Please provide feedback

Please support the ScholarWorks@UMBC repository by emailing scholarworks-group@umbc.edu and telling us what having access to this work means to you and why it's important to you. Thank you.

mLearning and Individualized Learning

Lin Muilenburg, Educational Studies, St. Mary's College of Maryland, USA, lymuilenburg@smcm.edu

Zane Berge, Education, University of Maryland Baltimore County, USA, berge@umbc.edu

Abstract: The semantic web, as some people are attempting to brand Web 3.0, should be tagged and flagged so that machines can make semantic sense of it, similar to how people make sense of language. Web 4.0 will move toward artificial intelligence in the service of a personal learning environment (PLE). Regardless of whether you believe that Web 4.0 will deliver personalized learning or will be just one more iteration of technology's unfulfilled promise to do so, it should not take Web 4.0 in our faces to look at what can be done with mobile technologies in our schools as we transition from Web 2.0 to 3.0. This paper will present examples of mlearning used for individual learning that can be currently used, along with brief lesson plans for these. Additionally, it presents some promising thoughts of where mlearning may be going over the next decade or so regarding students' personal learning networks.

As mobile technologies converge with student-centered elearning, more motivating and effective user experiences are needed. Mobile-learning, (or m-learning), is the use of portable devices (i.e., mobile technologies) for education and learning). For example, common mlearning activities today include podcasting, the use of PDAs for information retrieval and communication, the use of mobile social networking, web-enabled mobile phones, and moblogging (mobile blogging).

There is a lot of talk about social networking, collaboration, and communities of practice in elearning today. These are often effective processes and activities for learning, and they will continue in the future. Oftentimes, however, learning is an individual activity. For the past several decades, educational technologists have held out the promise that individualization in learning is just around the next corner—or, in this case, individualization will be realized through the next technological innovation. This is still largely an unfulfilled promise.

Benefits and Challenges to mLearning

There are several benefits to mlearning that practitioners have stated. Stănescu (2008) summarized these as:
- in collaborative projects and fieldwork (for example: on the job training for someone who accesses training on a mobile device "just in time" to solve a problem or gain an update);
- as a classroom alternative to books or computers ;
- learning in museums or galleries with handheld or wearable technologies;
- learning outdoors, for example on field trips, where learners are widely dispersed;
- to engage with learners who in the past have felt excluded;
- in promotional and awareness campaigns;
- for 'just-in-time' employee training;
- the use of personal technology to support informal or lifelong learning, such as using handheld dictionaries and other devices for language learning.

She went on to summarize the technical, and the social and educational challenges to mlearning as:
- Connectivity
- Battery life
- Interacting with small devices
- Displaying useful content in small-screen devices
- The intrusion of formal education into daily life: Protecting the privacy of young learners, from being continually monitored and assessed through their mobile devices.
- How to assess learning outside the classroom
- How to support learning across many contexts
- Developing an appropriate theory of learning for the mobile age
- Design of technology to support a lifetime of learning

Generations of the Web
Web 1.0 was the basic hypertext Web
Web 2.0 is the "community Web" that connect people
Web 3.0 is the "semantic Web" – mostly for machines
Web 4.0 is what some call the "learning Web"

The suggestion in Figure 1 below (Spivack, 2007) is that the Web generations are for the *decade* that is being discussed. So that Web 1.0 is the 1990s, Web 2.0 is the 2000s, and Web 3.0 begins in earnest in 2010. Regardless of how it is defined, many technologist believe we are nearing the end of Web 2.0 and entering the beginning of Web 3.0. The semantic web, as some people are attempting to brand it, should be tagged and flagged so that machines can make semantic sense of it, similar to how people make sense of language. "That way, machines could make instant connections that would take serious amounts of time for people to see, or might even elude them altogether" (*Economist*, 2008, para. 2). Web 4.0 will move toward artificial intelligence in the service of a personal learning environment (PLE).
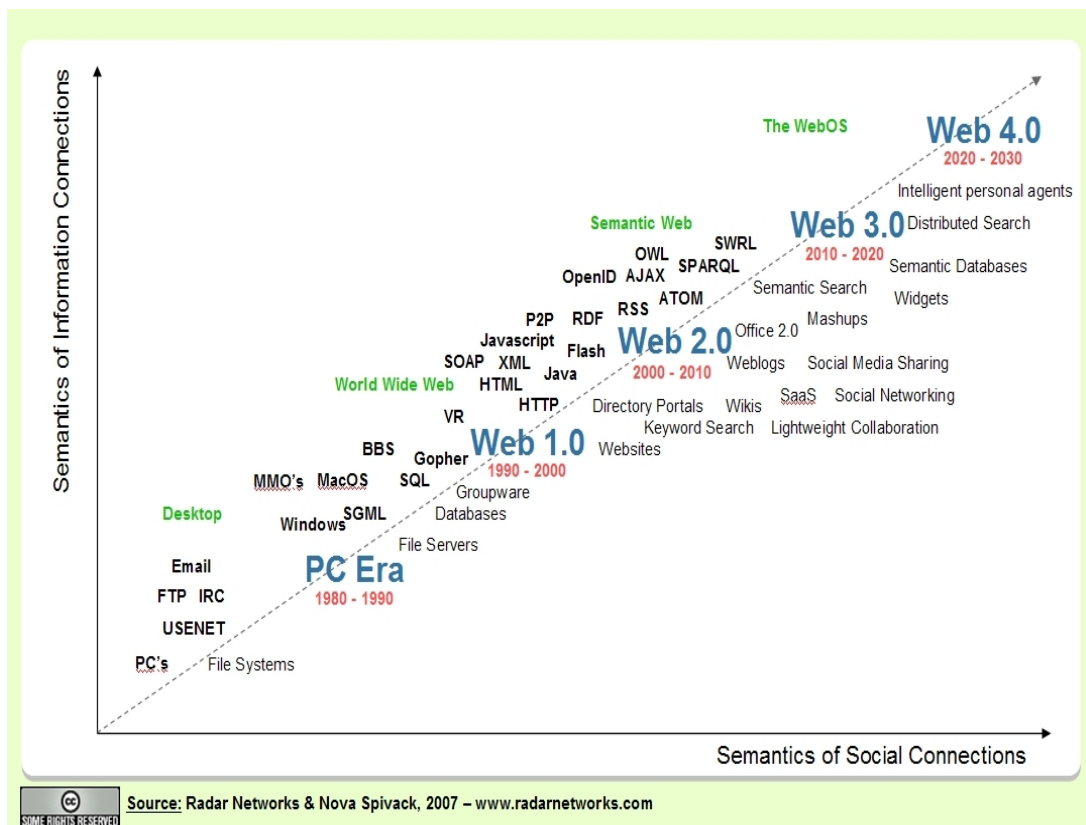

Figure 1. Generations of the Web

Regardless of whether you believe that Web 4.0 will deliver personalized learning or will be just one more iteration of technology's unfulfilled promise, it should not take Web 4.0 in our faces to look at what can be done with mobile technologies in our schools as we transition from Web 2.0 to 3.0. This paper will present 4-6 examples of mlearning that are currently being used along with brief lesson plans for these. Additionally, it presents some promising thoughts of where mlearning may be going over the next decade or so regarding students' personal learning networks.

Social Networking to Academic Connections

If Web 2.0 connected people, Web 3.0 will connect machines. Web 3.0 is often referred to as the "semantic network." Where is m-learning headed in the light of the next generation of the Web?

One vision of a well-developed semantic web includes a search feature that would return a multimedia report rather than a list of hits. The report would draw from many sources, including websites, articles from scientific repositories, chapters in textbooks, blog dialogue, speeches posted on YouTube, information stored on cell phones, gaming scenarios played out in virtual realities—anything appropriate that is accessible by the rules of Web 3.0. The report would consist of short sections that coalesce around knowledge areas that emerged naturally from your research, with keywords identified and listed conveniently off to one side as links. (Ohler, 2008, p. 8)

Browsers with the capabilities to find and organize huge amounts of knowledge on the Internet, and then read them much like humans do. Potentially, using mobile technologies for learning in this new era, 3D, virtual classrooms on mobile devices may be possible. With *Second Life* being tested on mobile phones currently, **"the virtual 3D world on PC starts to be widely used in education, we believe that mobile virtual 3D classrooms can be realized on mobile devices in the near future"** (Wang & Higgins, 2008).

Academic Connections to Personal Learning Networks

Web 4.0 will, in theory, include an array of sensors that will gather information from one's environment and use them to create a deep profile of your behaviors and activities.

With Web 4.0 and personal software agents that track and register your purchases, your movements, your professional, commercial and recreational activities the future seems to promise a truly brave new world of targeted and meaningful information. Your past behaviors and activities will be considered predictors of future behavior, and the information streamed to you will be based on patterns that you have established. In theory, the information will help you do a better job in whatever you want to do. However, will you be held hostage to your old patterns? Will the information actually restrict your options? (Nash, 2008, para. 1)

This has some obvious advantages, especially in the areas of informal learning. Oliver (2008) pointed out that with learning "we might be seeing a situation in which the student progresses along a learning pathway not only influenced by their degree/tutors but also by who they know, their interests, career objectives, progression in particular subjects etc. (para. 3). The risk is that this type of environment may *limit* learning by more or less repeating and reinforcing a person's existing knowledge. "The ability to branch out and think about obscure, unrelated, even random things can and will be seriously constricted in the world of Web 4.0 as envisioned now" (Nash, 2008, para. 13).

Conclusions

The point here is that advances in technology will happen. Some of them will be rapid and far-reaching. It is up to us to work toward helping each individual learn regarding of the stage technology is currently. Mobile technologies are important tools for exploring, finding relevant knowledge, and doing so just-in-time. This will continue to be the case in the foreseeable future. As students live with portable computers, cell phones, and other handheld mobile devices at their side, deciding how their interaction with these devices can be used for their individual learning is a challenge educators should take on without delay.

References

Downes, S. (2007, March 20). Why the semantic web will fail. *Half an Hour*. Retrieved March 24, 2009 from http://halfanhour.blogspot.com/2007/03/why-semantic-web-will-fail.html

Economist. (2008, April 9). Start making sense.

Nash, S.S. (2008, October 13). Web 3.0, Web 4.0 and personal agents: Will they open or restrict choice? Retrieved March fs31, 2009 from http://elearnqueen.blogspot.com/2008/10/web-30-web-40-and-personal-agents-will.html

Ohler, J. (2008). The semantic web in education: What happens when the read-write web begins to think? *Educause Quarterly, 31(*4): pp. 7-9. Retrieved March 24, 2009 from http://net.educause.edu/ir/library/pdf/EQM0840.pdf

Oliver, A. (2008, October 17). Where are we going? Let's talk about Web 3.0 and Web 4.0. *e-Learning Now.* Retrieved March 25, 2009 from http://drandyoliver.edublogs.org/2008/10/17/where-are-we-going-let%e2%80%99s-talk-about-web-30-and-web-40/

Spivack, N. (2007, October 4). Web 3.0 -- The best official definition imaginable. *Minding the Planet.* Retrieved March 23, 2009 from http://novaspivack.typepad.com/nova_spivacks_weblog/2007/10/web-30----the-a.html

Stănescu, I. A. (2008). New elearning frontiers: mlearning and glearning. *The 4th International Scientific Conference eLearning and Software for Education.* Bucharest, April 17-18. Retrieved April 3, 2009 from http://adl.unap.ro/else/papers/018.-696.1.Stanescu%20Ioana%20Andreea%20-New%20elearning.pdf

Wang, S., & Higgins, M. (2008). Mobile 2.0 leads to a transformation in mlearning. In J. Fong, R. Kwan, & F. L. Wang (Eds.): Proceedings of the First International Conference on Hybrid Learning and Education, (ICHL), Hong Kong, China, August 13-15, pp: 225-237. Retrieved March 23, 2009 from http://www.cs.cityu.edu.hk/~ichl2008/LNCS-Proceedings/ICHL2008_ShudongWang_12pages.pdf

Appendix A

(NOTE: The remainder of the paper will be used for 4-6 lesson plans regarding what is possible *now* in K-12 m-learning similar to those below at *Ed's Living Textbook* (http://www.pass-ed.com/CellPhone/Pictures.html), only somewhat more complete and focused more on individual m-learning. These examples will also be the focus of the presentation.)

Cell Phone Lesson 1 – The Camera

Today, nearly all cell phones have built-in cameras. Since, most students have access to cell phones and enjoy using them, teachers can certainly assign students homework assignments that require them to take pictures. Even if schools prohibit students from turning on cell phones during the day, students can still access these phones during the day if they post them to flickr, after they take them.

So, you might be asking what's the point of asking students to take pictures for homework.

Students could take pictures in response to questions that require critical thinking. Examples follow:
- If you had to show somebody from Mars one site in your neighborhood that you think best represents the neighborhood what site would you show them? Take a picture of this site and be ready to explain why you chose it.
- Students might be reading a novel in which a particular place is mentioned. Ask students to imagine that they were going to change the place. Instead of using the place in the novel, students would insert a real place from their neighborhood into the story. They could take a picture to show the site they would insert. Students should prepare to explain why they chose this site.
- Everybody uses math in real life. However, students often don't stop and think about how they use it. They might take a picture of a scenario in which math is really being used.

Students could also be prompted to think critically when they look at pictures. They might consider:
- What does the picture show?
- What can we say about the people/places/things in this picture? Why can we say this?
- If students could change one part of the scene in the picture, what would they change? Why?
- How might somebody else describe this picture? What parts of the picture would support the other description?

Cell Phone Lesson 2 – Text Messaging

Cell phones in general, and text messaging in particular, allow us to bring outside experts into the learning process. After a major scientific advancement is made challenge your students to find somebody outside the classroom who can explain the advancement through text messaging. Make it a race!! Obviously this activity will not only produce a description of the advancement. It will also involve students in the exciting process of finding somebody to text message them.

When reading a novel by a particular author you might ask students to find somebody who has met the author and can share an interesting story about the author to text message them. Or, students might find somebody who has visited a community described in a novel to text message them.

If the class is studying about a foreign nation, challenge students to find somebody currently in the nation to text message them.

Will students learn facts through the use of text messaging? Probably not!! However, they will practice the process of finding the information that they need. Just imagine the process that students will have to go through in order to achieve one or more of the above objectives.