

Chapter 62

Modeling Digital Work and Learning: Preservice Teachers' Digital Proficiencies and Teacher Education

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ABSTRACT

This chapter compares preservice teachers' knowledge, skills, and their pedagogical use of digital technologies in the areas of Web 2.0, multimedia production, and online collaboration. Preservice teachers in a large public university participated in the survey; the results show mixed findings and significant correlations between their pedagogical uses in the three research areas. In-depth interviews were conducted to examine these subjects' knowledge, digital production, and online collaboration both in and out of the classroom in order to identify the digital tools and resources they applied during their student teaching, as well as to understand how they perceived their teacher preparation coursework's impact on their digital competence and proficiency. Recommendations for educating 21st-century teachers and modeling digital-age teaching practices are provided in this chapter.

INTRODUCTION

Teachers today are both challenged and required to use digital technologies in their teaching to meet the needs of 21st-century learners. The *International Society for Technology in Education* describes teaching in the digital age as being able to work, teach, and learn in a highly connected global and digital society. The National Educational Technology Standards for Teachers have asked today's teachers at all levels to "model and apply the National Educational Standards for Students as they design, implement, and assess learning experiences" in their teaching, as well as in their professional development. Teachers are expected to inspire student learning and creativity, model digital work and learning, and "exhibit knowledge, skills, and work processes representative of an innovating professional in a global and digital society" (ISTE, 2008). For preservice teachers and teacher preparation programs, such a

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vision presents both a challenge and an opportunity: it is challenging because to a great extent teacher educators themselves generally are not prepared to teach digitally (Marx, 2005; Selwyn, 2007), while their net generation students are perceived as already proficient new-technology users; it is an opportunity because new technologies featuring Web 2.0 tools, multimedia production, and online collaboration are becoming more and more accessible, affordable, and easy to use.

Net generation students refer to college students who are fascinated by new technologies, gravitate toward group activities, are racially and ethnically diverse, digitally literate, connected via networked media, and are visual and kinesthetic learners (Oblinger & Oblinger, 2005). They generally thrive in an environment where Web communication solutions are integrated into the classroom (Driscoll, 2007). However, teacher education and school district professional development programs have not adequately prepared their teachers nor taken the lead in integrating digital technologies in training their teaching professionals (Johnson, et al., 2010b). Also, using digital technologies should not be about the tool *per se*; tools should be designed, utilized, and integrated for specific pedagogical purposes, educational inquiry, and “deeper learning” (Pallegrino & Hilton, 2012). In a global economy that demands collaboration, connection, creativity, and innovation, it is equally important that we understand in what ways students’ collaborative projects and types of team communication are structured and conducted, especially with the affordability of digital technologies. Thus, the purpose of this study is to understand and examine how and how well preservice teachers work individually and/or collaboratively when using digital technologies, as well as to identify the challenges in integrating the informal use of digital technologies into formal education, including both teacher preparation coursework and student teaching.

BACKGROUND

Many preservice teachers are active social media users; for example, Facebook, a social media and networking site, has more than an 85% market share of four-year US colleges and universities (Heiberger & Harper, 2008). Students can post, comment, or upload images or videos, create digital products online, or share with others electronically. However, knowing how to use digital technologies for entertainment or networking does not necessarily lead to academic use. Researchers have found that there is a substantial gap between preservice teachers’ informal use of Web 2.0 and digital technologies in their daily lives and their formal use in their educational environments (Bull et al., 2008; Kumar & Vigil, 2011). Preservice and beginning teachers cannot independently make the necessary connections between technology and pedagogy, or technology and their subject matter (Kumar & Vigil, 2011; Mishra & Koehler, 2006; Moore & Chae, 2007). Preservice teachers in general are users, but not critical digital curricular and pedagogical producers (Kennedy et al., 2008; White, 2007). Meanwhile, there is a growing concern to make digital literacy more about thinking, culture, innovative curricula, and participation, and less about tools (Buckingham, 2007; Jenkins et al., 2006; Johnson et al., 2010a; Johnson, Adams, & Haywood, 2011; Livingstone, 2010). In other words, properly using digital and new technologies for academic use means putting them to uses beyond simply what the tools can do; it is about what the tools can do for a curricular purpose and pedagogical engagement, as well as about the ways students’ digital and information literacy can be expanded and advanced. To help preservice teachers move to tech-savvy from tech-comfy (Pegrum, 2011), teacher educators must give guidance regarding and formal assessment of the academic uses of technology. Such guidance and assessments are crucial for preservice teachers if they are to develop their critical digital competencies.

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