Chapter 17
Challenges and Opportunities for Innovation in Teaching and Learning in an Interdisciplinary Environment

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ABSTRACT

Keeping up-to-date with ever-changing technologies and striving to find innovative ways to integrate them into a classroom setting are constant challenges to all educators. Clearly, technology is associated with changes in practice, but the nature of this association is complex and contested. Innovation in education has always been related to technological developments, but it can also be achieved by introducing changes to teaching practices, curricula, and learning activities, all of which can be regarded as activities included in the knowledge management and transfer paradigm.

INTRODUCTION

Innovation is a very powerful concept with a large spectrum of meanings and fields of applications (Bratianu & Vasilache, 2009). However, its Latin root nova is very clear, designating something new, and innovare means to make something new (Tidd, Bessant, & Pavitt, 2001). The concept of innovation refers to a new idea, which can be obtained by using old ideas, by presenting an idea that challenges the established order, or by doing or seeing things in a new way. The stress should always be put on the idea being innovative for the ones involved in the process, not in an abstract, general way (Van de Ven, 1986; OECD, 2005). According to the OECD (2005, p. 46) innovation is an umbrella term that unites the “implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.” For the study of innovation in education, we need to

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focus on two main aspects of this concept: on the process innovation and on innovation as a process. The first term is defined as “a new or significantly improved production or delivery method” (OECD, 2005, p. 55). This includes significant changes in techniques, equipment, and/or software. In education, this can for example be a new or significantly improved pedagogy” (OECD, 2005). The process of innovation is defined by Van de Ven (1986) as the development and implementation of new ideas by people who over time engage in transactions with others within an institutional context. Innovation in education has always been related to innovations in technologies, but, as we will argue in the following sections, innovation does not have to depend on new devices or software solutions; it can also be achieved by introducing changes to teaching practices, curricula and learning activities, all of which can be regarded as activities included in the knowledge management and transfer paradigm (Laine, et al., 2008). Educational and research institutions, especially universities, create an important amount of knowledge which becomes valuable only if it is used to increase the common welfare of citizens by being transferred to the stakeholders. This is done through knowledge transfer, a process by which one individual or organization transmits its experience to another and systematically organized information and skills are exchanged between entities (Argote & Ingram, 2000; Duan, et al., 2010; Hubig & Jonen, 2006).

The take we have on innovation is based on the opinions of those authors who regard technology as a catalyst, not an initiator, of innovation in education, authors who argue that other major societal forces are the true reasons behind the inclination toward change and that technology is just another solution (McCreadie, et al., 2009; Taylor, 1999; cited in Price, et al., 2005). However, before arguing in favor of more proactive means of innovating, we need to address the issue of the relationship between change in education and technology within the interdisciplinary environment. Interdisciplinary studies have grown in popularity over the last decades and they are regarded by Boix-Mansilla (2010) as a solution to changes in global labor markets that require individuals who are able to frame and address new problems, employ expert thinking in a flexible manner, and communicate effectively with people who hold different perspectives on the problems at hand. Moreover, many of the problems faced by our society today, such as climate change and global migration, lie at the intersection of many different disciplines, and their analysis and solution demand a general view of the world which can be acquired only by transgressing the boundaries of the traditional notion of discipline and by recognizing the subtleties of the nature of academic disciplines which cannot be viewed as discrete and autonomous as before anymore.

Thus, we can conclude that interdisciplinarity can be regarded as a solution to the complex problems encountered in today’s world and that it lacks some of the challenges posed by using only technology as a means to solve these issues. With an interdisciplinary approach, the focus is never on “what,” but always on “how,” on “why,” and the end result is always in sight from the beginning of the process. Irrespective of the definition we give to interdisciplinarity, the value of the interdisciplinary approach with regard to innovation lies in the emphasis put on using the inherent strengths of the agents involved in the educational process, and not on external devices, while not contesting their usefulness. Thus, in its study we can get a complete view of what is happening in the teaching and learning practices today. Teaching and learning are tightly connected with knowledge. Knowledge is gained either by experience, learning, and perception, or through association and reasoning. The term knowledge is also used to mean the confident understanding of a subject, potentially with the ability to use it for a specific purpose. Knowledge Management programs are typically tied to organizational objectives and are intended to lead to the achievement