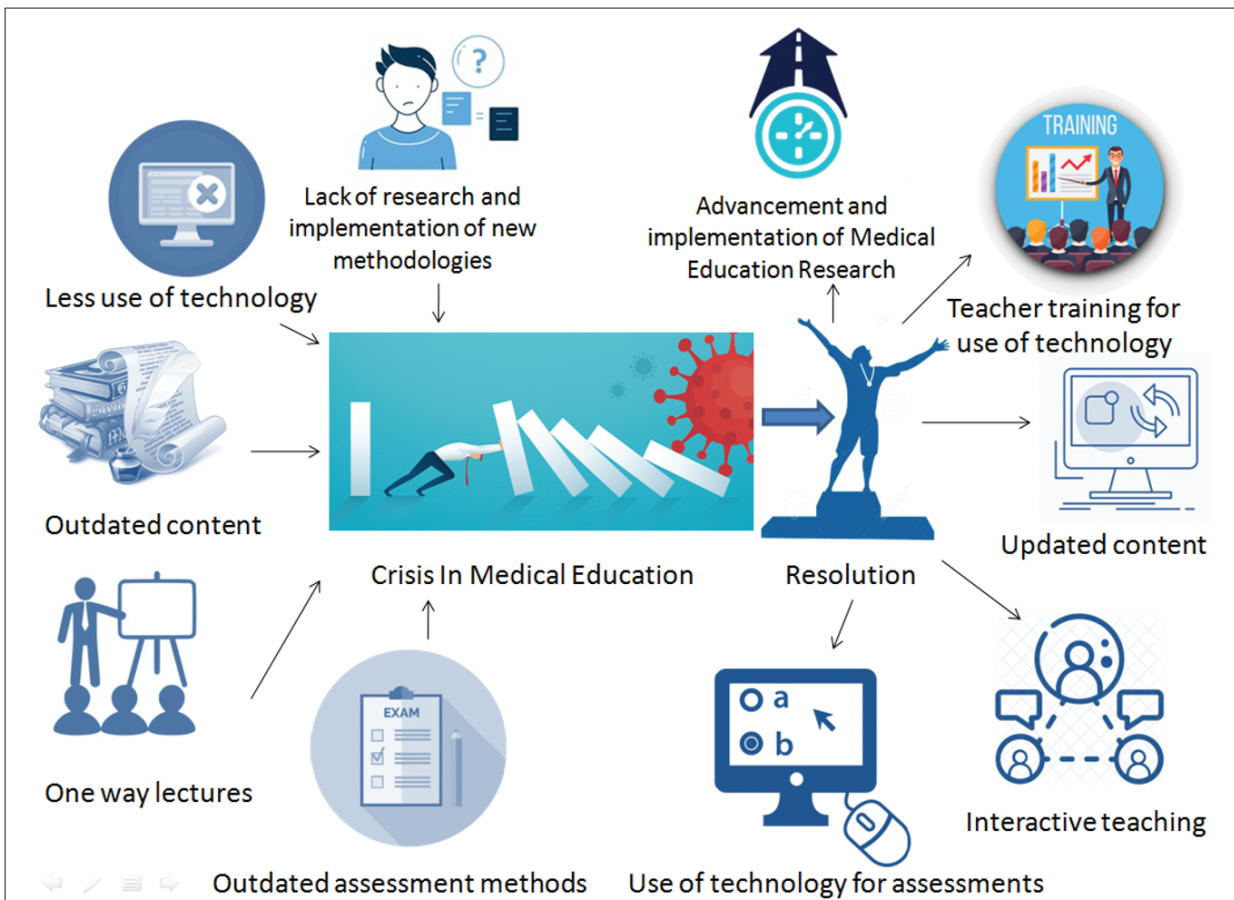


Figure 2: Proposed solution to the crisis in medical education.

An Aid to Online Academics in Pakistan

COVID-19 is a peril for Pakistan’s insubstantial and exploited medical system and foundation, encouraging the transformation of online academics and rising nations like Pakistan are on the verge of developing reliable, low price and safe e-learning academic structures. A study concluding data of

middle and low-income countries (South Africa, India, Egypt and Brazil) concluded that utilizing e-learning in medical education proves to be creating better learning opportunities on the same hand enhancing faculty effectiveness and efficiency²⁹.

A survey conducted on medical students at Dow

University of Health Sciences, Karachi concluded satisfaction of medical students toward the e-learning environment and suggested adopting a hybrid technique incorporating a mixture of e-learning as well as practical exposure appears greatly feasible for efficacious medical education impartation. In another study at Sialkot medical college, students were assigned individual online quizzes and assignments in Edmodo and a correlation between the internal assessment of students and their performance in the 1st professional exam was observed which turned out positive (correlation coefficient 0.74) ³⁰.

We have incorporated this social networking tool to practice online tests and mock exams in our institution along with Zoom for keeping a check on students' suspicious activities, further we also use it to upload lectures in the form of presentations and give assignments and quizzes to the student for monitoring attentiveness of students during online lectures. Therefore, it can be said that Edmodo is being used by Pakistani medical universities as well but very little data is available on the student's feedback and evaluation of its effectiveness.

A Source for Blended Learning (Tool for flipped classroom and gamification)

Literature reveals a list of features Edmodo possesses that makes it exclusively suitable for blended learning: fusion of LMS applications with social media, attendance, home assignments, seminars, quiz/polls, forums, certificates, document uploading, grade books, notifications, tests, scheduling, communication features with parents, emailing, and chat service. The results indicate that students can use these features well³¹. Moreover, it has some gamification features like badges, a progress tracker and also tasks and projects³².

A case-control study was conducted in Hong Kong on improving argumentative writing by blended learning approach and gamification via Edmodo in which the control group was taught via a direct teacher-led instruction approach while the other group was taught by online Edmodo postings and pre-and post-test written essays were held. They reported significant progress in students' writing that was taught by a blended learning approach and when gamification was implemented online contributions were significantly higher³³.

A study in Pakistan also evaluated it as a tool for blended learning. PowerPoint presentation (PPT) containing lecture material was uploaded on Edmodo including a table of relevant resources that could be used along with a quiz then the standard method of flipped classroom was followed. The students had a favorable view of the class. They indicated high yield interaction, healthier retention, individual attention and application of

already obtained knowledge can be practiced in this method³⁴.

Helpful in Self-directed Learning

Self-directed learning (SDL) is an approach where learners take responsibility and self-monitor and self-manage processes to achieve their learning outcomes. Self-monitoring is dependent upon both internal and external feedback, so it builds from a collaborative process. Self-management involves shaping the contextual conditions in line with target-driven actions. This is a collaborative process between teachers and students. It is also a complicated process, and as such the development of SDL has some barriers related to the student, the organization and the teacher-student interaction. The main task of the teacher is to develop the learning objectives and the student is supposed to make a schedule around it³⁵. Fortunately, Edmodo has been proven to overcome this barrier by a Saudi Arabian study in 2017^{36,37}.

Previous research has proven it as an effective tool in various higher education fields including business³⁸, computing³⁹, media⁴⁰, tourism/culinary education⁴¹, language learning⁴² and even in connecting students from two different nations (the USA and Japan) for learning language⁴³ and it is being proven to be as such in medicine as well. It can be applied in several aspects such as sharing course material, conducting exams and even improving physical sessions by incorporating it into flipped classroom method.

Recommendations

Literature on Edmodo usage in Pakistani Schools⁴⁴ and other educational programs including B.Ed⁴⁵ and intermediate language learning⁴⁶ has been reported positively. However, very few Medical Universities in Pakistan have reported it and only student feedback has been obtained. Therefore, teacher feedback should also be included and its effectiveness should be evaluated further.

CONCLUSION

Edmodo should be explored to improve contact time with the learners, as this generation's learners are not ready to learn the traditional way in the new digital age. The teachers should then teach the way learners want to be taught.

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CONFLICT OF INTEREST

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION

JM designed and wrote the manuscript and was

the corresponding author, NP designed the concept, drafted and critically reviewed the article. Both the authors finalized and proofread the manuscript.

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