

## Chapter 1.33

# Simulation, Training, and Education Between Theory and Practice

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### **ABSTRACT**

This chapter reports the results of a theoretical and practical research work on simulation, both as a teaching strategy that creates a dynamic and experiential situation which enables participants to take on roles in relation to the variables to be tested or modified, and the learning content that the students need to acquire. With reference to the training and educational needs of contemporary society, the theoretical premises underlying simulation are considered and examined in relation to recent findings regarding the process of learning and teaching and the acquisition of knowledge, as well as some recent research results. On the basis of the findings, it appears necessary to reflect on the synergy triggered through simulation. It particularly emphasized the role of simulation in the integration of different skills and types of knowledge, leading to the overcoming of the

compartmentalization of knowledge and its fragmentation into discrete subjects or disciplines. Questions remain open regarding the role of ICT in the whole simulation process.

### **INTRODUCTION**

The change in the concept of education that emerges from the contemporary pedagogical literature is closely related to a number of social, economic, and cultural factors, as well as the enormous growth of knowledge that has accompanied advances in new technologies. In other words, the way we acquire knowledge has been radically altered by the rapid development of technology and, in particular, by information technology, which facilitates the circulation of ideas and knowledge to every corner of the globe, and the management of information and knowledge (de

Kerckhove, 1991). The effect of all this on education can be seen in the new kind of relationship that can be established between the learner and the information to be learned. It is mediated through technologies which are becoming more and more sophisticated and interactive, giving the learner increasing opportunities for immersion; that is to say, opening the way for real involvement and interaction, both physical and intellectual, in virtual worlds (Levy, 1997).

While in the past, education could be viewed, by and large, as the adaptation of the individual to external situations, today we can see the emergence of a concept of education focusing on the subject and his or her awareness in every single aspect: physical, emotional, cognitive, and ethical. The concept is in harmony with the idea that learning abilities are not closed and pre-codified, but depend on the decision of the subject to consciously develop them, with his or her need of finding the right key to understand and interpret a text or situation, and even alter it. This on going relationship, which will continue to change and evolve throughout the learner's lifetime, enables the learner to develop his or her logical capabilities and critical and interpretive faculties but, above all, the ability to make decisions.

In such a scenario, there is an urgent need to pay close and constant attention to the contexts in which education takes place. These strategies, as modalities for the realization of educational processes, become points of reference to the extent that they make it possible for the effective development of all aspects of the personality of each individual allowing him or her to grow in a unique manner. This implies a revision of the following traditional ideas: structure of education, learner and teacher relationships, and even the concept of learning itself, as well as teaching practices. In conclusion, we must challenge and, if necessary, reject traditional ideas about learning, in order to ensure the growth of new approaches to learning that respond, in a more

adequate way, to the educational needs of the contemporary world.

## **MAIN THEMES**

### **Learning Theory: An Ecological Perspective**

In order to guide and interpret learning processes, it would be opportune to consider firstly a general theory of learning which takes account of the context, culture, and content without neglecting the individual identity and social and ethical aspects. Neither behaviorist nor cognitive theories are recognized as a reliable guide on which to base a program with a social validity and educationally valuable (Pontecorvo, 1999). The first theory seems to be more suited to the concept of learning which privileges passive learning, in the sense that sees learning as the consolidation of a response which, being part of the organism under observation, is reinforced and thereby "learned" through the appropriate mechanisms used to reinforce the desired outcome. In this way, the role of the environment is underlined and aspects such as the subjective experience of the individual learner are neglected. Cognitive theory, on the other hand, has laid a primary emphasis on the acquisition, manipulation, and the importance of abstract symbols. Both theories seem, therefore, inadequate to describe the dynamics of what actually occurs in the interplay between a subject and the environment. Despite paying lip service to the interaction between the two poles (the individual and the environment), both theories emphasize one of the two poles while excluding the other (Bornfenbrenner, 1986); on some occasions veering toward the external environment, on others, exclusively focusing on the internal mental processes of the individual without any social context consideration. In other words, the learner is totally decontextualized.

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