Chapter 103
Pre–Service Teachers and Technology Integration:
International Cases and Generational Attitudes Toward Technology in Education

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ABSTRACT

The current generation of young teachers entering the profession is often presumed to have an easy comfort with and seemingly innate understanding of technology. Prensky (2001) has gone so far as to name them "digital natives" and has claimed that members of the millennial generation "think and process information fundamentally differently from their predecessors" (p. 1). However, recent studies in several English-speaking western nations call the millennial generation's innately skillful use of technology into question, and some studies of millennial teachers indicate that they are, in fact, no better at integrating technology into their teaching than their colleagues from other generations. Rogers' (2003) diffusion of innovations theory provides an alternative to the digital native/digital immigrant approach for explaining teachers' technology integration habits. Based on this approach, suggestions for teacher educators are recommended for training millennial teachers to integrate technology and pedagogy.

INTRODUCTION

In schools today, there are as many as four distinct generations at work, which each have their own unique characteristics to describe them (Oh & Reeves, 2014; Pegler, Kollewyn, & Crichton, 2010). The youngest generation of teachers—those just entering the profession—are often assumed to be technologically savvy, interested in collaboration, and possessing learning style preferences different from earlier generations (Oh & Reeves, 2014; Southall, 2013). Prensky (2001) named this generation "digital natives" because of their preferences and proclivities for using technology. However, other voices have noted concern with this assumption that today's novice teachers are somehow "native" in their use of

technology (Bennett & Maton, 2010; Kennedy et al, 2009; Margaryan, Littlejohn, & Vojt, 2011). Bauerlein (2009) went so far as to name this generation "the Dumbest Generation," which raises concern about their ability to teach at all!

At the forefront of this collision of perspectives is the question of the abilities of this young generation of teachers to integrate technology into their teaching practices. If they are truly "digital natives," they should be able to integrate technology with ease and facility. Does the literature bear this out? If so, to what degree? And if not, what are the implications for teacher preparation programs charged with training this generation of teachers?

BACKGROUND

What is Technology Integration?

Over the past decades, technology and education have become intrinsically entwined. Pierson (2000) suggested that integrating technology in one's teaching practice is "becoming an inseparable part of good teaching" (p. 1598). Teo (2011) indicated that technology integration has become basic job requirement for teachers in contemporary society. However, simply having technology present in the classroom is not enough. Spector (2012) noted, "technology integration is perhaps the most challenging and complex aspect of designing educational environments and systems of instruction" (p. 151).

Although there are now a wide variety of technological tools available for teachers to integrate into their teaching practices (Brown & Green, 2013; Gray, Thomas, & Lewis, 2010), it is important to determine exactly what is meant by "technology integration." Certainly, different teachers will place different levels of emphasis on the tools, and may even have their own definitions for "technology integration" (James, 2009). Pierson (2000) proposes that the term "integration" may often be used too lightly, suggesting that some schools and districts seem to consider having a computer in every classroom "integration," regardless of how (or even *if*) they are being used. However, true integration must involve more than simply having technology tools present. Roblyer (2003) defines "integrating educational technology" as "determining which *electronic tools* and which methods for implementing them are appropriate for given classroom situations and problems" (p. 8). Similarly, Mishra and Koehler (2006) describe technology integration as a combination of technology and pedagogy within a particular content area. In other words, technology in the classroom should not be an institution unto itself; it should be a natural and low-profile part of the teaching and learning environment. It is along these lines that Spector (2012) describes technology integration as the use of technology being regarded "an unobtrusive facilitator of learning, instruction, or performance" (p. 150). Thus, true integration of technology and teaching must be viewed as the skillful understanding of how and when technology can support teaching and learning, and how to select the right technological tools to incorporate given a teacher's instructional goals.

The question might then be raised: are all teachers equally able to integrate technology and pedagogy in this way? Or is it more likely that some teachers are better able to integrate technology into their teaching because of their personal proclivities for using technology? A further question may stem from these: are younger teachers better able to integrate technology, because of their preference for using technology in other areas of life?

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