

Modern Educational Technologies in Medical Education: A Dream that is a Reality

Shoaleh Bigdeli^{1*}, Maryam Soleimani Movahed², Nazdar Ezzaddin Alkhateeb³

Bigdeli S, Soleimani Movahed M, Ezzaddin Alkhateeb N. Modern Educational Technologies in Medical Education: A Dream that is a Reality. Int J Biomed Clin Anal. 2022;2(2):79-81.

There is an increasing demand for accountability in higher education and, at the same time, a rising focus on improved teaching and learning [1]. Meanwhile, human society has entered the era of information explosion [2]. In this regard, Medical Education has undergone significant changes in the last couple of years, and medical educators experienced intense evolutionary changes due to the COVID-19 pandemic. The pandemic drastically affected the nature and methods of education [3], and educators worldwide focus more on modern educational technologies, which aim to promote students learning and improve their enthusiasm and initiatives in learning [2]. These technologies provide opportunities for hybrid education and are a transition from teacher-directed to learner-centered methods and self-directed learning that puts this industry on edge.

In addition, the rapid development of computers and modern educational technology opened up the possibility of enriching teaching and learning experiences. With the advent of new

educational technologies and a new breed of learners labeled in many ways, such as ‘Digital Immigrants’, ‘net generation’, ‘net-geners’, ‘D-generation’, ‘homozappiens, Y, Z, and Millennial generations’ [4] using computers and modern educational technologies are more prevalent than any other time in the history of education. A literature review indicates that this tech-savvy group prefers using motivating technologies and practical tools to support teaching and learning.

In this regard, the Association for Educational Communications and Technology (AECT) defines Educational Technology as facilitating learning and improving performance through appropriate technological processes and resources considering ethical aspects [3]. However, as educators, we experienced educational technology, especially during the pandemic, as an effective tool for transforming traditional teaching and learning into digital form in synchronous and asynchronous modes. In conventional arrangements, “see one, teach one and do one” were popular, while modern technologies make teaching and learning at anytime, anywhere, and at an individual pace imaginable. For educators, the main difference between traditional and modern technologies

¹Professor, Center for Educational Research in Medical Sciences (CERMS), Department of Medical Education, School of Medicine, Iran University of Medical Sciences, Tehran, Iran

²Co-Founder and CEO, Adviserian Co., Iran

³Assistant Professor, Department of Medical Education, Hawler Medical University, Iraq

*Corresponding author: Shoaleh Bigdeli, Professor, Center for Educational Research in Medical Sciences (CERMS), Department of Medical Education, School of Medicine, Iran University of Medical Sciences, Tehran, Iran, Tel: +98 21 88622607; E-mail: bigdeli.sh@iums.ac.ir; sbigdeli@alumni.sfu.ca

Received: September 26, 2022, Accepted: October 10, 2022, Published: December 22, 2022



is how knowledge is delivered, and shared experiences and expertise.

Integrating Educational Technology into medical education creates innovative teaching and learning settings, improves collaborative teaching, enhances teaching and learning, and provides an opportunity for personalized smart teaching and learning. In other words, these technologies are feasible for adult learning and provide an opportunity for repetitive experiential learning [5]; therefore, they create better teaching and learning experiences that result in higher educational outcomes.

Modern educational technologies are varied; for example: social platforms, Artificial Intelligence (AI), Machine Learning, Big data analytics, Realities (AR, VR, MR, XR), Simulation, Gamification, Smart/Intelligent Campus, Nudge Technology, Cross life Cycle, 5G Infrastructure, Career software, Blockchain, and Faculty Information Systems [6]. Moreover, institutes such as Gartner [7] and Coursework [8] annually predict the future of technology trends.

Nevertheless, it cannot be concluded that modern educational technologies per se result in better teaching and learning in communities worldwide. More, it is essential to infer it from a period and compare the assessment results with the former ones. Setting the educational technology is time and cost-consuming, so it is crucial to know the cost-per-effectiveness ratio in each method. Solving the paradox of cost and quality could steer the vision of selecting between the dominant strategy of teaching and learning with technological apparatus. Although to establish equality in education, international and governmental interventions are needed for funding and distributing the virtual modern educational technology fairly [9].

Despite the advantages of modern educational technologies, it is crucial to consider its installation costs. Additionally, these technologies have a transformational impact on

society, and they might be unsafe considering equality in imperative educational facility distribution between regions with different income level.

There are some limitations to using technology as an educational assistant. As mentioned, the economic aspect of educational technologies is a contemplating one. Technology costs can decrease the education fee; on the contrary, they can increase tuition fees. More accessibility to educational devices, on the one hand, and less expense on paper and classic educational tools, such as books, pens, and other educational supplies, might decrease education costs. On the other hand, for educational institutes, maintaining and upgrading the technological infrastructures or digital facilities. Furthermore, the cost of training teachers and staff to reach modern technical developments elevates the costs of e-Learning, and tuition fees will fly predicated on these items [10,11].

Moreover, using high-tech educational tools in education might disrupt students' concentration or make cheating a piece of cake. In the foreseeable future, the automated education process might reduce the teacher's role and the cost of employing teachers. Still, educational institutes must increase per capita salary to recruit skilled faculties. There are many other restrictions to using modern technology tools in recent education, such as the technology gap among students or between teachers and students, program bugs, internet bandwidth requirements and high probability of getting misleading online information [9,12].

To sum up, educational technology is instrumental. Even though it has become the imperative part of education after COVID-19, the limitations, and disadvantages of using them ethically and economically are considerable. It will need more intelligent educational governance to settle the hassles and reach the optimal and region-based composite of various new educational technologies.

References

1. Gosling D. Educational development units in the UK-what are they doing five years on? *Int J Acad Dev.* 2001;6:74-90.
2. Lei Q. Modern educational technology theory and university quality education. Proceedings of the 7th International Conference on Management, Education, Information and Control (MEICI 2017), Shenyang, China. 2017.
3. Januszewski A. Educational technology: the development of a concept. Libraries Unlimited, Santa Barbara, California. 2001.
4. Bigdeli S, Kaufman D. Digital games in medical education: key terms, concepts, and definitions. *Med J Islam Repub Iran.* 2017;31:p.52.
5. Bigdeli S, Kaufman D. Digital games in health professions education: advantages, disadvantages, and game engagement factors. *Med J Islam Repub Iran.* 2017;31:p.117.
6. <https://elearningindustry.com/educational-technology-trends-that-go-all-out-in-2022>
7. <https://www.gartner.com/en/articles/whats-new-in-the-2022-gartner-hype-cycle-for-emerging-technologies>
8. <https://webcourseworks.com/elearning-hype-curve-our-predictions-for-2022/>
9. Walls E, Tulloch C, Holla A. Cost measurement guidance note for donor-funded education programming. United States Agency for International Development, prepared for Building Evidence in Education (BE2), Washington DC. 2020.
10. <https://www.allisonacademy.com/students/education/technology-in-education/advantages-and-disadvantages-of-technology-in-education/>
11. <https://futureofworking.com/10-advantages-and-disadvantages-of-technology-in-education/>
12. <https://www.dejaoffice.com/blog/2020/10/28/7-disadvantages-of-technology-in-education/>