Teaching with Web 2.0 Technologies: Benefits, Barriers and Best Practices

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Abstract

The purpose of this study was to explore best practices in teaching with Web 2.0 technologies as well as the benefits and barriers associated with the use of Web 2.0. Participants in this study were 14 university instructors who had considerable experience in teaching with Web 2.0 technologies. A Web-based survey was used to collect data for this study. The study results indicate that the major benefits of using Web 2.0 technologies in teaching include (1) interaction, communication and collaboration, (2) knowledge creation, (3) ease of use and flexibility, and (4) writing and technology skills. The major barriers university instructors encounter in teaching with Web 2.0 technologies include (1) uneasiness with openness, (2) technical problems, and (3) time. The survey results also provided insightful guidelines and tips for teaching with Web 2.0 technologies.

Descriptors: Web 2.0; Benefits and Barriers; Best Practices

Introduction

Web 1.0 was read-only where Internet users went online to find information. It was similar to going to the library to find books. With Web 2.0, which is read/write, people have become active participants and content creators. They not only find information on the Internet, but they also create and share content (Thompson, 2007). According to Edison survey (2009), about 15 percent of podcast consumers are also content creators compared to five percent of those who are not podcast consumers. Web 2.0 technologies – such as blogs, wikis, podcasting, social bookmarking, and social networking sites – have allowed users to easily publish content online and to connect and network with other people from all over the world who have similar interests. The use of tags particularly enables us to collectively categorize and find content easily. In a nutshell, Web 2.0 could be characterized by openness, user participation, knowledge sharing, social networking and collaboration, user-created content, and folksonomy (Alexander, 2006; Brown & Adler, 2008; Downes, 2005; Thompson, 2007; Richardson, 2009).

Web 2.0 in Teaching and Learning

As addressed above, Web 2.0 technologies have “blurred the line between producers and consumers of content and has shifted attention from access to information toward access to other people” (Brown & Adler, 2008, p. 18). Emphasizing a participatory culture, Web 2.0 technologies encourage and enable teachers and learners to share ideas and collaborate in innovative ways. They also force educators to rethink the way we teach and learn and to transform our education practices so that we can support more active and meaningful learning that involves “learning to be” as well as “learning about.”

Web 2.0 has the potential to create more interactive and powerful learning environments in which learners become knowledge creators, producers, editors, and evaluators (Richardson, 2009). Learners’ critical thinking skills can be enhanced through the opportunity to regularly compare their own contributions to those of their peers, and the affirmation of their relative standing in the class may be powerful motivation for learning (Hurlburt, 2008). Thus, Web 2.0 technologies has the ability to “support active and social learning, provide opportunities and venues for student publication, provide opportunities to provide effective and efficient feedback to learners, and provide opportunities to scaffold learning in the student’s Zone of Proximal Development” (Hartshorne & Aijan, 2009; Vygotsky, 1978). In addition, Web 2.0 provides numerous opportunities for social interactions and collaboration among students, teachers, subject matter experts, professionals in different fields, as well as a host of others with related interests.

The pedagogical benefits of Web 2.0 have been well documented in the literature. However, most of the existing studies on the use of Web 2.0 technologies in teaching and learning environments have been anecdotal in nature or in the form of case studies. Huang, Yoo, and Choi’s (2008) study, for example, found that correlation
exists between learning style and learners’ preferences and attitudes towards using Web 2.0 technologies. Lambert and Kidd’s (2008) explored the potential impact of the design of Web 2.0 environments on cognitive load. While such studies are collectively useful in providing a broader view of issues surrounding instructional uses of Web 2.0 technologies, they are limited in scope, as they address such issues within the context of one or two courses.

Today’s students are “digital natives” (Prensky, 2007), and make increasing use of Web 2.0 technologies in their daily lives. The vast majority of educators, on the other hand, still have little or no experience with these new tools. Teachers and instructors need to understand what opportunities Web 2.0 tools provide for teaching and learning, what kinds of barriers they may encounter when using them, and how to effectively implement the new tools in their teaching.

Among barriers to effective use of web 2.0 tools for instruction is the challenge of creating meaningful assignments to promote desired learning outcomes. Ill-designed assignment with no visible connection to the overall purpose of the course not only frustrates students, it decreases students’ interest in using the tool, and results in little or no learning (Reynard, 2009). Moreover, educators needs to be conversant of the fact that the social nature of Web 2.0 tools which makes them attractive as potential learning tools is also one of its drawbacks. “The very key to the success of a blog assignment structure, then, is fundamentally counterintuitive. In order to take advantage of the virtual social space that is spontaneously created in the natural blogosphere, course work must dictate the precise level of engagement of the participants, must make the class blogosphere entirely unnatural … not spontaneously social…” (Hurlburt, 2008, p. 184). According to Hurlburt (2008), there are “invisible aspects” to facilitating learning in the social network environments. In addition to the visible aspect of designing effective learning environments with these tools, educators also need to serve as coach, mentor, cheerleader, as well as task master to their students when the expected learner participation does not materialize. The affective aspects of teaching with Web 2.0 tools may provide both opportunities and as well as barriers that are yet to be explored.

Currently little research has explored these issues. Therefore, this study attempts to provide a first step in understanding the benefits of and barriers to using Web 2.0 technologies, especially in higher education, and in developing guidelines for teaching with Web 2.0 technologies.

**Research Questions**

The purpose of this study was to explore best practices in teaching with Web 2.0 technologies as well as the benefits and barriers associated with the use of Web 2.0. Research questions guiding this study are as follows:

1. What are the benefits of using Web 2.0 technologies in teaching?
2. What are the barriers to using Web 2.0 technologies in teaching?
3. What are the best practices in teaching with Web 2.0 technologies?

**Research Method**

A Web-based survey was undertaken in November 2008. The first author sent out an email invitation, including a link to the web-based survey, to a number of university instructors who were known to have considerable experience in teaching with Web 2.0 technologies. The survey included four demographic questions and 10 open-ended questions. The key questions include the following:

- Describe 1-2 ways you use Web 2.0 technologies in your teaching.
- What are the benefits of using Web 2.0 technologies in teaching?
- What are the barriers to using Web 2.0 technologies in your teaching?
- What instructional strategies or techniques have already worked for you? Please describe best practices in teaching with Web 2.0 technologies based on your direct or indirect experiences.
- What has NOT worked for you in terms of Web 2.0 technologies in teaching and learning?
- What would be effective ways to use Web 2.0 technologies in teaching that you have yet to try but are perhaps thinking about?

Fourteen university instructors participated in this study. The participants, consisting of 64.29% female and 35.71% male, were from a number of different universities in the United States. They ranged in age from 30’s to 60’s (31-35: 7.14%; 36-40: 21.43%; 41-45: 14.29%; 46-50: 21.43%; 51-55: 7.14%; 56-60: 21.43%; 61-65: 7.14%). The instructors had an average of 15 years of teaching experience and an average of 3.71 years of using Web 2.0 technologies in teaching.

Qualitative data from the Web-based survey were analyzed using the constant comparative method (Glaser & Strauss, 1967; Strauss & Corbin, 1990). All responses were carefully read and reread and were coded and constantly compared to other data. In the process, some coded data were renamed or merged into new categories. A number of categories or themes were identified and were organized under three overarching categories that this...
study focused on: (1) benefits of using Web 2.0 technologies in teaching, (2) barriers to using Web 2.0 technologies in teaching, and (3) best practices and tips for teaching with Web 2.0 technologies.

**Results**

The survey results provided insightful guidelines and tips for using Web 2.0 technologies in teaching. Web 2.0 technologies used by the participants include: blogs, Wikis, Youtube, social bookmarking, podcasts, webcasts, Facebook, Myspace, Flickr, Twitter, Skype, Second Life, and Tegrity. The participants reported how they used these Web 2.0 technologies in their teaching, what worked well, what did not work well, and so forth. The discussion of results is organized around the following three focus areas: (1) benefits of using Web 2.0 technologies in teaching, (2) barriers to using Web 2.0 technologies in teaching, and (3) best practices and tips for teaching with Web 2.0 technologies.

**Benefits of using web 2.0 technologies in teaching**

The study results indicate that the major benefits of using Web 2.0 technologies in teaching include (1) interaction, communication and collaboration, (2) knowledge creation, (3) ease of use and flexibility, and (4) writing and technology skills.

**Interaction, communication and collaboration.** Most participants believed that using Web 2.0 technologies in teaching helps build a sense of community, increases interaction and communication among the instructor, students, and other people, and promotes collaboration and resource sharing. The following are some of the comments by the participants:

- “I think, if used correctly, they can help develop a better sense of connectivity between students and teachers and afford students opportunities to connect and communicate with classmates and resources throughout the world…”
- “They reduce the distance between teacher and students.”
- “Students learn about new ways of collaboration.”
- “Students and teachers see learning as a more social process. It's not just the book and yourself; it's collaborative meaning making.”

**Knowledge creation.** 50% of the participants reported that Web 2.0 technologies enable students to “become creators of knowledge.” As one noted, Web 2.0 technologies give students “the opportunity to create content themselves instead of just listening to lectures,” and this supports active and student-centered learning in which students take responsibility for their learning. Several participants also noted that Web 2.0 technologies create an environment where a teacher becomes a facilitator of learning rather than a distributor of knowledge.

**Ease of use and flexibility.** About a third of the participants reported that Web 2.0 tools are easy-to-use and flexible. They noted that while some of the traditional course management systems (CMS) are too static, Web 2.0 tools remove time constraints by providing a more flexible learning environment that is not inhibited to classroom walls.

**Writing and technology skills.** Several participants noted that the use of Web 2.0 technologies help students become more proficient in writing and in the application of technology.

In addition to these four major benefits, the participants also mentioned that using Web 2.0 technologies “helps teachers understand a little more about the world of their students,” and “motivates the students.”

**Barriers to using web 2.0 technologies in teaching**

The study results indicate that the major barriers university instructors encounter in teaching with Web 2.0 technologies are (1) uneasiness with openness, (2) technical problems, and (3) time.

**Uneasiness with openness.** A number of participants noted that the open nature of Web 2.0 technologies is still new to many students. They reported that some students are very uncomfortable with the openness and are reluctant to participate in class activities that utilize Web 2.0.

… And the immediate and public nature of wiki collaboration made some of my students feel more self-conscious and a bit uneasy at times… These students preferred one-to-one teacher-student interaction more than public, peer-to-peer interactions…

**Technical problems.** Five participants reported that students who have older computers often have technical issues when using Web 2.0 tools. It was also noted that some Web 2.0 tools are “still a little primitive,” having technical glitches and might not work well with current course management systems. Several participants mentioned that universities do not provide enough technical support for faculty who are unfamiliar with Web 2.0 technologies.
**Time.** It takes time to learn and manage new technologies. Time was another barrier identified in this study. Several participants reported that learning new technologies takes time away from learning subject matter content.

**Best practices and tips for teaching with web 2.0 technologies**

As mentioned earlier, the participants in this study were asked how they have used Web 2.0 technologies in their teaching, what instructional strategies or techniques have worked well, and what has not worked for them. Based on data analyses, the following best practices or guidelines were identified.

1. **Do NOT introduce too many technologies new to students in one semester.** A number of participants indicated that using too many Web 2.0 technologies in one semester could lead to surface learning. They suggested that instructors utilize a small number of the tools adding more only as expertise is developed.

2. **Do NOT use multiple technologies that do the same thing.** Several participants suggested that instructors should not introduce more than one application that does the same thing. It was noted that students must often manage several email accounts and forums and a new technology, if used like an existing tool, simply creates management problems.

   Students and I also felt at times that Wiki space is just another forum to manage in addition to several email accounts, WebCT, and etc in this busy life. The fact that most of my students were working full time and had several email accounts and other "online message boards" to check added to that feeling, perhaps.

3. **Provide appropriate instruction, tutorials, examples, and frequent feedback.** A number of participants emphasized the importance of providing in-class instruction, tutorials, and examples that teach how to use Web 2.0 technologies. They pointed out that Web 2.0 technologies are still new to many students, and support is needed if using them for learning activities and projects. On the other hand, it was also noted that instructors should help their students to become independent learners in keeping abreast of emerging technologies.

   "We can teach them how to use the tools available today, but by the time they graduate from the U., there will be new tools and no one to teach them. So, right up front they need to learn how to find resources on the web to help them learn new technology."

4. **Facilitate collaborative learning.** The participants in this study reported a variety of strategies for facilitating collaborative learning using Web 2.0 technologies. Examples of the strategies include the following:
   - Using wikis for collaborative writing projects.
   - Using a blog as a collaborative reflection space beyond personal journals by requiring students to respond and provide feedback to each other.
   - Using a social bookmarking site for sharing resources.
   - Using peer evaluation.

5. **Build a sense of community in your classroom first before trying more public collaboration.** Web 2.0 is generally characterized by openness, social interaction and collaboration. Not surprisingly, some of the participants used Web 2.0 tools for inter-institutional collaboration. One reported that her students wrote a wikibook on learning theories in collaboration with students in another university. She believed that their inter-institutional collaboration was not very successful because the students’ entry level knowledge and focus (research vs. practice) were different. She also mentioned that some students were overwhelmed by trying new technologies with new people. She contended that instructors “have to establish at least a certain sense of community first before trying more public collaboration and social interaction.”

Other strategies for teaching with Web 2.0 technologies the participants suggested include: creating an engaging and supportive environment, providing clear goals and objectives for using Web 2.0 technologies, rewarding students for good work and good contributions, and showing YouTube videos to start or end class.

**Discussions**

Web 2.0 has been one of the major topics in professional conferences and journals. Teachers and instructors in diverse contexts are exploring ways to use Web 2.0 technologies in teaching and learning. Many case studies on integrating Web 2.0 technologies in teaching and learning are providing valuable tips and lessons. However, Web 2.0 is still new to a majority of instructors, especially in higher education settings. This study attempted to present a first step in understanding the benefits of and barriers to using Web 2.0 technologies and in developing guidelines for teaching with Web 2.0 technologies.

Web 2.0 has the potential to provide more interactive and customized learning environments where students create knowledge, rather than passively receive information from instructors, interact and collaborate with those who have similar interests globally, and obtain opportunities to learn to become professionals in communities of practice. However, it appears that many teachers and instructors are not using Web 2.0 technologies to their potentials. Instead of maximizing the benefits of Web 2.0, educators often do the same thing with a new tool much
like early distance education instructors who simply moved their course content to the Web without adapting the course and teaching methods to the new environment.

Instructors should keep in mind that Web 2.0 itself does not guarantee more effective learning and teaching. Simply adding Web 2.0 tools to our traditional teaching practice cannot realize the potential benefits Web 2.0. New technologies can help us improve our teaching and learning only when they are used effectively with clear goals and proper methods (Reynard, 2009; Hurlburt, 2008). The effective use of new technologies requires innovation in teaching methods.

Participants in this study reported that universities do not provide enough technical support for faculty who are unfamiliar with Web 2.0. We agree that it is important to provide faculty with appropriate technical support. However, we believe that it is more critical to help instructors develop new ways of teaching that reflect the capabilities of the new tools and their potentials rather than simply teach them how to use the tools. In addition, institutional reward structure that is commensurate with the time and efforts that instructors invest in exploring these tools will likely remove some of the barriers to instructional uses of Web 2.0 tools.

Students also require some support to effectively learn with Web 2.0 technologies. Today’s students integrate technology in their everyday lives and they are constantly connected to their friends, family, and various resources via technology. Therefore, it is easy to assume that they are technologically savvy. However, as Oblinger (2008) contends, “Not all students have computers, not all are skilled users, and not all want to use technology” (p. 18). This is consistent with the findings in this study. The participants noted that many students have technical issues with old computers, are not very comfortable with Web 2.0 technologies, and need instructions and examples on how to use them. In teaching with Web 2.0 technologies, instructors should be prepared to provide appropriate support and scaffolding. Providing step-by-step procedural guidance might be necessary in some situations, but we believe that instructors should also help their students find appropriate resources and teach themselves how to use technologies since instructors cannot provide the tutorials forever.

Openness and privacy is another issue instructors should consider in using Web 2.0 technologies in their teaching. As noted in this study, some students are not comfortable with the open and public nature of Web 2.0 tools often preventing them from participating in learning activities. Openness is one of the key characteristics of Web 2.0 and is expected to be increasingly reinforced in the future. There should be more research on this issue to help instructors effectively prevent potential problems and counter students’ uneasiness with openness.

Limitations and Future Research

The benefits, barriers, and best practices identified in this study are based on Web–based survey responses from only fourteen university instructors even though they had considerable experience in teaching with Web 2.0 technologies and provided great insights into the use of the new tools in higher education settings. Further studies might survey a large number of instructors and also conduct interviews in addition to the survey with hopes of better understanding participants’ experiences. Second, it might be interesting to observe a number of courses that use Web 2.0 technologies and learn about students’ perspectives as well as those of instructors. Finally, future research should also explore how Web 2.0 technologies are used in different contexts, including K-12, higher education, corporate settings, and the comparison and contrast of the findings.

References


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