

# Chapter XXVI

## Virtual Learning Environments in Health

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### ABSTRACT

*This chapter aims to present various virtual learning environments for medical purposes in the world. More than ever, medical students and healthcare professionals are faced to with floods of data of which the relevant information has to be selected and applied. The internet and the new media are a fertile ground to meet these requirements. More and more physicians unravel e-learning as new tool and as attractive adjunct to the traditional face-to-face teaching in medicine. This chapter describes the most important benefits for all parties of the simulation and learning environments in health sciences.*

### INTRODUCTION

Traditional training for health care providers follows a methodology of observation and repetition allowing the trainee to learn from those cases

and situations presented within the short period of time a clinician attends school.

Simulation is a training and feedback technique in which learners practice tasks and processes under realistic settings and circumstances using

tools and models, such as virtual reality, and utilizing feedback from observers, such as professors, peers, actor-patients, and video cameras.

Medical simulation improves patient safety, an a priori fact. Simulation technologies have a proven record in improving safety through decreased errors during technically challenging procedures, such as surgery and other interventions. Technical errors are reduced by improved training with a focus on error identification.

In addition to clinical skill development, simulation or training-based medical training provides realistic training in communication, leadership and team interaction and observation providing the student with the opportunity to repeat the materials until the student has mastered the information.

Distance education has emerged due to increased technological advances and the increased demands and responsibilities of learners. Historically, distance education was known as correspondence education, but is currently being replaced by a more electronic media (Schlais and Davis, 2001). Distance education programs primarily take place when facilitator and learner is separated by physical distance and therefore use different types of technology to deliver the subject content (Picciano, 2001). This makes learning interesting for both the facilitator and learner as the learners are given more responsibility as self-leaders to take initiative for the pace of their learning. As well, it allows the learners to think critically, preventing the facilitator to force them to learn. There is a focus on the needs of the learners as well as the requirements of the course. The needs of the learners involve their values and beliefs, as well as their available time. Assessing these needs will influence the development of curriculum and enrollment choices made by the learners.

As adult learners, health care staff will likely be involved in formalized forms of education throughout their lives that tends to be self-di-

rected, independent and problem-based (Tight, 2002). A common model used for adult learning is an andragogical model which is based on the assumptions that adults need to know why they are learning something, that they have a self-concept of being responsible for their own lives, their experiences are a valuable resource, adults are ready to learn those things they need to know, adult learners are more motivated to learn as they bring their experiences to a relevant learning environment, and they are motivated by internal factors such as job satisfaction and self-efficacy (Knowles, 1984).

In the health care context, there is no question that the diffusion of Virtual Learning Environments (VLEs) has profoundly changed education and practice. Medical training on “real” patients is no longer acceptable (Gallagher & Cates, 2004) and there is an increasing demand for simulation-based medical education. Continuing advances in Virtual Reality (VR) technology and computer-based Simulations Devices, available at increasingly lowcost have opened new frontiers in teaching since the end of the 20th century.

Disparities in medical information and education are a major determinant of health practice inequities in developing communities. The recent diffusion of the internet is facilitating the creation and circulation of “new” VLEs in the health-care field, that overcome traditional boundaries of “space”, “time”, and “place”. Yet, online learning environments bring along huge opportunities for learning and knowledge exchange among multiple users in remote areas of the world, but also new barriers.

The validity of the new internet mediated learning environments has still to be tested, especially for what concerns their ability to: (1) overcome “traditional boundaries” characterizing the learning experience and consequently change medical education and profession and (2) help educate patients and “health seekers”.

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