Chapter 5

A Framework for Developing Pre-Service Teachers' Web 2.0 Learning Design Capabilities

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ABSTRACT

This chapter presents and evaluates a Web 2.0 Learning Design Framework that can be used to develop pre-service teachers' learning design capabilities. The framework integrates the TPACK model of educational practice, Anderson and Krathwohl's Taxonomy of learning, teaching and assessing, and different types of constructive and negotiated pedagogies, with a range of contemporary Web 2.0 based learning technologies. Pre-service teachers in a second year learning technology subject felt that the framework helped them to better understand the relationship between technology, pedagogy, and content, as well as create more effective learning designs for their students. Examples of student learning designs are used to illustrate the way that pre-service teachers applied the framework. Students' reflective responses to the framework are also used to explain how the Web 2.0 Learning Design Framework can be more effectively used to develop pre-service teachers' Web 2.0 learning design capabilities.

INTRODUCTION

21st Century Skills as an Imperative for Students and Teachers

A growing number of business leaders, politicians, and educators agree that students will need '21st Century skills' to be successful in our world of tomorrow (AACTE & P21, 2010; ISTE, P21, &

SEDTA, 2008; Rotherham & Willingham, 2009). Twenty-First Century Skills include problem solving, communication, collaboration, information and media literacy, critical thinking, and creativity (Lambert & Gong, 2010).

A perceived discord between the future skills required of students and the current practices of many teachers has led to governmental calls for a revolutionary change of University-based teacher preparations programs (Duncan, 2010). Teacher education programs have been criticized for no

longer providing prospective teachers with the skills for teaching students to survive in today's workplace (UNESCO, 2008). U.S. Department of Commerce statistics show that education is the least technology-intensive field among fifty-five U.S. industry sectors (ISTE, et al., 2008).

A vision of 21st century knowledge and skills for all students requires that educators are supported to master competencies that ensure positive learning outcomes for students, including the ability to appropriately integrate technologies to support learning and teaching (AACTE & P21, 2010). In order for students to develop 21st Century skills it is critical that our teachers possess these skills themselves (Rotherham & Willingham, 2009). Teacher education programs should provide technology-rich experiences throughout all aspects of the curriculum (UNESCO, 2008). While it is assumed by some that pre-service teachers who have recently graduated from school will automatically possess technology capabilities, research has shown that their knowledge of contemporary technologies is often limited to surface understandings and in many cases does not extend to how technology can and should be used for learning and teaching purposes (Lei, 2009).

Web 2.0 as a Potential Driver of Educational Reform

Part of modernizing the pre-service teacher education curriculum involves preparing teachers to effectively utilize Web 2.0 tools in the classroom (Albion, 2008). In the past the education profession has struggled to integrate technology into learning and teaching, generally having a narrow conception of how technology can be used (ISTE, et al., 2008). Web 2.0 technologies are a new range of open online technologies that support collaboration and sharing of content through sophisticated yet easy to use interfaces (Alexander, 2006). Web 2.0 platforms enable user-initiated publishing of information, social networking to take place, and online communities to be formed

around specific content (Rosen & Nelson, 2008). In education, Web 2.0 technologies provide the potential for seamless transfer of information, collaborative as well as individualized learning, and active participation by all members of a class (Richardson, 2006).

Requiring teachers to consider pedagogy in the context of new and emerging technologies provides a significant driver of change in educational systems (Attwell, 2007). Rosen & Nelson (2008) present a vision of 'Education 2.0' where digital tools "transform teaching and learning by having learners, as well as teachers, participate in knowledge creation and interactively build distributed communities, or networks, of learning" (p. 221). A central challenge for teacher educators is how to integrate Web 2.0 into the pre-service teacher curriculum in ways that enable teachers of the future to successfully leverage such technologies in their classes (Voithofer, 2007). Effectively utilization of Web 2.0 technologies requires an seismic epistemological shift – a transformation in our understanding of how people come to know (Eijkman, 2010). Without adequate frameworks to support their thinking and practice, beginning teachers often struggle to make more than superficial use of online technologies (Moore & Chae, 2007).

There have been some examples of education courses that require students to design using a range of Web 2.0 technologies (Lambert & Gong, 2010; Oliver, 2007). As well, He and Hartley (2010) have provided a range of online tools that can support Web 2.0 use by teachers. When attempting to integrate technology into the classroom, pre-service teachers often focus too heavily on the mechanics of learning new technologies at the expense of their strategic pedagogical thinking (Marra, 2004). Yet none of these approaches to embedding Web 2.0 in education courses provide an overarching framework to help students conceptualize Web 2.0 technologies and cope with the massive and ever-evolving nature of the field.

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