Web Technologies and Education

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Abstract

Since its creation, the Internet has gone through incredible advances. These changes have influenced the way that students interact with the world. New Web Technologies such as blogs, wikis, Google Docs, pod casts, VoiceThread, social networking, social bookmarking, have exploded into the technological world known as Web 2.0   Educators would stand to benefit by embracing these technologies and incorporating them as part of their every day curriculum.

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A Review of Literature

Introduction

It is clearly evident that in the past decade, substantial advances have made technology indispensable to our human race.   The electronic computer is truly at the heart of this information revolution (Bernard, 2005).

People have always used a variety of tools to organize and process information: the abacus, punch cards, and switchboards. But it was not until the inception of the personal computer in the 1970s that the enormity of information came directly to the user. The introduction of the World Wide Web in 1991 gave users a new way to locate and access information from computers anywhere in the network, which had come together from the advancements of the Defense Advanced Research Projects Agency or DARPA (Bernard, 2005).

As this research advanced, so did our technology: at the Center of Particle Research in Geneva, Tim Berners-Lee invented three things: Hypertext Mark-up Language, or HTML, used to put together text, pictures and files; a coding system to specify the location of a website (Universal Resource Locator, or URL) and HTTP, the Hyper Text Transfer Protocol, a procedure for moving Web files from a source to a user's computer.   These inventions gave birth to a dynamic, interactive Web, which proved useful to both individuals and businesses. Programs and browsers boomed the use of the Web into the millions. The number of websites was well over 35 million in 2002, compared to 150 websites in 1993 (Bernard, 2005).

With the exponential growth of the Internet have come Web Technologies which have found their way to our educational system. Web Technologies such as blogs, wikis, social

networks, have become useful as educational tools, for educating today's student, the digital native.

The educational system would be greatly benefited if it embraces these technologies to educate and create a 21st century learning environment for our 21st century learners.

To begin, the advancement of technology developed over time, and advanced as the web advanced. The initial implementation of this web is known as Web 1.0. Web 1.0 can be defined as a static technology. When the internet was first publicly deployed, information was flat and one-directional. For the most part, the internet consisted of HTML pages which were uniform, and had no user-interaction of any kind. The most interaction that took place was elements such as filling out a form, clicking the submit button, and having to wait for a response, sometimes taking the course of several days for an answer. Web 1.0 was a "double-click" element (Utecht, 2006). The use of search engines, and "surfing" was the focus of the Web 1.0 world. Mouse clicks would take the user from one page to the next. The user had to essentially wait for the next page to load unto the open browser window.

Currently, society is experiencing a "second phase of architecture" with regards to the Internet and Web Technologies; this new phase is termed Web 2.0 (Utecht, 2006). Web 2.0 differs from Web 1.0 (which has retroactively labeled) in that uses content developed by the user (davidEPN, 2008). It has become a "democratic, personal, and do-it-yourself medium of communication (Utecht, 2006).

"Web 2.0 represents a collaborative, interactive Internet where individuals can easily share, create, and contribute to global conversations. This next generation Web offers unique opportunities for educational application in inquiry practice, collaboration, communication

and individual expression, and literacy" (Drexler, Baralt, & Dawson, 2008).   This new concept of Web 2.0 will certainly benefit our educational world.   "Web 2.0 has the potential to complement, enhance, and add new collaborative dimensions to the classroom" (Parker, & Chao, 2007).

<div align="center">Blogs</div>

Blogs are much like an on-line journal where a user, a "blogger" writes about any specific topic that he/she chooses. His/Her audience, not only follows and reads these blogs, but is able to comment on the writings, thus creating a discussion thread.   Readers subscribe to any particular blog, via RSS feeds, much like podcasting.   User accounts are generally free of charge, and numerous blogs exist in the World Wide Web.

In the field of education, blogs can have many uses. In his video, Stanley states that blogs "open up the classroom walls" (2007).   In one case, at Drexel University, blogs were used to create "librarian-authored research guides, information literacy teaching sessions and even librarian-student interactions" (Lynch, 2009).   Also, blogs have been used to keep track of "what is happening in a classroom, posting homework" and having the ability to link to relevant information; this is one of the basic ways that blogs have been used in the classroom (Stanley, 2007).

"Blogs provide instant internet publication and encourage interaction between the writer and the reader. Open communication guides learners to a deeper understanding of a topic and allows bloggers to take ownership for their constructive knowledge" (Nelson, Christopher, & Mims, 2009).

In her article, Balderrain states that teachers, as well as students, use blogs currently to "boost the learning experience" (2006).   Regardless of who actually mangages blogs, the

instructor or the student, it is a tool that opens the line of communications and can create a learning community.

Furthermore, for many, the idea of becoming a published author can be far-fetched. With blogs, however, a user can instantly feel the accomplishment of becoming a published author.

<div align="center">Wikis</div>

Wikis are a web 2.0 tool that allows users to quickly create simple HTML WebPages that can be edited and, thus, authored collaboratively. The term Wiki is derived from the Hawaiian term "wiki-wiki" which means "quick" (Parker, & Chao, 2007). In a wiki, content, not design is given priority (Stanley, 2007).

It is the simplicity of wikis that attracts users to their use and to information that is most up-to date. "Wikis are characterized by a variety of unique and powerful information sharing and collaborative features" (Parker, & Chao, 2007). Since most wikis have a revision and editing history, a user can track the changes that collaborators have updated. This proves useful in a cooperative learning environment, since teachers and students can easily post work on the web (Stanley, 2007). "In cooperative learning, students work in heterogeneous groups, to support the learning of individual members" (Parker & Chao, 2007).

Even though the wiki was first introduced over ten years ago, its use in academia is still relatively new (Parker, & Chao, 2007). As with any new form of technology, questions and concerns exist among users wishing to implement wikis into the classroom. Questions as to the technical skills necessary to implement a wiki are often asked (Higdon, & Topaz, 2009). However, Higdon and Topaz add that if "you have the ability to set up a simple Web page, you have sufficient skills to use the social software tools" (2009).

Google Docs

Google Docs offers a platform-free office productivity suite, free of charge that can be accessed from anywhere in the world. Documents created can be shared to allow collaboration. The suite offers presentation software, a spreadsheet, and an online word processor. These tools are of great benefit to students who cannot afford tools like Microsoft Office.

One major benefit to using Google Docs is its effectiveness in facilitating paperless projects. Its "green" mentality certainly appeals to modern-day thinking and to the educational realm.

In his article, Adams states that "Google Docs has essentially eliminated all paperwork from our courses" (2008). Google Docs provides an extension of class discussion, it expected students to collaborate and share with students which were miles apart. This collaboration mode also allowed teachers to share and grade assignments without the necessity to print.

In addition, the use of integrating this type of technology has proven successful in schools around the country. For example, Intermediate School 339, an inner city school in Bronx, New York had outstanding success integrating this technology into the classroom. The school's principal, Jason Levy, highlights the importance of technology comparing it to the oxygen the students breathe. Since the "kids are constantly navigating through technology" at all times, he explains that "we make schools make more sense" to our students (Frontline, 2009). Teachers at his campus integrate the use of Google Docs and email through school-issued laptop computers. The procedure is certainly not fool-proof; there have been issues with security and supervision, however, the increase in student achievement showcases how effective technology is. With the integration of technology, School 339 increased from 9% of students on grade level in math, to 62% (Frontline, 2009).

Voice Threads

In March 2007, VoiceThread technology emerged to great success. This technology allows users to capture their voices, around media. Accessible through voicethread.com, recorded voices can essentially be "threaded" to one another, creating a type of message board using voices instead of text. Even though voice threads have to be created on this website, voicethread.com, they do not have to be seen only on voicethread.com: they can be downloaded as a video and/or embedded on other websites.

By September, 2007, a second revision boasted improvements such as being able to upload Power Point Presentations and Adobe Documents, as well as other functions such as Facebook imports (Rodgers, 2009).

The possibilities for VoiceThread use in education are evident. Its collaborative features could make Voice Threads a useful tool in the classroom. The bringing together of education with different takes on the same subject broadens the student perspective, as they listen to each other's ideas and thoughts. In 2008, VoiceThread established an area specifically for educators. This version, "ed.VoiceThread" allows educators to establish accounts for classroom use (Rodgers, 2009). This technology is certainly making its way to the classroom as an innovative and interactive tool.

Voice threads can also be used for digital story telling. "Digital story telling allows students to be actively engaged in their work, play a part in literacy communities, and delineate themselves as readers and writers" (Nelson, Christopher, & Mims, 2009). Certainly, educators can find numerous innovative ways of using VoiceThread in the classroom.

Pod Casts

"Podcasts is a way of using voice to connect students from around the world" (Stanley, 2007). Podcasts are audio recordings that have been created by a user and uploaded to the web. These files are portable and can be downloaded and heard easily from any device with MP3 capabilities. Teachers can record entire lessons, so that students may retrieve them at a later time. This proves beneficial in the event of a student absence, missed assignment, or even for re-teaching of the topic. To the "digital natives" podcasting is seen as a vital tool for receiving information or communicating with people (Stanley, 2007).

According to Beldarrain (2007) podcasts require a news aggregator to be installed, which processes an RSS feed that accesses the actual broadcasts. RSS (Really Simple Syndication or Rich Site Summary) use XML to deliver audio files. Nowadays, podcasts extend to include both video and audio files. Users with RSS subscriptions can receive up-to-date recordings which are tailored to their choice and subscription specifications.

The "versatility of podcasting may impact the way…educators deliver instruction as well as the manner in which students are engaged in learning" (Baldarrain, 2006).   Audio and video downloads provide opportunities for lessons to be listened virtually anywhere, taking the lesson "with you wherever you want" (Stanley, 2007).   Teachers can share information with students anywhere in the world, sharing with other teachers who have podcasts, breaking down distance barriers. In addition, this creates enthusiasm in the students, creating projects for which they know there is an audience, and collaborating with classes around the world which use podcasting.

Social Networks

Social Networking sites encompass the true meaning of Web 2.0.   These networks are platform-free, user created, ever-evolving websites. Sites such as Facebook, MySpace, and Twitter, give the user the ability to not only create a wiki-like page, but it empowers the creator with the ability to interact with others in real-time. Features such as chat, blog, comment, image/audio/video upload, and the ability to share there of, makes social networking, not only a collaborative tool, but a collaboration of tools.

Integrating social networking in to education presents a challenge, since many school districts filter out these sites by default. However, outside of the school environment "social networking is changing the way children communicate" (Drexler, Baralt, & Dawson, 2008.) Drexler, Baralt, & Dawson, continue that students may benefit from the exposure to these Web 2.0 applications, yet "schools are notoriously slow to adopt new technologies." Despite the challenge of lack of professional development, "more than 55% of all online American youths ages 12-17 use online social networking sites" (2008).

Regardless whether this tool is used on school grounds or not, it is clear that students are learning from peers, accessing the internet, and embracing Web 2.0 technologies.   "There is great potential for teachers to build upon the students' existing social network and leverage students' comfort with Web 2.0 technology within their classrooms" (2008).

Social Bookmarking

Social bookmarking is the ability to share a user's website bookmarks with another group of individuals. The user has the ability to add a description, tags, and highlights to the bookmark before it is shared. This allows the bookmarks to be easily retrieved via a search engine within the bookmark site.

There are numerous social bookmarking sites which include: www.delicious.com and www.diigo.com. These sites are user-friendly and provide guides for creating and using accounts. Some of them require additional downloads or add-ons to be installed unto the browser in order to obtain full functionality.

For teaching and learning, "social bookmarking has many effective uses…and learning and can be a powerful bridge between the classroom and the internet" (Nelson, Christopher, & Mims, 2009). A particular educator uses social bookmarking by "highlighting the most vital information [on a webpage] and adds discussion questions on a virtual sticky note next to the text" and shares them as assignments with her students (Nelson, Christopher, & Mims, 2009).

Conclusion

The future of Web Technologies is still unclear. What will the next generation of web technologies hold? Some, like Stanley (2006), compare Web 3.0 to a "second life" like setting where a user, with the use of an avatar, enters a 3D gaming-like environment to collaborate and experience the web. Yet others, like davidEPN (2008), call Web 3.0 and all-knowing, network of smart devices that will virtually automate human functions. Elements such as appliances will be interactive, "talking" to each other, making an environment that is available instantly, automatically. "As more and more appliances are connected to the internet…such as washing machines, telephones, and cars…these appliances learn from each other" making everyday decisions for the benefit of the user. Even though the web is more present, it will "become less and less visible...it will be invisibly present" (davidEPN, 2008)

How this futuristic phase of technology will impact our social, and most importantly, our educational realm is exciting but uncertain. Ultimately, "it remains to be seen" (Stanley, 2006).

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