

# Chapter 71

## Stepping over the Edge: The Implications of New Technologies for Education

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### ABSTRACT

*This chapter considers the impact of Web 2.0 technologies on education and, in particular, how these new technologies are changing learning and teaching practices. It considers their fundamental characteristics and looks at the implications for learners, teachers, and institutions. It argues that the impact on practice can be both positive and negative, and that as a consequence, educational institutions need to develop new policies and strategies. The chapter concludes with two approaches to making sense of and harnessing these new technologies. The first is an example of applying Web 2.0 approaches to facilitating greater dialogue and sharing of learning and teaching ideas, through a social networking site for design. The second argues for greater use of metaphors and other forms of meaning making as a mechanism for understanding Web 2.0 technologies in an educational context.*

### INTRODUCTION

There is now a growing body of empirical evidence on the impact of Web 2.0 technologies on education—see, for example, the European Union (EU) study on “Learning 2.0” (Redecker, 2009; Redecker, Ala-Mutka, Bacigalupo, Ferrari, & Punie, 2009), the Becta research project examining use of Web 2.0 in schools in the UK (Crook & Harrison, 2008), the U.S. National Science Foun-

dation’s task force on cyberlearning (NSF, 2008), the most recent *Horizon* reports on future technological trends (New Media Consortium, 2008, 2009, 2010), and the Organisation for Economic Co-operation and Development’s investigation into “new millennium learners” (Pedró, 2006). The central message across these reports and reviews is encapsulated in the following quote from a white paper on new media literacies by Jenkins, Purushotma, Clinton, Weigel, and Robison (2006):

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*According to a recent study from the Pew Internet & American Life project (Lenhardt & Madden, 2005), more than one-half of all teens have created media content, and roughly one third of teens who use the Internet have shared content they produced. In many cases, these teens are actively involved in what we are calling participatory cultures ... A growing body of scholarship suggests potential benefits of these forms of participatory culture, including opportunities for peer-to-peer learning, a changed attitude toward intellectual property, the diversification of cultural expression, the development of skills valued in the modern workplace, and a more empowered conception of citizenship. (emphasis in original)*

The new skills for this, according to Jenkins et al., include play, performance, simulation, appropriation, multitasking, distributed cognition, collective intelligence, judgment, transmedia navigation, networking, and negotiation. The list seems to encapsulate a lot of the potential of what Web 2.0 technologies can offer in an educational context. However, fostering these new skills suggests a need for radical transformation of the educational curriculum.

This chapter reflects on how Web 2.0 technologies are being used in education. The central focus is a critique of the impact of new technologies on education, which raises a number of key questions: What new digital literacy skills are needed? What does it mean to be a teacher or learner in this new environment? What are the implications for organizational structures and processes? What new learning spaces need to be developed to harness the potential of new technologies? The title “Stepping over the edge” is used to indicate that we are poised on the threshold of major change in education. A taxonomy of tools is used as a basis for critiquing the characteristics of Web 2.0 technologies and the associated positive and negative impacts on practice. The chapter then looks at the implications for learners (how they learn and how they are supported in their learning), teachers (how

they design and assess learning), and educational institutions (in terms of the learning spaces—real and virtual—they provide for learners). Two examples of approaches to harnessing Web 2.0 technologies are then presented: (i) a description of a social networking site for discussing and sharing learning and teaching ideas; and (ii) a discussion of the types of meaning making and metaphors that might be used to better understand and represent the digital environment. The chapter concludes by considering the impact of Web 2.0 technologies on education and the potential implications for the future.

## **THE EVOLUTION OF TECHNOLOGIES**

With a historic lens, it is evident that there are key step changes in terms of technological development that have acted as catalytic triggers in education. Cook, White, Sharples, Davis, and Sclater (2007) use Bush’s (1945) seminal article “As we may think” as a starting point. In the article, Bush described the first system with hypertext capability that was in essence the forerunner of the Internet developed decades later. Following the timeline forward, there are other obvious triggers: the rise of the personal computer (PC) (and individual computer ownership); the Internet (providing access to increasing quantities of digital information and new forms of electronic communication); the uptake of institutional learning management systems (LMSs)/virtual learning environments (VLEs); mobile technologies; and, in recent years, the introduction of social networking and Web 2.0 tools (Downes, 2005; Alexander, 2006; Anderson, 2007).

Pea considers technological developments and their impact on practice in five stages (Pea, 2008; NSF, 2008, p. 11), focusing in particular on how progressive waves of technology have changed the “ether” of mediation. The first phase is “cultural mediation” (i.e., standard human communication

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