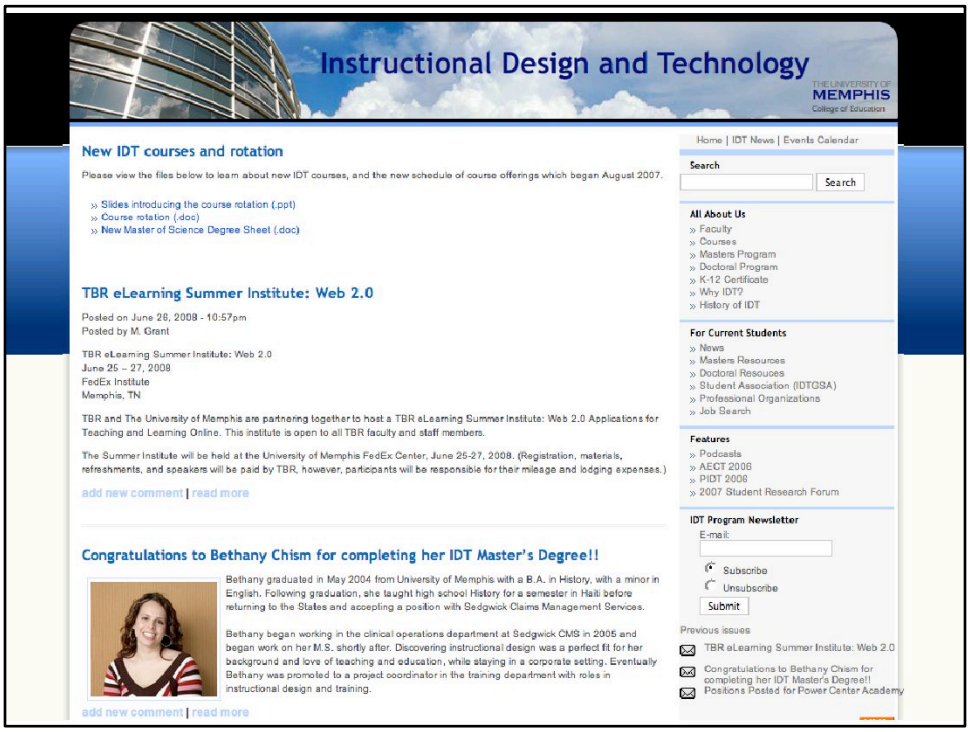
Teaching & Learning with Web 2.0

Purposeful, Promising, Potentially Precarious

Michael M. Grant, PhD
The University of Memphis

HELLO
my name is
Michael
M. Grant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New IDT courses and rotation
Please view the files below to learn about new IDT courses, and the new schedule of course offerings which began August 2007.
» Slides introducing the course rotation (.ppt)
» Course rotation (.doc)
» New Master of Science Degree Sheet (.doc)
TBR eLearning Summer Institute: Web 2.0
Posted on June 26, 2008 - 10:57pm
Posted by M. Grant
TBR eLearning Summer Institute: Web 2.0
June 25 – 27, 2008
FedEx Institute
Memphis, TN
TBR and The University of Memphis are partnering together to host a TBR eLearning Summer Institute: Web 2.0 Applications for Teaching and Learning Online. This institute is open to all TBR faculty and staff members.
The Summer Institute will be held at the University of Memphis FedEx Center, June 25-27, 2008. (Registration, materials, refreshments, and speakers will be paid by TBR, however, participants will be responsible for their mileage and lodging expenses.)
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Congratulations to Bethany Chism for completing her IDT Master's Degree!!
Bethany graduated in May 2004 from University of Memphis with a B.A. in History, with a minor in English. Following graduation, she taught high school History for a semester in Haiti before returning to the States and accepting a position with Sedgwick Claims Management Services.
Bethany began working in the clinical operations department at Sedgwick CMS in 2005 and began work on her M.S. shortly after. Discovering instructional design was a perfect fit for her background and love of teaching and education, while staying in a corporate setting. Eventually Bethany was promoted to a project coordinator in the training department with roles in instructional design and training.
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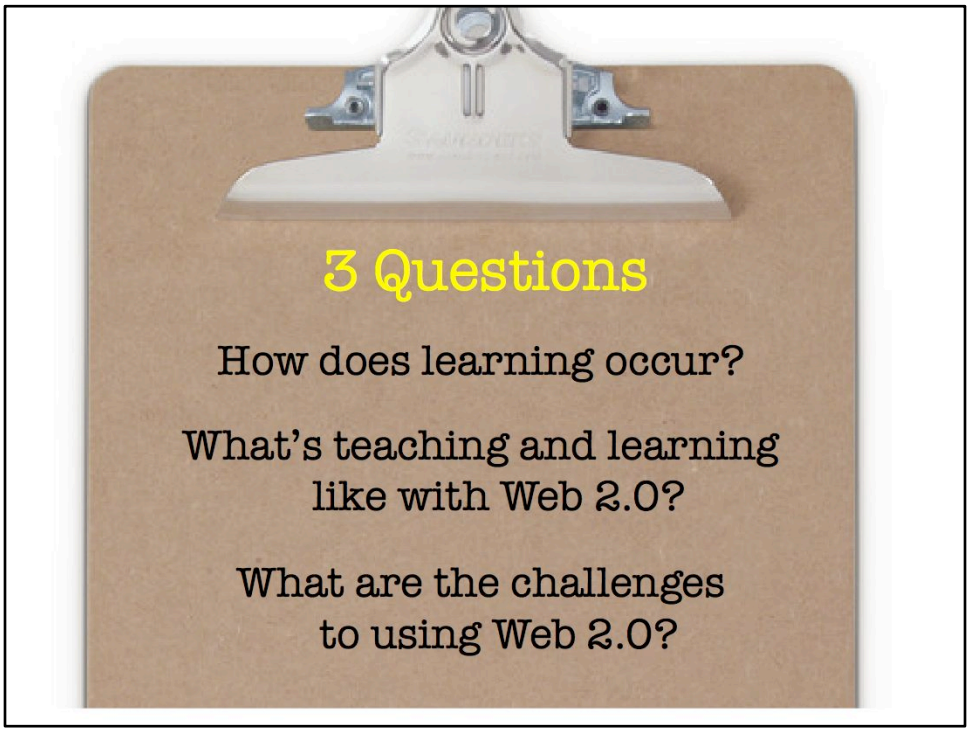

3 Questions
How does learning occur?
What's teaching and learning like with Web 2.0?
What are the challenges to using Web 2.0?

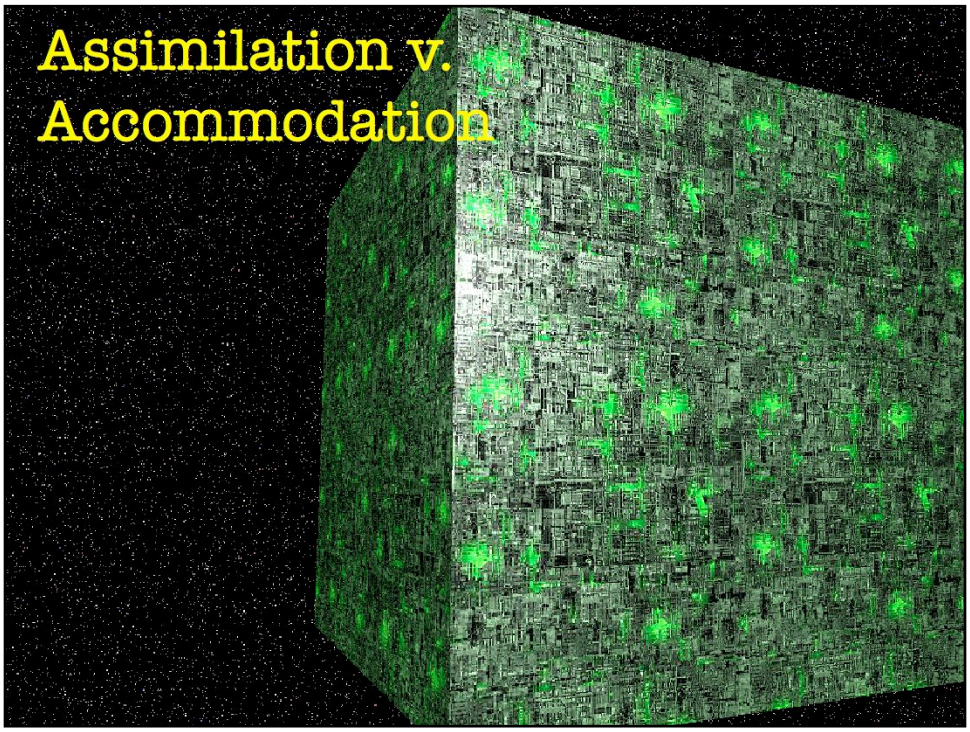
How does learning occur?

Cognitivism is explicated by three apportionments: a sensory register, working memory and long-term memory. Stimuli are perceived and attended to and then pass on to working memory. Working memory is the processing center for active learning, but it has a limited capacity. This is theorized to be 7 plus or minus 2 bits of information. This capacity can be extended through memory strategies, such as mnemonics like HOMES for remembering the Great Lakes, rehearsal like repeating a phone number over and over till you dial the phone and chunking, which is combining pieces of information like social security numbers grouped into three segments. New learning is them processed from working memory to long-term memory, which is believed to be unlimited.

Cognitive learning strategies are really focused on ways to get new knowledge and skills into long-term memory and back out of long-term memory. Methods for structuring knowledge and cues for triggering prior knowledge or new knowledge ways to do that.

Cognitive load theory specifically highlight the limitations of working memory, because that's where learning happens. Three types of cognitive load: intrinsic, germane and extraneous. Intrinsic and germane are associated with the difficulty of the learning and commitments of the learner. But extraneous cognitive is all the other junk, like poor instruction, complex system and whether a tool is too difficult to use. These three are additive, so they compete for space in working memory. When working memory gets full, there's no more room for other stuff. So, your bucket is full.

Learning is an active process and learners construct knowledge and understanding of the world by reflecting on their experiences. Constructivist learning is often associated with key interactions with others and the environment. There is a real emphasis on allowing learners to represent their knowledge in multiple ways.

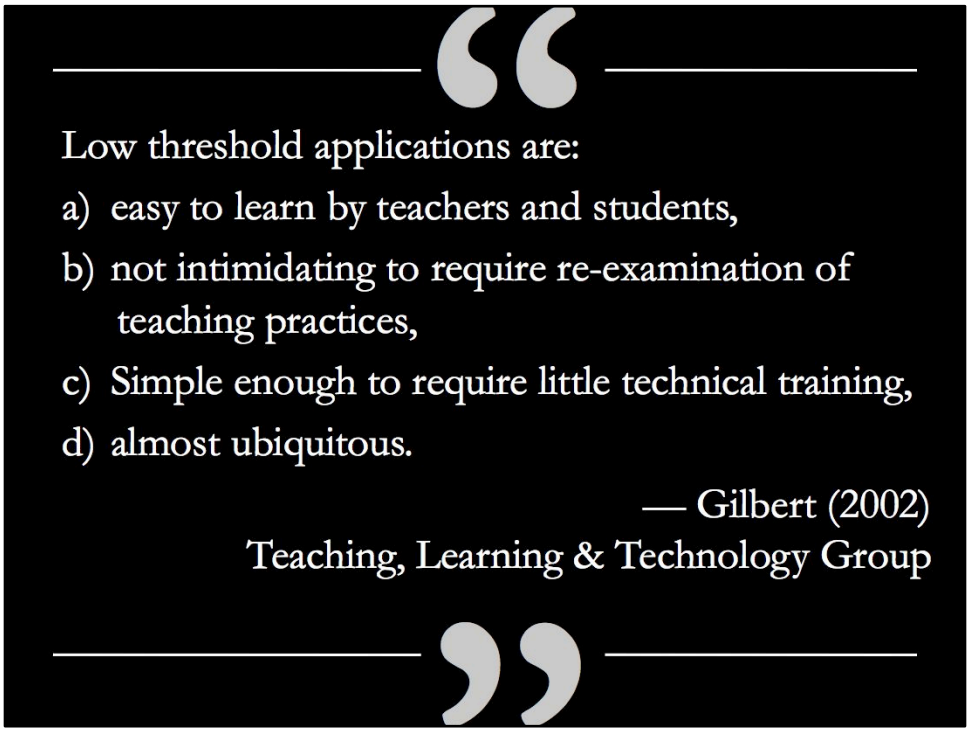


Piaget suggested that learners construct new knowledge through assimilation and accommodation. Assimilation occurs when learners are able to integrate the new knowledge with their existing framework. Accommodation occurs when new learning conflicts with prior knowledge, so the learner's mental framework has to be constructed anew.

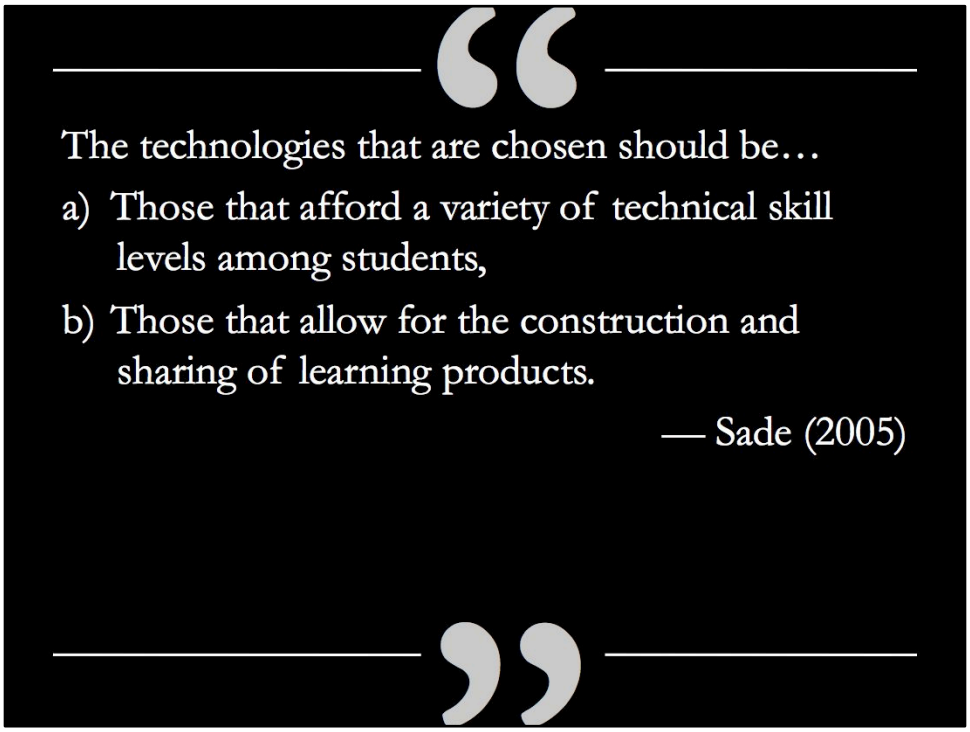
What's teaching and learning like with Web 2.0?

I'd like to suggest there's 3 things we should consider when choosing whether or not to use Web 2.0 with teaching and learning.

Low threshold refers to how easily a tool is to adopt and how easy it is to learn.



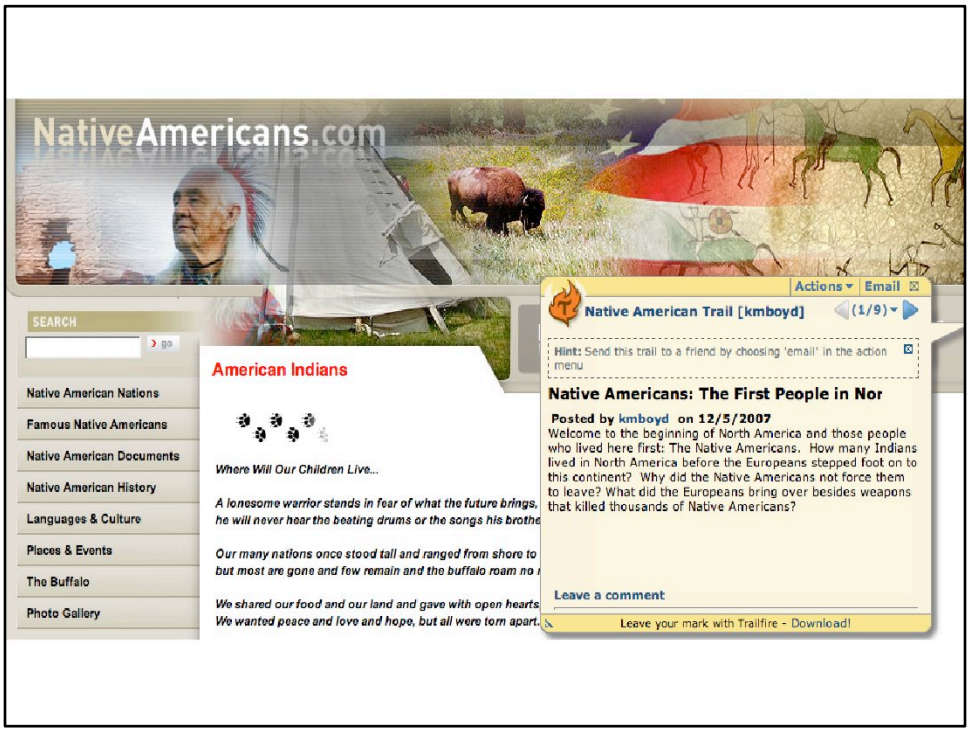
Low threshold applications are (a) easy to learn by teachers and students, (b) not intimidating to require re-examination of your teaching practices, (c) simple enough to require little technical training for use and (d) almost ubiquitous. For teachers, these are attractive. This tends to focus on efficiency, and that's inline with cognitivism.



Sade takes the emphasis to be on the student view—a more constructivist view.

How do low threshold apps connect with teaching & learning?

Low threshold apps suggest a shallow learning curve and dedicating few cognitive resources to the tools. Both Gilbert and Sade recommend tools should be chosen on high usability—that is very intuitive. For learning, this is low extraneous cognitive load. You're also able to focus on the content and not teaching a tool.



In one of my classes, I have preservice teachers create self-instructional units with Trailfire, a social bookmarking service that generates a linear sequential set of bookmarks, around a selected topic. A learner can follow the trail the teacher has created with annotations or critical thinking questions displayed on each Web site. To do Trailfire, you have a Firefox or Internet Explorer plug-in that makes it super easy. The focus of the assignment is then on locating the best sources of content and adding annotated comments to the trail. Because it's so easy, the students don't focus on the tool. It just works. Diigo allows something very similar with WebSlides and audio.

When using Web 2.0 tools I've had to provide very little upfront instruction about how to use the tools and little subsequent support. As students, they are able to move forward with building a learning product without having an introductory type of assignment to learn the tool. Weebly, that I mentioned and demoed yesterday, is a Web site authoring tool with a very easy to use drag and drop interface. It has been completely unnecessary for me to teaching how to use Weebly. I've heard similar reports with Google Sites.

Variety of Tools & Models

Mental models are the ways you think things should work. They guide and govern our performance during learning and problem solving. When we use a Web site or a software application, we have preconceived notions about how to accomplish a task. Most of us have been using comprehensive office suites—all in one tools with a single mental model. So if your model didn't match the all in one tool's then you adopt, adapt or too bad.

Web 2.0 tools in contrast are small, niche tools. A number of tools across the Web have been created to accomplish the same task, but they use different mental models of how to accomplish that task. For example, at Go2Web20.et, there are 13 different concept mapping or mind mapping tools.

In another example, Fleck, JumpKnowledge, and Diigo all allow textual annotations to a Web page. Fleck is the most graphical; JumpKnowledge is strictly text only. Diigo and Fleck include social networking and communities, while JumpKnowledge shares via email and hyperlinks. DrawHere, however, allows drawings and freehand diagrams to be saved to a Web page as an annotation, then shared. So, it might be possible to match your mental model and possibly address your preferences for learning, such as visual, textual and audile learning.

Instead of an all in one suite, teachers and students can selectively adopt tools that are most intuitive. This is related to low threshold applications and cognitive load. You have to dedicate fewer cognitive resources to learning a tool, and you can express yourself with the tool that best fits.

Access to Tools & Knowledge

Who likes free?

In the March 2008 issue of Wired magazine, Chris Anderson describes the new business model called free-conomics. With the rapidly decreasing costs of technology, it is best to give them away for free. This helps build awareness and a user base.

In addition, there is an altruistic component of providing knowledge and expertise openly. This is at the heart of the open courseware movement. For example, we all know about Wikipedia that relies on the collective knowledge of individuals. But do you know about Curriki, which is committed to providing high-quality curricula for K-12 schools. The state of California is also exploring the creation of an online textbook for World History and they are using Wikibooks. That sure is going to cause a stir with textbook publishers.

Introduction

In addition to safety on the Internet, ethics are critical when using digital resources. In Unit 4, we discussed what it means to be literate in the Information Age. Similarly, we discussed locating and evaluating information from the Internet in Unit 5. These units have prepared us to use the tools and processes for locating and evaluating information, but they have not provided with the mechanisms to ensure that our students respect the works of others online, particularly when they are so easily copy and pasted or downloaded into a new document. And what of our own practices? Aren't we all guilty of finding a cute piece of clip art or photo on the Web, then copying and pasting it into a handout or presentation? Is this plagiarism or copyright infringement. Do the students you work with firmly believe that if anything's available on the Web, then it must be free to use? How do we prepare students to use digital resources? How do we teach them to respect copyrights? How do we teach using fair use guidelines? Are you familiar with Creative Commons licensing? Try the quick interactive module on the right and watch the short, humorous video. These will get you started thinking about ethics, copyrights and fair use.

As you progress through this unit, consider your own practices regarding using the Internet safely and ethically. Consider the example you set in your classroom and the level of emphasis you place on these concerns.

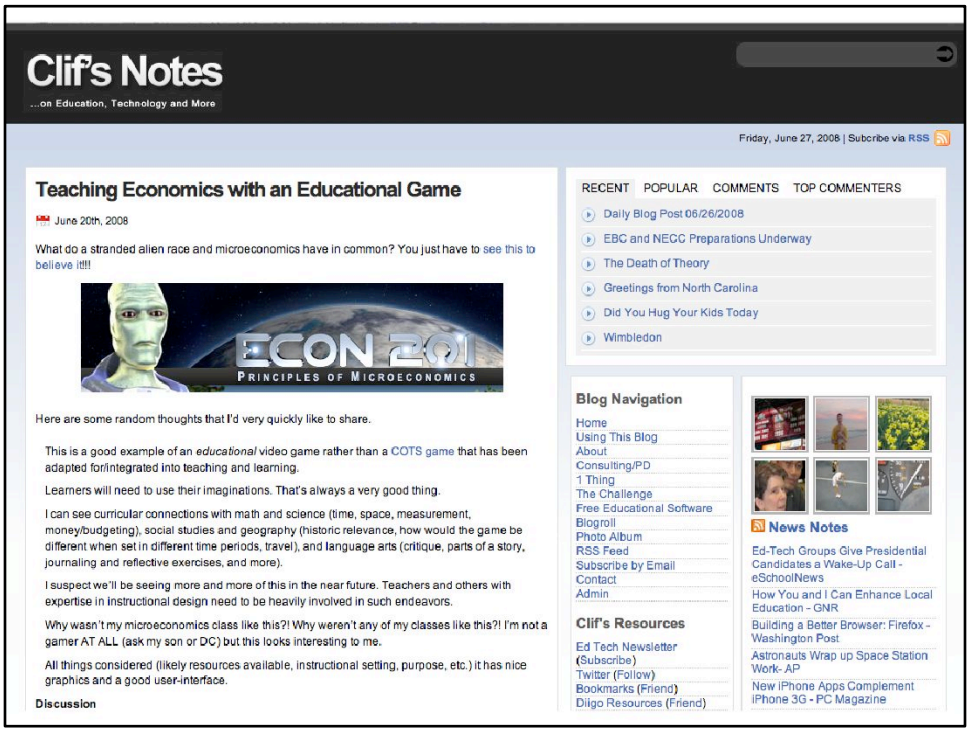
References

Bailey, T. (2006a, January 20). Bullies swagger onto Web. *The Commercial Appeal*, pp. B1-2.

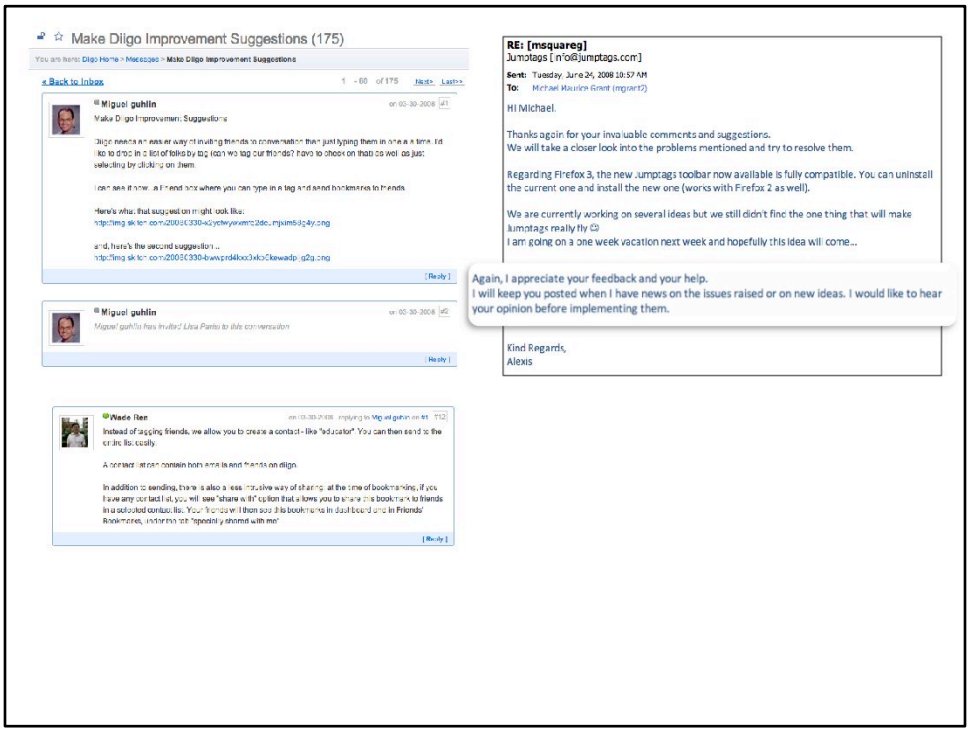
Bailey, T. (2006b, January 14). Mom did well in capture of sex offender. *The Commercial Appeal*, pp. B1-2.

Children's Internet Protection Act, 20 U.S.C. (2000).

With the limitations related to access and expense greatly diminished, learners are able to try multiple tools and there's little time lost. Since the applications are Web based, there typically are not downloads and only a registration process. For a teacher, it is easier and more accessible to use a variety of resources, such as embedding external media, such as YouTube and TeacherTube or fun little widgets, or extending learning opportunities with external blog conversations. In my classes, I have embedded relevant videos, podcasts and slideshows for both content and motivation. A colleague of has a good following of folks from around the country contributing to his blog and he has integrated his course content and students with these conversations and postings.

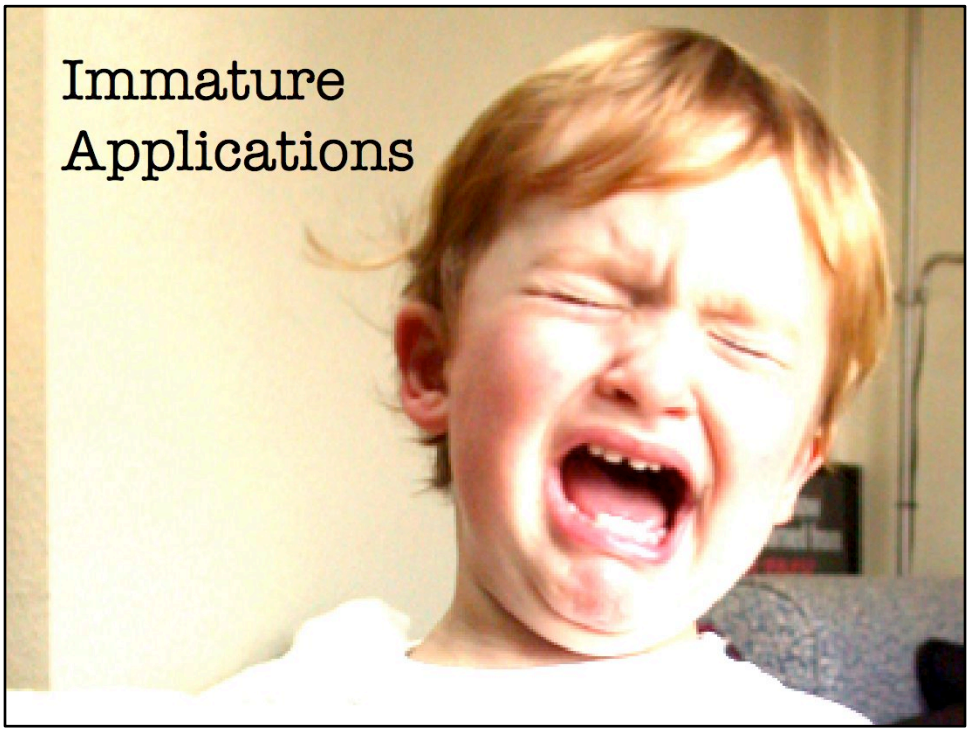


Personal learning communities or PLCs have also emerged as a result of the social aspects of many of the Web 2.0 tools. Access to experts and others interested in a topic is available through social components of tools like Diigo, Twitter, blogs and wikis. This certainly gives a learner more control over their learning and access to a broader learning community, bringing their profession closer to home.



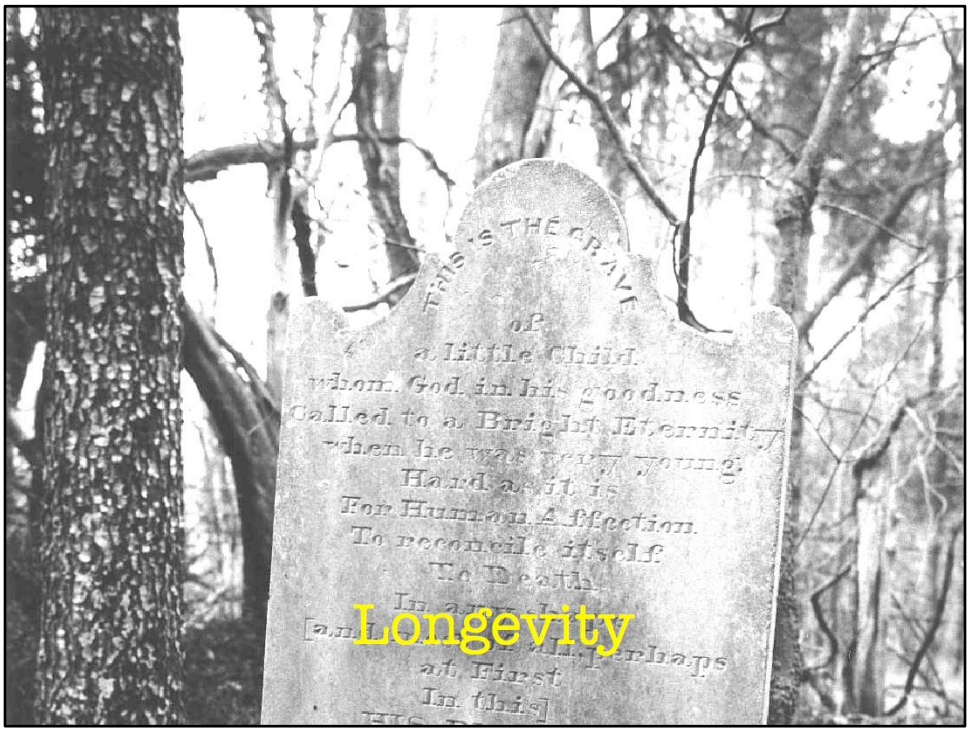
The last piece that goes with access to tools and knowledge is a reverse. The developers of the tools rely on you and your needs. On a number of occasions, I have contacted the developers directly. My colleague has too. We've seen significant interest in our ideas from the developers. They want to know what you want. So, I encourage you that if you use a tool and have ideas about how to improve it to tell them. A couple of examples, as a result of a conversation with Diigo, they will launch an educational version in the future. Wetpaint the wiki has opted to remove ads from educational pages; you just have to ask. And Jumptags, a social bookmarking tool, has asked for my feedback on some of their tools and problems that I've had. Try it.

While I've spent some significant time telling you all the reason why you should be doing this stuff, I'm a pretty practical guy, and I want you to balance it with reality. So, what I'd like to do is give you some warning signs, too, of things to watch out for when using these cool tools.



One of the true computer programming characteristics of Web 2.0 is called perpetual beta. This is where an application is "constantly evolving, never really leaving the beta state." Because of this immaturity, the Web 2.0 applications have a tendency to be susceptible to unexpected downtimes and software – anomalies. Zookoda, is a blog posting to email newletter tool. They had to suspend service after they found out they were being attacked by spammers. Even the wildly popular Twitter a couple of weeks ago went down because they lost a database.

With software applications, we're all aware of the adage of don't buy new version. Wait for the point one version or the service pack upgrade. Just a minute ago, I said that the developers like to hear your ideas. Well, they sort of depend on them to improve their products. In teaching and learning this translates into a little unstable and a little unreliable. Caveat emptor.



Most of these tools are four or less years old. It is simply impossible to determine which ones have legs and will last. So, as a teacher, you have to be reticent to recommend or adopt a tool that at least doesn't have some type of reputation. Using sites like Buzzshout, Cnet or AppAppeal might help you. Some folks are seriously concerned that the Web 2.0 apps will echo the "dot com bubble."

Certainly, for teachers and students the concern is investing significant time with a tool that just doesn't make it. So, one way to deal with this is to leverage the compatibility features of many of the tools. Many of them will exchange file formats, such as exporting or importing Microsoft Word, Powerpoint and Excel formats. So, getting the data in and out might help this uncertainty.

These tool are still wrestling with a good business model. I mentioned Twitter. They can't figure out how to make any money. Two of my all time favorite tools – Zoho Creator and Weebly – both in the last 10 days launched new business plans, placing limitations on their free stuff. Caveat emptor.

This one is easy: there are a bazillion of these tools. How do you keep up with them? With the browser wars and search engine wars, we're down to a few choices. These guys haven't been around long enough for us to find the defacto tools. At one of my popular directory for tools, Go2Web20.net, the listing was at 2,490 last Monday. At another directory, the list was similar at over 2,400. So, while you've got so many choices that allow you to match mental models, you've got so many choices.

We've had a few move forward, like Wordpress, Blogger, Wikipedia, delicious, Flickr and recently Twitter.

Another challenge to using these tools is their dispersement across the Web. A blog may be hosted at Wordpress, a wiki at Wetpaint, and presentations at SlideRocket. The strength to all in one applications is their centrality and consistency across applications. Functions in one tool work identically or similarly in another tool. So, while Web 2.0 tools get high marks for high usability and shallow learning curves, there is still a cognitive investment to learn each new tool. Warning: extraneous cognitive load alert. Danger Will Robinson.

Some companies have tried to combat this. Zoho has over 20 tools and Google bought everybody and their brother to create Google Apps. But sending students all over the Web to different sites can be a little disorienting. I'm going to admit that in my bookmarking service, sometimes, I get confused about whether I'm in the private view or the public view.

Security for student information and security of intellectual property persist as issues. Encouraging students to use blogs and other Web 2.0 tools requires that students be aware of protecting their privacy. We also have to force students to respect copyrights and intellectual property. And we have to model it for them. Downloading text, images, music and software. With many of the Web 2.0 tools, it's easy to combine media from across the Web with little regard to copyright. Cut and paste plagiarism with any media is still copyright infringement.

And students still have to be sensitive to the quality of information sources. Blogs and wikis as sources is questionable quality. But how do our students know that? Wikipedia has a great page for helping students use Wikipedia as a source. Interestingly, and you may have heard about this, a recent study in Nature found similar levels of quality between Wikipedia and Encyclopedia Britannica.

> There are strongly mixed reactions about the new technology. Some end users like it (and some love it), but professionals who built a lifetime of skills around the old technology are very suspicious, often undermining it. Even the advocates admit the technology often has to be cajoled into working….Invariably, people just did not realize how hard it was to pull off. What seemed easy and obvious is in fact quite daunting.
>
> — Clark Aldrich (2005)
> *Learning by Doing*

Not every teacher and every student will be attracted by the Web 2.0 tools. The technologies themselves may be easier and more accessible, but combining complex learning environments, learner characteristics, content, pedagogy and technology together creates a less distinct path to success. Skilled teachers, like you guys, are still the key to meaningful student learning. The digital natives may be using a variety of tools for entertainment, information learning and communication, and teaching and learning must respect these changes. Changes in the way we teach and learn may in fact be necessary to make learning active. Thank you and have a great rest of the day.