

E-Learning in Health Education

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Abstract—The purpose of this paper is to analyse the feasibility of adopting E-Learning in health education and to examine reasons for adopting or rejecting it as an alternate way of medical academics. The advantage is that the people engaged in E-Learning activities will be able to construct their own knowledge through self-directed learning. These tools offer multidimensional learning for novice medical students. A lot of time and money will be saved. Internet and associated multimedia technologies can be used to deliver up-to-date medical education to health workers. Now, with the advent of newer information communication technologies with faster broadband speeds; it is possible to create a virtual classroom environment for students in remote locations. In Indian scenario, various challenges and issues are involved with the use of E-Learning such as non-availability of internet facility in all the geographical areas, absence of policy, guidelines, and standards, lack of proper infrastructure and competent human resource. The health care professionals with computer illiteracy may experience computer or technology anxiety, which may in turn impact their learning and teaching capabilities, the face to face interaction and hands on practice can't be provided by E-learning. Few suggestions are made at end to increase the Pros and decrease the Cons of E-Learning.

Keywords: E-Learning; Virtual classroom; Computer illiteracy.

1. INTRODUCTION

In today's scenario, the world of medicine is changing rapidly. New areas are being researched and new treatments come every day. Not every one of 398 medical colleges in India has access to all these updates and resources. To bridge this gap, there came a scientific revolution to rescue. In October 1999, during a CBT Systems seminar in Los Angeles, a strange new word was used for the first time in a professional environmental E-Learning. The use of computing and the internet in education is known as Electronic Learning or, more typically, E-learning. Since then it has been hailed as the savior of a country struggling with acute resource deficiency and unopposed component of health education.

2. VIRTUAL LEARNING ENVIRONMENT

E-learning method best suited for health care industry is the Virtual Learning Environment shortly, VLE. A VLE is a computer based software system designed to support teaching and learning in an educational setting, i.e. school or a

university. A VLE provides a wide collection of tools such as those for interactive learning, assessment, communication, uploading of content, return of students work, peer assessment, administration of student groups, collecting and organizing student grades, questionnaires, tracking tools, etc. Originally created for distance education, VLEs are now used most often to supplement face-to-face teaching. VLEs allow instructors/teachers and learners/students to interact in an online community, without being present in the same physical location or time frame. In India, though some institutes are using computers for storing information, patient care, and hospital management, using VLE for teaching is still in its infancy.

3. SIMULATION

Another model of E-Learning fast evolving in developed nation is Simulation, that are Virtual world software applications. Examples of virtual world applications are Second Life (Linden Lab), Photosphere™ (Proton Media), OLIVE™ (Fonterra Systems), the Croquet Consortium™, and Open Wonderland™ (Open Wonderland Foundation). In these on-line worlds, users choose an avatar (or virtual character) and interact in a three Dimension (3-D) environment with other on-line users controlling the character's movements, actions and voice. Educational institutions, including medical schools and health organizations, are developing educational activities to be taught to students in this environment. Recently there has been growing interest by medical and public communities in using Second Life for public education, out-reach and training.

Some examples of simulation modules used in medical education are

- i. Artificial patients or animal models (computer simulations designed to teach biochemical or physiological principles on simulated models)
- ii. Human patient simulators (mannequins or interactive models reflecting human appearance, pathology, and physiology)
- iii. Simulated patients (patient information simulated and stored in a database for student use)

- iv. E-patients (use of real patient cases with different names to maintain anonymity, e.g. electronic health record information)
- v. Virtual world patients (patient is a virtually generated character — an avatar — living in a virtual world)

4. PRESENT SCENARIO

In this portion of paper we present some approaches already taken in account of establishment of VLE in India so far.

- i. EDUSAT, launched on 20 September 2004, is the first Indian satellite built exclusively to serve the educational sector. This project has got tremendous success in India during last few years to motivate Indian conventional education to a new era of Hi-Tech education.
- ii. Online Open Access Bibliography: Two government agencies, the National Informatics Center (NIC) and the Indian Council of Medical Research (ICMR) have established the Indian Medical Literature Analysis and Retrieval System (MEDLARS) Center to cater to the information needs of the medical community of India. This ICMR-NIC Center for Biomedical Information has developed various web-based modules such as a union catalog of the journal holdings of medical libraries of India (<http://uncat.nic.in>), a bibliographic database of Indian biomedical journals (<http://indmed.nic.in>) and full texts of Indian biomedical journals (<http://medind.nic.in>).
- iii. The Apollo Telemedicine Network Foundation, in collaboration with Anna University in Chennai, was the first to start a 15-day certification course in Tele-health Technology, which is a blend of technical, medical, and managerial skills. The first course commenced in October 2003. As part of its efforts to popularize telemedicine, an interactive section on telemedicine has been made available in the division of emerging technologies at the renowned National Science Center in New Delhi. Thousands of public individuals now have an opportunity to see telemedicine and learn about it.
- iv. SGPGIMS, in collaboration with the Uttar Pradesh State government and Department of Information Technology, has taken the initiative to set up a School of Telemedicine and Biomedical Informatics on its campus.
- v. The National Board of Examinations (an autonomous body under the aegis of India's Ministry of Health) offers a satellite-based postgraduate e-lecture program in all medical specialties. It is now mandatory for every institution recognized by the board to make available the necessary infrastructure for receiving these programs.
- vi. RAD GURUKUL Solutions, premier provider of tele-radiology services, launched —Rad Gurukul, the tele-radiology training center in Bangalore, to provide training and to refine the skills of radiologists, technologists, and IT personnel involved in healthcare IT.
- vii. C-DAC MOHALI (Centre For Development Of Advanced Computing) in Punjab provides training to healthcare professionals to effectively use telemedicine solutions

both on site and remotely through the use of Tele-health equipment with the help of training specialists. This training will be helpful in implementation of electronic medical records, training, and support for a telemedicine system, and doing technical assessments and business analyses.

- viii. Christian Medical College, Vellore, in 1995 with the help of software and support from the Tufts University School of Medicine and School of Public Health has created a dynamic multimedia knowledge management system called TUSK to support faculty and students in teaching and learning.

5. HURDLES TO E-LEARNING

Indian medical colleges, with the exception of few notable ones have however, not been able to maintain the high standards of education or keep pace with developments in the fields especially in knowledge and technology. Although the Government of India is committed to implementing E-Learning in education, a number of barriers hinder the process

A. Regulatory framework in India

After the dissolution of the Distance Education Council (DEC) in 2013, the power to govern the Open and Distance Learning (ODL) system has been vested in the University Grants Commission (UGC), which states in —Gazette Notification No. 44 that all qualifications awarded through distance learning by institutions established under the University Grants Commission (UGC) Act, 1956 will be recognized for the —purpose of employment in government jobs in India. Therefore, the problem arises for the credibility of E-learning courses when applied for Non-Government hospitals.

B. Resource limitation

The major bottleneck to E-Learning is the slow internet connectivity and digital divide. Most broadband users in India are primarily concentrated in urban and semi urban areas. The rural areas are virtually excluded. It means slower performance for sound, video and intensive graphics, causing long waits for download that can affect the ease of the learning process. TRAI estimated that a rural fiber infrastructure to connect 3, 75,552 villages will require an approximate investment of INR 32,295 crore, which is very expensive and time consuming. However, newer wireless technology like Wi-Fi and WiMax are expected to take care of last mile connectivity issues in near future.

C. Other barriers

The other barriers to widespread adoption of e-learning are the process of integrating e-learning into the existing curriculum, setting up the required infrastructure at bricks and mortar institutions of learning. There is also a certain amount of resistance from senior medical faculties, who are not computer literate and are intimidated by the prospect of e-learning.

Without proper accreditation or recognition, students are also wary of taking up e-learning courses.

6. ADVANTAGES OF E-LEARNING

A. CME credits for doctors

In changing healthcare systems every 4-5 years 50% of the medical knowledge, and every 8-10 years, 70% of the same knowledge is considered as —old. Thus, the knowledge gained in a period of general or specialized academic CME will not be sufficient for a future career hence the International Federation of Medical Education asked the medical universities in 1997 to prepare grounds to integrate e-learning and CME. Medical Council of India requires health practitioners to regularly update medical knowledge and skills by maintaining a certain number of CME credits. Companies such as CME.web.com and GE Health Care are able to offer online continuing medical education credits through web-based tutorials and other electronic means. With this being said, becomes an attractive option for medical professionals with time constraints in fulfilling CME credits.

B. Other advantages

Other reason for it being recognized by busy medical professional to maintain competency and to update their medical knowledge is schedule flexibility, more chances for interaction and cost effectiveness

7. EVIDENCE OF EFFECTIVENESS

- i. Lockyer .L (2007) explored nurses' perceptions on the impact of an online education package in patient care amongst nurses the results showed that nurses who worked through the e-learning package were more confident to care for their patients and were able to transfer their learning to their clinical practice.
- ii. Hugenholz (2008) investigated the effect of e-learning on knowledge on mental health issues as compared to lecture-based learning in a CME program for occupational health physicians. The results showed e-learning is comparable to a lecture-based approach in terms of effectiveness.
- iii. Duffy (2002) compared the outcome of course delivery for health professionals including post-registration nurses in the conventional classroom -based, distant learning with face-to-face tutorials, as well as completely online with no face-to-face interaction. They found that overall, module results were significantly higher for the students who studied completely online.

8. DISADVANTAGES OF E-LEARNING

Nothing in this world is 100% perfect. Everything has its own disadvantage. E-learning is no exception to that. Some examples are:

A. Poor recognition in job market

Health professionals may find that hospitals are less willing to accept degrees, transcripts, and certifications from online programs as comparable to traditional classroom courses.

B. Less human interaction

Most, if not all, of your communication and interaction with your instructor and fellow students will be through electronic medium including email, chat rooms, discussion boards, or perhaps Skype or online meeting technology. Not having access to the visual cues, body language, and non-verbal communication of a traditional program could make it difficult to discern true meaning.

C. No hands on practice

Online courses have no opportunity to give hands on practice to doctors, which are very essential in medical practice.

D. Technical mishaps

While technology tools and the Internet infrastructure are becoming more and more stable, there are still instances when technology fails. Servers may be down, or you may experience periods when your connection to the Internet is interrupted. Hard drives fail, and email may get caught in spam filters and never be delivered.

E. Working alone

Working alone can isolate a student, making it easy to put off or neglect course work or drop out of an online class completely. It takes a certain amount of internal motivation to continue when you are pressed for time and do not have fellow students to talk with and help to motivate enough.

9. FUTURE OF E-LEARNING IN HEALTHCARE

A report by Federation of Indian Chambers of Commerce and Industry (FICCI) in 2010 states, "Healthcare has emerged as one of the most progressive and largest service sectors in India with an expected GDP spend of 8 per cent by 2012 from 5.5 per cent in 2009. It is believed to be the next big thing after IT and predicted to become a USD 280 billion industry by 2020," and According to the research report, "India E-Learning Market Outlook to FY' 2018 – Increasing Technology Adoption to Drive Future Growth, the market is estimated to grow at a CAGR of 17.4% over the period FY 2013-FY 2018 driven by many factors such as increasing government initiatives to promote e-learning, increasing adoption of technology, shortage of quality education, convenience and cost factors and others. So simple math on these two reports makes it very clear that —Healthcare supported by E-Learning is the future of developing India.

10. CONCLUSION

At the end, for anyone who questions —How could a MBBS student hope to acquire the requisite skill sitting miles away from a hospital or a senior doctor? , the answer is No, he can't, but one should make the best use of technology. Video lectures won't replace the teachers, e-books won't replace libraries, simulation won't replace practical sessions but for sure, they'll certainly make a supportive for themselves. Till now, there is no standardization to the quality of these course materials and course structure as well as nomenclature of these programs. Until this is done, we would have a long way to go before virtual learning could be used to replace real time learning.

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