Educational Forum

SIMULATION IN MEDICAL EDUCATION: A STUDENT-DIRECTED LEARNING MODEL

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The overall goal of undergraduate medical education programme as envisaged in the revised Regulations on Graduate Medical Education - 2012 (GMR 2012) is to create an "Indian Medical Graduate" (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness. In order to accomplish the roles, the IMG must acquire a set of competencies during the graduation time. In order to ensure that training is in alignment with the goals and competencies, MCI has proposed learner centric teaching learning approaches including a structured longitudinal programme on attitude, communication and ethics.

In mid-19th century, pretty much everything we knew about learning methods were centered around the way kids operated. After all, traditional schooling was pretty much how and where education took place. Finally, adult educator and researcher Malcolm Knowles adopted the term "andragogy" to refer to the unique motivators adult learners used[1,2]. While children required more extrinsic motivation and relied on instructor-led methods, Knowles noticed that adults were self-directed and relied heavily on their past life experiences when they approached learning opportunities. There are indeed facets of extrinsic motivation and reflection that play a central role in today's medical education that are not classically addressed by andragogy[1] and other theories. The crust of new regulation is adoption of a student-directed model, which is being consistently shown to yield good results in improving competencies.

The increased demand for patient safety and error free practices has pushed educational institutes to rethink the medical education system[3]. One of the main bioethical principles taught to all healthcare professionals worldwide is the "primum non nocere" or, in English, "first do not harm"[4]. However, it is inevitable that trainees will occasionally cause preventable injuries to patients. From the ethical viewpoint, such injuries are only justified when all effort is made to minimize patient harm[5]. Error Management and Error Prevention Medical practice is characterized by a constant pursuit of perfection. During medical education and internship, trainees strive for an error-free practice in an environment where mistakes are not well accepted[5]. As a result, physicians have difficulties in dealing with error and admitting them as well[5].

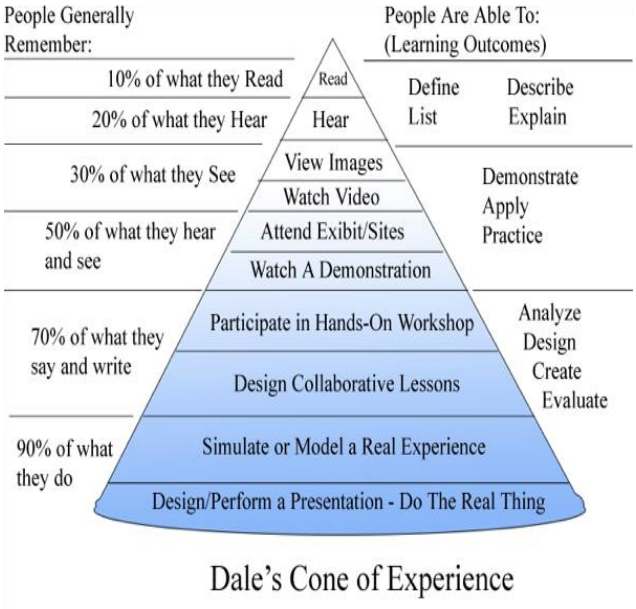
Simulation, a student-directed learning model[6,7] may add valuable and essential adjunct to the educational experience since chances to learn essential clinical skills in real clinical setting may be inadequate. The Oxford Dictionary defines Simulation as "The technique of imitating the behaviour of some situation or process (whether economic, military, mechanical, etc.) by means of a suitably analogous situation or apparatus, especially for the purpose of study or personnel training."

The use of simulation in Medicine perhaps dates back to 9th Century where a midwife used wax and wooden figures to illustrate reproductive processes. Madame du Coudray, a midwife in the court of King Louis XV, continued the use of childbirth simulators for training midwives of France. She was known in the 1700s for creating ''the Machine,'' an anatomically correct, life-size

mannequin birthing pelvis, made of wicker, flesh-colored fabric, and leather and padded with sponges, and mannequin babies, made of cloth. Once limited to basic task trainers for the rehearsal of basic skills, simulation now aims to increase task proficiency and patient safety, reduce medical errors and enhance professional communication and team management skills[8,9]. Simulation can be adapted to accommodate the need of preclinical, paraclinical and clinical subjects of the medical curriculum. Simulators have been developed for training procedures ranging from drawing blood to laparoscopic surgery and trauma care[10].

Anaesthesia was the first speciality during the recent times, in the mid 80s to have created a simulated training environment for anaesthesia administration. The Anaesthesia educators did this after studying the Aviation and Military training simulators. The introduction of affordable, portable, and versatile human patient simulators in the late 1990s & early 2000s transformed health care education and is the technology of the future for competency testing and continuing education[6,7].

Simulation gives the students a chance to practice the skills and also apply the knowledge that they have acquired.



Dale's Cone of Experience

Employing medical simulation techniques can help move medical training from the old "See One, Do One, Teach One" method into a "See One, Practice Many, Do One" model of success[12]. Simulation-based teaching has proved to reduce Edgar **Dale** theorized that **learners** retain more information by what they "do" as opposed to what is "heard", "read" or "observed" (Fig-1). Simulation helps to create a clear "need to know", since it mimics real life situations and gives students the chance to practice procedures, both within the safety of a controlled environment[11].

risks to both patients and learners[6,7]. Simulation can be used in the primary health care setting to improve confidence in performing life-saving skills[9], clinical skills[4,10], communication skills[13], and the quality of care for patients with chronic diseases[14].

Simulation is going to become a reality in near future in education for learning and assessment of both psychomotor skills and problem solving capabilities. Technology has progressed immensely not only in computing but also in the material technology allowing for the manufacture of increasingly realistic simulation equipment which in turn permits the practice of real situation in an artificial environment in a more immersive approach. With increasing use of simulation, costs of these simulation can be expected to come down. To conclude, self-directed learning mantras are the order of the day and simulation learning model may create the external motivation among the students to acquire the competencies required for the newer generation of medical graduates.

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