

FROM WEB 2.0 TO TEACHER 2.0

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Imagine a world in which ...

- Passion is the driving force of creation;
- The really important creations are the work of inspired amateurs; and
- Inspired amateurs acquire the specialized knowledge they need primarily through web-based independent learning, mentoring, and collaboration.

To some people, this sounds empowering and exciting. Gee (2005) and Prensky (2001a) argue that students have changed fundamentally in response to the technologies in their lives; that is, today's students think and process information fundamentally differently from their predecessors" (Prensky, 2001b, p. 1). While these "digital natives" may challenge traditional educational values, beliefs, and programs, they are also likely to embrace and support exciting technology-rich educational innovations.

On the other hand, we are entering an age in which "knowledge, power, and productive capability will be more dispersed than at any time in our history – a world where value creation will be fast, fluid, and persistently disruptive, a world where only the connected will survive". In business, in education, and in our personal lives, those who fail to grasp this truth will find themselves "ever more isolated – cut off from the networks that are sharing, adapting, and updating knowledge to create value" (Dorman, 2007). This paper takes the position that educators must "grasp the nettle" of this change and use its momentum to shape the evolution of web-based and web-assisted teaching and learning.

Web 1.0 and Education 1.0

In 1993, while visiting the *National Center for Supercomputing Applications* (NCSA) at the University of Illinois, Urbana-Champaign, this author watched in wonder as graduate students and faculty completed development of *NCSA Mosaic*, the first widely-used web browser. At that time, the World Wide Web was being invented to facilitate the exchange of scientific data and documents across the Internet. And when NASA and NOAA began publishing full color images of the Earth, the planets and the universe, the world immediately understood that something new and powerful was happening. At first, *NCSA Mosaic* did little more than present textual and graphical information. User interaction was limited to the use of scroll bars, links to other web pages, and a limited set of font and layout options. There were no search engines, no java applets, and no chat rooms. In spite of these limitations, Web 1.0 opened our eyes to other possibilities: A non-linear, non-hierarchical, interdisciplinary presentation of information empowering students to decide where, when, and how they acquire information. *NCSA Mosaic* and Web 1.0 may have been created by individuals who were a product of 20th Century

formal education; but those creations may also be viewed as an expression of their search for something both different and better.

Some aspects of Web 1.0 parallel aspects of traditional education (i.e., Education 1.0). Other aspects differ dramatically. For instance, 20th century mathematics education was textbook driven and teacher centered, involving little or no use of other documents or learning objects. By contrast, web publication has always emphasized documents and learning objects rather than textbooks. Perhaps the most obvious difference between traditional education and web-based information and learning is that the web is neither hierarchical nor linear (See Table 1).

	Education 1.0	Web 1.0
Presentation format		
Textbook	Y	N
Document	N	Y
Learning objects	N	Y
Organizational format		
Linear	Y	N
Hierarchical	Y	N
Approach to content		
Disciplinary	Y	Y
Interdisciplinary	N	Y
Abstract	Y	Y
Contextual	N	Y
Motivates & facilitates		
Individual learning	Y	Y
Collaborative learning	N	N
Student centered learning	N	Y

Table 1: Web 1.0 and Education 1.0

Originally, it was thought that a small number of writers (i.e., experts) would use the web to share a small number of documents (e.g., scientific papers and data sets) with a large audience of readers (e.g., colleagues and students). Nobody envisioned a time when more books would be sold online than in line at the local book store. Nobody imagined that millions of ordinary citizens would become compulsive web publishers as well as web readers. Nobody foresaw that a flood of online information, much of it of questionable veracity and value, would eventually make finding the “good stuff” difficult, if not impossible. Nevertheless, during the late 1990s, the number of web pages increased exponentially, reaching approximately 7 million worldwide by the year 2000 (Pandia, 2007). Today, it is estimated that there are 15 - 30 billion web pages used by over one billion internet users (Internet World Stats, 2007).

Web 2.0 and Education 2.0

What is Web 2.0? Tim O’Reilly (2005) defines it as “a perceived ongoing transition of the World Wide Web from a collection of static websites to a full-fledged computing

platform serving web applications to end users”. Although no universally-agreed-upon definition exists, it is widely accepted that Web 2.0 represents a shift (Barefoot, 2006) from information warehousing where users are passive consumers to sites promoting and facilitating user participation (See Table 2).

Web 1.0 was about	Web 2.0 is about
Reading	Writing
Companies	Communities
Client-server	Peer to peer
HTML	XML
Home pages	Blogs
Lectures	Conversation
Advertising	Word of mouth
Cold over the web	Web services

Table 2: Web 1.0 vs. Web 2.0

What might education be like in a Web 2.0 world? If the evolution of the web drives the evolution of education, then we may expect a convergence of sorts (See Table 3). In such a convergence, education at all levels may become less textbook driven, less linear, less hierarchical, more interdisciplinary, and more collaborative in nature. In other words, Education 2.0 may parallel in many ways the structure and functionality of Web 2.0.

	Education 2.0	Web 2.0
Presentation format		
Textbook	Y	N
Document	Y	Y
Learning objects	Y	Y
Organizational format		
Linear	Y	Y
Hierarchical	N	N
Approach to content		
Disciplinary	Y	Y
Interdisciplinary	Y	Y
Abstract	Y	Y
Contextual	Y	Y
Motivates & facilitates		
Individual learning	Y	Y
Collaborative learning	Y	Y
Student centered learning	Y	Y

Table 3: Web 2.0 and Education 2.0

In Web 2.0, new technologies will also provide alternative presentation and publication options, offering new “looks” to accommodate different learning styles and personal preferences (See Figure 1).

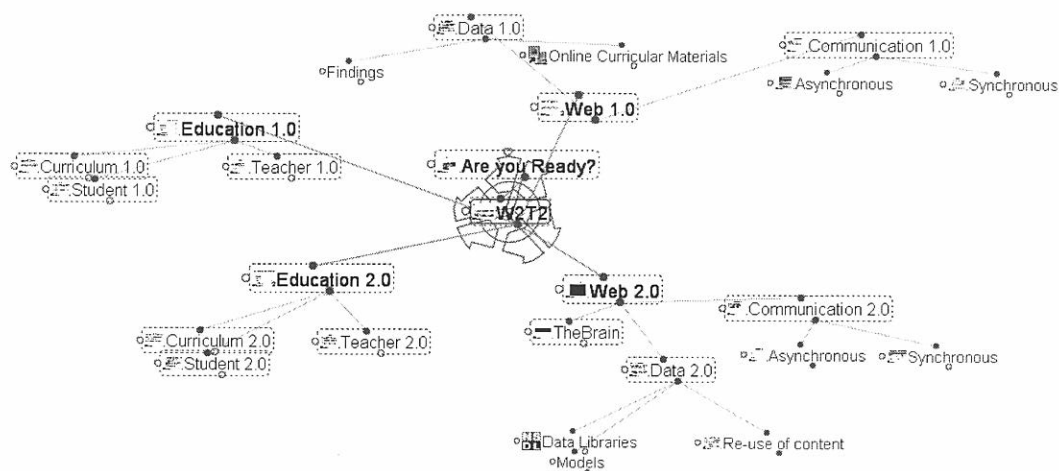


Figure 1: PersonalBrain 4.0 Interface (TheBrain, 2008)

Online Learning 2.0 in a Web 2.0 World

As a designer, developer and instructor of online courses, the author looks forward to the day when web-based teaching and learning technologies come packaged in seamless, integrated suites that guarantee interoperability of all technologies, support the use of a broad spectrum of digital learning objects, and identify their semantic relationships. Teachers will need more than hardware and software to realize this vision, however. Today's good teachers ...

- Create learning environments that facilitate learning for all students;
- Use pedagogical content knowledge to challenge and empower all students;
- Use whole/small groups effectively; and
- Develop and deliver standards-based lessons.

Tomorrow's good teachers will also ...

- Encourage students to collaborate regularly on extended learning activities that are defined and structured by their academic and career interests;
- Use technology to broaden student access to information, data, expertise and other resources needed for their individual and collaborative learning activities;
- Use multiple perspectives and procedures to assess student achievement; and
- Individualize instruction as they help students to identify and pursue their authentic interests and talents.

A remarkable vision of this future and its dynamics is seen in the full size version of the poster seen in Figure 2 of *School 2.0* (2006). I can hardly wait ...

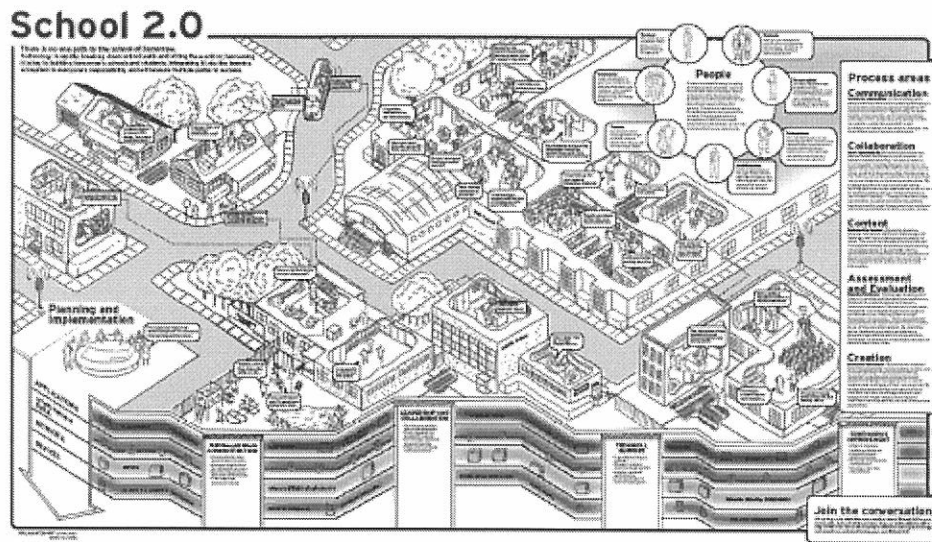


Figure 2: School 2.0

References

- Barefoot, D. (2006). Web 1.0 vs. Web 2.0. *Weblog of Darren Barefoot*. Retrieved February 28, 2007 from www.darrenbarefoot.com
- Dorman, J. (2007). *Engaging digital natives: Examining 21st century literacies and their implications for teaching in the digital age*. Retrieved November 15, 2007, from <http://web2videos.blogspot.com/>
- Gee, J. (2005). *Why video games are good for your soul: Pleasure and Learning*. Melbourne, Australia: *Common Ground*.
- Internet World Stats (2007). *Internet usage statistics: The Internet big picture*. Retrieved November 15, 2007 from <http://www.internetworldstats.com/stats.htm>
- O'Reilly, T. (2005). *What is Web 2.0?* Retrieved November 15, 2007 from <http://www.oreilly.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>
- Pandia (2007). *The size of the World Wide Web*. Retrieved November 15, 2007 from <http://www.pandia.com/sew/383-web-size.html>
- Prensky, M. (2001a). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1-4.
- Prensky, M. (2001b). Digital natives, digital immigrants, Part II: Do they really think differently. *On the Horizon*, 9(6), 1-5.
- School 2.0 (2006). Retrieved February 29, 2007 from <http://www.school2-0.org/>
- TheBrain, (2008). *PersonalBrain 4.0*. Retrieved February 10, 2008 from www.thebrain.com