IMPORTANCE OF USING E-LEARNING IN MEDICAL EDUCATIONAL INSTITUTIONS

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Abstract: *Healthcare and medical training are not immune to universal, rapidly changing technologies. In medical education, advances such as simulation, virtual patients, and e-learning have evolved into pedagogical strategies that promote an active, focused approach to learning. Today's generation of students has grown up immersed in a variety of technologies and is now less functional in traditional classroom settings. However, not all of today's medical trainees or faculty is equally proficient with technology.*

Advancement in education requires understanding which learning-enhancing technologies are worthy of use in certain scenarios. To better improve patient care in modern times, continuous innovative efforts between medical school faculty and medical students remain essential to harness the full potential of technology. The purpose of this paper is to discuss the various available medical training technologies and subsequent trainee acceptance of these methods. In addition, our work examines how educational technology can enhance or hinder medical student learning.

Keywords: *medical education, technology, e-learning, simulators, virtual reality, mobile devices, medical illustration, social networks.*

The selected systematic reviews were organized around the following topics of interest in medical education: e-learning, multimedia in lectures, audience participation through technology, virtual reality and simulation, mobile devices and social media.

Flexibility and active learning methods are a priority in modern medical education. E-learning, a web-based technology that extends teaching beyond the classroom, allows students to hear from

and engage teachers instead of or in addition to traditional classroom lectures. Developing an effective eLearning course requires collaboration between course leaders, instructors, and technology experts.

Despite the time and cost involved in initial creation, eLearning curriculum offers a platform to easily track learner development and advancement. E-learning will help physicians bypass geographic and calendar restrictions and thereby promote participation in continuing medical education.[2] Online learning is perceived as most valuable when associated with real-time feedback, self-assessments, a simple interface, extended time for completion, and relevance of the topic. [3,4] E-learning activities that are perceived as too superficial and lacking relevance or interactivity are viewed less favorably.[2] A survey of health education trainees found that e-learning not only accelerated the learning of psychomotor skills, but also provided superiority in cost-effectiveness, learner satisfaction, and focus and focus. These qualities make eLearning ideal for teaching trainees about rare and complex medical scenarios. These learning activities reinforce recognition of clinical patterns and direct trainees' attention to key learning points. [5]

Multimedia.Various categories of technology were used to enhance the presentation of medical science topics to students. Multimedia (such as tutorials and charts) and interactive self-assessments (such as patient cases, surveys, or other feedback) were included in more than half of the eLearning courses. Video combines both auditory and visual information simultaneously. The videos touch on various areas of the learner's knowledge during lectures. Video lectures allow students to use repetition, independent practice, and active learning. As with eLearning, trainees benefit most from videos that contain self-assessments, integrated lecture objectives, images, PowerPoint lecture slides, limited duration (<15 minutes), quality design, and authoritative popular lectures. In fact, multimedia is transforming the role of health educators from delivering formal lectures to facilitating discussions and creatively maximizing listener understanding through media intervention tools.

Audience Participation Technologies. Audience response system technology is increasingly being used to encourage more active learning in the classroom. ARS can promote student participation in the classroom and encourage group problem solving (depending on how ARS is integrated into the experience). Anonymity in responses allows the student to participate without fear of embarrassment or being singled out by peers or the instructor. Regarding the inclusion of ARS in curricula, students report strong positive perceptions, increased attentiveness, and increased engagement and enjoyment of the lecture experience. One controlled study found that immediate feedback after questions (facilitated by ARS) can improve knowledge condensation.

Virtual reality and simulations. To improve the application of knowledge, faculty developed virtual patient encounters (realistic, animated clinical scenarios depicting a wide range of pathologies) to implement medical decision-making skills. Virtual reality has often been used by procedural trainees to enhance their training.

When properly designed and used, simulation can provide distinct benefits to medical education. Trainees identified feedback, opportunities for repeated practice, realism, and team-oriented communication skills as predictive variables contributing to the success and acceptability of the

simulation. The use of simulators in medical education appears to be effective in engaging the medical trainee in active learning.

Mobile devices. Mobile devices have evolved to meet the numerous demands of the physician and trainee. As of 2006, 85% of healthcare providers have adopted mobile devices in patient care [6]. Smartphones give trainees the ability to multitask while keeping their knowledge up to date on diagnostics, medical care, patient health information, medical calculations or the latest literature. Trainees can now access point-of-care data in real time, and trainees can utilize downtime and maximize learning using web-based training materials and current literature. Mobile device apps provide improved access to clinical literature, continuing medical education, and error prevention tools. In addition, these devices also provide faster clinical communication and subsequent response time to patient needs. Mobile devices remain limited in areas such as battery life, risks associated with malware, potential privacy violations or erroneous search information.

Social media. Due to its prevalence, social media represents a potentially valuable tool for educators. Health social networking sites can serve as a platform for students to share advice and health information throughout their education. In addition, social media creates opportunities through which medical professionals can educate the public on health issues. Health care professionals should be trained and reminded to avoid unprofessional behavior and violations of privacy when using social networking sites.

Discussion. Technologies, which are increasingly integrated into medical practice, strive to streamline the work of a doctor and offer reliable and easily accessible information. To accelerate the growth of trainees and empower innovative scientific leaders, faculty must play a critical role in how technology transforms medical education. Learners prefer technology-related methods that offer learning material that is interactive, authoritative, simple, pragmatic and coupled with appropriate feedback. Innovations such as virtual reality and simulations effectively increase knowledge, performance skills and team communication through realistic clinical cases. Educators use social media to promote student reflection and address challenges faced by trainees. [19]

Educators should consider whether the benefits of the added flexibility and real-time feedback provided by technology-based learning outweigh the negatives of the social isolation associated with classroom-independent learning. This potential loss of camaraderie is causing some health educators to advocate for introducing blogs and social media into the curriculum. In the face of technological overload, educators must innovate a curriculum that supports the humanistic touch of every learner. Additionally, medical educators may advocate for testing core technology competencies when entering medical school before entering school or when continuing technology education is required throughout medical training.

As the number and variety of technological resources increase, educators have more opportunities to create and modify new teaching methods. Health educators should instruct trainees on how to consistently find the most appropriate, reliable, and up-to-date information. For example, educators might consider programming virtual patients and simulators to simulate the side effects of psychotropic medications, delirium, or drug poisoning. As artificial intelligence advances, trainees can use virtual patients to develop psychotherapy skills. Continued research into how integrated

technologies influence learner attitudes and patient care outcomes remains vital for future developments.

Numerous factors, ranging from practice, personal preferences, and population composition, influence how each medical student, trainee, and physician perceives and accepts technological changes in medicine. Therefore, conclusions drawn from the experience of medical students cannot be extended to all generations of practicing physicians. Further research into the use of technology across generations and practice types will highlight the most ideal technology-related learning objectives. Such an innovation could contribute to the development of best practice models for technology-based learning in undergraduate and graduate medical education.

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