Chapter 18

Developing Creative Problem Solvers and Professional Identity through ICT in Higher Education

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ABSTRACT

This chapter regards creative problem solving as a professional identity skill that can be fostered by creative learning environments supported by Information and Communication Technology (ICT). A systematic literature review will be provided in order to build relationships between creative problem solving, creative learning environments, ICT, and professional identity in the context of higher education. The literature review will focus on the following research questions: How do ICTs support a creative learning environment in fostering creative problem solving skills? How do ICTs relate to or affect the characteristics of professional identity in the context of higher education? How do ICTs relate to or affect the formation of professional identity in the context of higher education? These three questions will help allow to organize the structure of this chapter that drive the authors to propose a change of perspective in the study of professional identity and ICT, from the theoretical standpoint of actor-network theory. Accordingly, the conclusion of this chapter contributes to implications of improvement for the better development of creative education by ICT and professional identity in the future.

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INTRODUCTION

In the current era of information and knowledge societies, information and communication technology (ICT) plays a major role in the shaping of professions, disciplines and higher education. For instance, the pedagogical use of ICT is a major theme of educational research and practice, and the professional identity of nurses and student nurses is heavily affected by the introduction of technology in hospitals and clinics. Understanding the relationships among higher education, professions and ICT is paramount in higher education institutions; these relationships are transforming at an increasing rate to keep up with the decline of the technology obsolescence period. Educational technologists advocate that technology-mediated learning practices can enhance the opportunities and outcomes of learning and contribute to achieving different attributes of a professional identity.

For students of higher education, the acquisition of applicable knowledge and ICT-integrated creative problem-solving skills specific to their future professions and disciplines is central to the development of their professional identities. The development of professional identity is a challenge in higher education due to the various pressures educational institutions face to produce graduates that have not only mastered theoretical concepts and abstractions but also know how to apply their knowledge in real life professional practices. To address this challenge, pedagogical methodologies and methods are adopted, and ICTs are integrated into the teaching-learning process. For instance, practice-based pedagogies contribute to professional identity development and prepare graduates for their future work lives (Trede, Macklin, & Bridges, 2012). The study of professional identity has been among the prominent and recurring themes of educational research, especially since the late 20th century (Bauman, 2004; Lawler, 2014). This line of research deals with two broad themes or questions: (1) what are the characteristics of a professional identity? And 2) how is a professional identity formed (Zinn & Goldsby, 2014)?

A review of the current literature is needed to understand the theoretical frameworks of creative problem solving, professional identity and ICT in higher education, as well as to explore the themes and understandings within these areas. The objective of this literature review is to investigate the relationships among creative problem solving, ICT and the professional identities of students in higher education. This objective will be addressed by applying the following three questions to the existing literature dealing with ICT and professional identity:

- How do ICTs support a creative learning environment to foster creative problem solving skills?
- How do ICTs relate to or affect the characteristics of professional identity in the context of higher education?
- How do ICTs relate to or affect the formation of students’ professional identity in the context of higher education?

These research questions will be addressed by a structured, systematic literature review in which meta-analysis, qualitative analysis and synthesis will be used. The relationships between creative problem solving skills, ICTs and professional identity will be explored through the four sections of the present chapter. First, points of departure will be identified by presenting definitions, characteristics and approaches to the development of professional identity and by emphasising creative problem solving skills and the varying intensity of ICT integration in different professions as an important part of student professional identity in higher education. Second, the systematic literature review’s methodology will be explained. Third, an analysis will be provided, including an overview of the selected literature, a
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