

## Chapter 5

# Technological Advances and Teaching Innovation Applied to Health Science Education

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### **ABSTRACT**

*The objective of this special issue under the title “Technological advances and teaching innovation applied to health science education” is to improve health science education, to encourage the information exchange and dissemination regarding different training aspects in medical science. Technological procedures in teaching entail an important adequacy and teaching content analysis to transmit and be acquired by students, as well as their careful presentation so that the message and knowledge reach the student more effectively. Due to this, the design of technological applications is very important so that it becomes attractive to the user, and the time spent in the learning process helps optimize it and facilitate its knowledge. The authors will introduce, to teachers and researchers, current technological application tools and their possibilities in education; providing complementary training elements that help improve the teaching and learning process in health sciences. How these application of computer technologies in education broadens the action and intercommunication possibilities between teachers and students, allowing access to new means of exploration and representation, together with new ways to access knowledge through diverse types of tools: powerful body structure visualization, multimedia imagery, computer simulations, stereoscopic visualization, virtual and augmented reality techniques, computer platforms for resource and document storage and mobile devices will be further discussed.*

### **INTRODUCTION**

With this special issue we intend to provide a general vision regarding teaching innovation technologies used in Health Science education,

through the experience of different research groups that employ these technologies in teaching.

The eruption of technologies in everyday life is one of the most global realities today. Computer technology applied to health science teaching has

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gone through many changes throughout the years, parallel to our society's technological evolution. We find ourselves in a world where information technology has become essential in many of our activities. One of the most evolved and benefited fields from the use of modern information technologies is health science, medicine in particular, continuing its exponential growth. The 21st century puts traditional learning systems in crisis due to the social and technological changes in universities. Technology as a tool becomes a substantial support to the teaching system offering the possibility to get an education through a knowledge society in a world where we can all participate through the internet. It is evident that technological development is transforming our teaching systems in health sciences, providing useful tools in university and incorporating resources in medical education that generate medical simulation environments or complementary and additional education in classroom teaching (Carmichael & Pawlin, 2000).

Today's medical education systems, within the European higher education framework system, use clinical simulations under technological procedures providing an interactive representation close to reality, allowing the observation of a phenomenon or clinical trial, as if in a real environment (Chariker, Naaz, & Pani, 2011).

The use of computer technology environments in medical training, always as an additional teaching resource, facilitates and optimizes the learning and clinical abilities of students and residents in different medical specialties (Darke, McBride, Lachman, & Pawlina, 2009).

Beyond a doubt, the use of technological methods in training and knowledge visualization, and the exploration of its teaching possibilities, is our responsibility as teachers, being a constant challenge we have to face, both for professionals linked to teaching in health sciences, as well as for the ones in charge of developing technological applications to optimize the learning process (Vázquez, Riesco, Juanes, Blanco, Rubio & Carretero, 2007).

The application of knowledge derived from technological advances in science has changed the way in which information is transmitted. Within health science in particular, it has represented a series of constant technological developments that have resulted in the transformation of medical training patterns. But applying technology in training is not only based on the instrumental domain of some computer equipment, but in the capacity to design teaching resources in health sciences, with the objective of reaching goals that we would have set for ourselves where applied. Therefore, as shown in the Council for Educational Technology, "Educational Technology is the application of knowing systems and techniques to improve human learning," we will probably witness an even greater development of innovative technology and its use in medical education within our country in the coming years.

It is evident that technological developments are transforming our teaching in health sciences, providing very useful instruments in university teaching and incorporating, in medical education, resources that generate innovative technological systems for complementary training to traditional education. It is necessary to look for new educational models with a technological basis that endow health science professionals with the necessary tools to develop their work. The objective of this special issue under the title "Technological advances and teaching innovation applied to health science education" is to improve health science education, to encourage the information exchange and dissemination regarding different training aspects in medical science. The application of computer technologies in education must help expand action, decision and intercommunication margins amongst teachers and students, allowing access to new means of exploration, representation and information processing.

The use of Information and Communication Technologies has become one of the basic pillars in university education within health science. This statement is confirmed through the data presented

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