

Challenges of incorporating e-learning in medical education-a review

Anitha P.^{1*}, Narayana Krishnappa¹, Ruchi Dhar²

¹Department of Pharmacology, ²Department of Community Medicine, Sri Siddhartha Institute of Medical Sciences, T Begur, Karnataka, India

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***Correspondence:**

Dr. Anitha P.,

Email: anitaprabhu16@gmail.com

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ABSTRACT

In this modern era of electronic gadgets learning is made easy and more effective using the electronic media. E-learning is it really a boon or a burden for medical education and the educators? E-learning is defined as learning mediated by technology, such as the world wide web, internet, and multi-media, based computer applications. All peer reviewed journals articles from 2009 to 2022 that reported the challenges of implementation of the e- learning were included in the study. The search was completed by three researchers over a period of 1 month from databases like Scopus, Medline, biomedical central and Google scholar. Term used for online search was “e-learning” in medical education. The common challenges in e-learning are lack of skills, inadequate time, poor infrastructure, poor communication and negative attitude of the educators. These challenges can be overcome by developing necessary skills, adopting new tools, and by better communication and having a positive attitude. E-learning in medicine is a relatively new concept. Hence it becomes imperative that the national medical council at the policy making and enforcing level become more vigilant on the fact that whether the respective Institutions are effectively using the e-learning platform for the benefit of the students or not. Whether the institutions are effectively providing all the technologies, teacher training, teaching aids for the medical teachers or not. Finally, whether the medical teachers are receptive of the new changes and willing to make better use of e-learning for the benefit of students.

Keywords: E-learning, Medical education, Challenges, National medical council

INTRODUCTION

In this modern era of electronic gadgets learning is made easy and more effective using the electronic media. All the information can be put into an effective mode of visual and auditory information. With the information made available on the finger tips, isn't it high time we make the best utilization of the available modern methods for imparting medical education? Are we on the verge of transformation from the conventional methods of teaching -learning activities? Is e-learning really a boon or a burden for medical education and the educators?

Technology has become an integral part of learning in today's day and age. Medical teaching as well as the way

a medical student learns is completely different from how it was few years back when technology was not such an important part in medical education. One of the modes of learning using technology is e-learning. E-learning is defined as learning through digital resources like the internet and other computer applications.¹ An Indian medical graduate (IMG) must be able to utilize technology for learning, treatment of his patients by the time of graduation as per medical council of India (MCI) guidelines.² Technology helps us to acquire new skills and keep oneself updated on latest research and development.³

E-learning is more flexible, interesting, makes learning fun, and it is learner oriented. With e-learning there is more one to one interaction and exchange of thoughts between the teacher and student.⁴⁻⁶

LITERATURE REVIEW

Inclusion criteria

All peer reviewed journal articles that reported the challenges in the implementation of e-learning published 2009 onwards unto 2022 were included as part of the study. Studies which reported on the particular aspects of e-learning including those that have addressed issues related to implementation of e-learning were also included in our study. Only studies done on e-learning with particular emphasis on its use in medical education were

included. A study of e-learning on any other nonmedical discipline was not included in our study.

Methods

A systematic literature review was done on all the articles published from 2009 to 2022. The search was completed by three researchers over a period of 1 month from databases like Scopus, PubMed, Medline, biomedical central and Google scholar. Term used for online search was “e-learning” in medical education.

Table 1: Different modalities of e-learning.

Modality	Characteristics
Flipped classroom	Most of the learning happens before and outside the classroom. Students practice self-study by utilizing online resources like recorded audiovisual lectures, power-point presentations, and handouts provided by the teacher. It is more subjective with active participation of the student in the learning process than mere passive information dumping. The time spent by the student in class room is flipped or reversed; hence the term flipped or reversed classroom. ⁷
Mobile learning	Smartphones have become most important and integral part of modern-day civilization. It is one of the greatest and important inventions by mankind. Smartphones are handy, provide the required information instantaneously and are user friendly. Smartphones can be used for e-learning by installing certain apps like dosage calculators, growth charts, Curofy, Docplexus, SCAT; web-based features like PubMed, Facebook, WhatsApp, and YouTube. ⁸
Synchronous learning	Synchronous learning takes place in real time. Here two or more people communicate in real time for exchange of information or learning. Examples include chat, video and audio conference, live webcasting, application sharing, polling, and virtual classrooms. ⁹
Asynchronous learning	Unlike synchronous learning here students complete the course at their own pace, it does not take place in real time, it is a self-paced course suitable for fast as well as slow learners. Examples are e-mail and discussion forums. ⁹
Self-study	It is the most common method of e-learning. Here students utilize online sources such as Wikipedia, blog and reading materials like ppt, pdf and word files to get a general idea about the topic. ⁹
Video/audio tape	This is the second most common method; here students utilize the video or audio tapes for learning. Basic knowledge is imparted by either watching or listening. ⁹
Computer-based training (CBT) and web-based training (WBTs)	Similar to asynchronous learning here the courses are self-paced, and the student has no interaction with an instructor or fellow student. Source of learning is through CDs or a CBT. E-courses are also available through WBT, which utilize the internet as a platform like a learning management system. ⁹
Blended e-learning/instructor-led (ILT)	It is a mix of both synchronous and asynchronous ways of learning. Most suitable for soft-skills or sales training, which require face-to-face interaction in order to be effective. ⁹
Game-based learning	Learning through games is more relatable to students and forms an instant connection with them. The term gamification is often used to describe game-based courses. E-learning through games increases student engagement, productivity and motivates them to learn while they play. ⁹
Skill laboratories	Here students perform and practice clinical skills in a simulated environment before performing them on real patients. The new competency based undergraduate curriculum for the Indian medical graduate by MCI incorporates this simulation-based methods, beneficial to not only beginners as well as the experts. ¹⁰ Basic clinical skills to complex surgical skills can be practiced on mannequins or with standardized patients in controlled training environment. ^{11,12} Evaluation of students can also be done by this method. Cardiopulmonary resuscitation (CPR), arrhythmia management, cardiac monitoring, scrubbing, administering drugs by different routes and placing an intravenous catheter are some of the procedures which can be demonstrated and practiced in skill laboratories

CHALLENGES IN E-LEARNING

Lack of skills and staying up-to-date with modern technology

One of the important limitations for implementing e-learning is lack of technical skills in teachers.¹³ Poor computer knowledge and typing skills can demotivate the teacher in developing the technical skills and also in the implementation of the programme.¹⁴

Time

Medical teachers are already multitasking and donning the role of a teacher, researcher, doctor, and administrator. As a result of which they are unable to balance both professional and personal life.¹⁵ Lack of time is an important cause for non-implementation of e-learning programme in medical colleges. There is a preconceived notion that e-learning programmes are time consuming and complicated.¹³ Lack of incentives also seems to be one of the reasons for lack of interest in the programme.¹⁶ Perlman et al found that lack of time as the cause for faculty not using an electronic e-portfolio tool.¹⁷ Hence it is important that teachers spend enough time and familiarize themselves for effective implementation of the programme.

Infrastructure

Poor infrastructure is also one of the important causes for non-implementation of e-learning, especially in developing and under developed countries. They lack basic technical facilities like email, uninterrupted internet access, photocopying or even uninterrupted power supply.¹⁸ Attardi and Rogers highlighted poor internet connectivity as barrier to live broadcasting of lectures in their institution in Canada.¹⁹

Poor communication

The cornerstone to success of e-learning programme is good communication between teacher and student as to how to utilize the e-learning programme.²⁰ E-learning programmes are often implemented in isolation, i.e., even though e-learning programmes are implemented in various departments in the same institution, there is lack of communication between the departments which can act as an obstacle.

Attitude

The saying "attitude is everything" holds good even for e-learning programmes. Lack of positive attitude is also one of the important factors for implementation of e-learning amongst teachers. They already feel over burdened with the multiple tasks they are entrusted with and hence they have less patience in the overcoming minor technical issues.²¹

Lack of learner motivation and engagement

Not every learner is motivated to utilize e-learning. There is more information available than one can consume. This can lead to distractions and lack of attention.

Price

Most of the times e-learning projects are allocated limited financial resources, this leads to delivery of substandard quality products. One has to compromise and make do with whatever is available.

DISCUSSION

E-learning is now a very essential tool in medication education. Technology helps us to develop necessary skills required for optimal patient care.¹³ Faculty must be trained first on how to utilize e-learning in medical education. They can be trained in e-learning by attending tech conferences and workshops. Digital tools help them to be updated about new concepts and takes up less time as opposed to conventional method of teaching, this allows them to utilize their time more productively.¹⁴ Furthermore, to motivate the teachers they can be given certain incentives and acknowledgement for their efforts.¹⁶

According to Maloney et al the expenses of e-learning was much less than a conventional class room teaching.²² This can encourage the medical school administration to adopt online teaching. Bediang et al found that for e-learning to be effective all relevant stakeholders and departments have to be involved.¹⁸ The institute should have qualified and dedicated faculty, and sufficient budget to cover all expenses has to be set aside. Perlman et al noted that administration support is very crucial for faculty to participate in online programs and for its successful implementation.¹⁷ Hence a strategic approach by the institute is essential. The most important point is to maintain a positive attitude which helps in achieving any difficult goal. Students can be encouraged to use e-learning by providing interactive courses and by utilizing gamification. Adopting to these new learning tools breaks down preconceived notions, and helps in development and implementation of online learning in medical education.¹⁴

CONCLUSION

E-learning in medicine is a relatively new concept. Since medicine is one of the most rapidly expanding fields it becomes imperative that the national medical council at the policy making and enforcement level encourages the use of e-learning in the institutions under its purview. Although E-learning seems to be very fascinating and interesting, various glitches need to be addressed in order to incorporate it into medical education. Will it replace the traditional method of class room teaching or will it stand as a complimentary aid in making the traditional method more effective is to seen in the days to come. Although modernization demands a change from the traditional

method of teaching-learning activities, implementing it with the available limited resources, skills and time constraints and designing the proper methods in e-learning is a really challenging task.

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