

Game-based learning in medical education

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Learning through play has formed the basis of education for the very young children. Play-based learning is the core of quality early childhood education.¹ The preschool kids are nowadays taught by engaging in various playful activities. The same concept is extrapolated when it comes to teaching in primary schools. Playful learning continues to be crucial even for older children, yet it is often neglected in favour of academic-focussed education approaches. As kids grow older, the playing and learning are segregated and by the time the students reach medical school, the “play” and “education” become very distant. The faculties are often heard saying that the students in medical school do not have time to engage in playful activities and that they should not waste time playing and rather should get serious and study. The students barely get playtime, despite their playful behaviour. The idea of game-based learning in medical education might therefore be something that many of us simply fail to agree with. Though the concept is new it should not be overlooked, considering the intake of technology-savvy students, who are very much used to learning from online sources, more so following the online classes owing to the coronavirus disease 2019 (COVID-19) pandemic.²

The medical schools have been using the same old didactic method for way too long and there have been little changes in the kind of tools we use in the teaching-learning activities. Didactic lectures are perceived by the students as the least effective method and the student-based active-learning strategies are known to work best for higher education.^{3,4} Self-learning too has been encouraged over the years and now it is much easier with tutorial videos on the internet on almost any topic. Partly for this reason, the first problem-based learning (PBL) medical curriculum was established at McMaster in 1969 in the United States of America.⁵ The students have also shown a great liking for PBL.³ Another big thing introduced in the field of medical education was simulations. Recently, simulation techniques are being increasingly used in medical education to solve numerous training problems. Simulations help students practice various aspects of patient care without actually harming or causing inconvenience to the patients.⁶

It has been a challenge for the medical educators to find novel approaches to make learning more stimulating, motivating, and entertaining.⁴ So now it is time to take the active participation of the students to the next level, in that they get actively engaged while playing games. Games introduce concepts and principles of adult learning; they encourage active self-learning and greater participation in group learning activities.⁷ Games help with memory retrieval providing the opportunity for learners to recall and reinforce the previously learned information and acquire new knowledge. Games get the students actively involved in the learning process, increasing their level of understanding and aptitude to integrate and synthesise material.⁸ Games can bring in healthy competition, collaboration and can increase motivation in the students. Games give students a chance to try out new things. Games help the attainment of educational objectives and make the learning process easier, more student-centered, fun, interesting, and more effective.⁹ The games are known to support pedagogy and andragogy principles like individualisation, feedback, active learning, motivation, social, scaffolding, transfer, and assessment.⁹

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The rapid expansion of the use of digital devices across the globe has paved a way for the assimilation of digital educational games into medical education as a new learning tool. Game-based learning and gamification can therefore be a potential solution, with evidence from various studies proving their effectiveness.⁹ Gamification implies the application of typical elements of gameplay (e.g., point scoring, competition with others, and rules of play) to other areas of activity like education in our context.¹⁰ The gamification concepts have been best applied in various websites like Duolingo, Kahoot, Nike+, Spent, fold.it, etc. There are many things that ought to be rote learned in the field of medicine and such things can be better memorised by playing games. Being able to implement such ideas in the field of medicine could do wonders for students in medicine as well as the healthcare professionals in updating new knowledge.

In the global context, there are a handful of serious games that are being tried in medicine so that students engage in real-life like situations and learn to handle the complex situations that they often see at the hospitals. It is argued that such games help students think and act better and fast in emergency situations. Also, digital technology provides a safe environment for learners to gain skills and self-confidence without harming a patient's life, which otherwise might occur in everyday practice compromising the patients' safety. Some medical colleges are rolling out such serious games in emergency medicine as a means of preparing the students for real hospital emergencies.¹¹

There are many different kinds of games being designed for medicine ranging from board games to video games and virtual reality (VR) games. Board games have proved effective at improving panic attack symptoms and in Alzheimer's disease.¹² Video games have also been employed to improve health outcomes especially in the areas of psychological therapy and physiotherapy.¹³ The VR games have been used in modulating pain for children with acute burn injuries, and also to relieve the sensation of phantom limb pain.^{14,15} Games have also been developed to provide health education to the patients, disease self-management, and distraction from pain, and for promotion of increased physical activity.¹³

Games keep students focussed and provide instantaneous feedback to students and help them identify the gaps in learning. Educational games can provide a safe place for failure. Unlike term exams where assessment is consequential, introducing similar environments for self-assessment as games provide students a unique opportunity to try over again and learn from their mistakes. Thus games help the students learn through experimentation and trial and error. Games can therefore change the students' approach towards learning itself. Games can someday in the near future be repurposed and introduced as a well-accepted tool in medical education to bring radical changes in the way students learn in medical schools. We certainly can and should harness the potential of games in engaging the students and motivating them to learn better by introducing various games in the field of medicine.

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