Tools

Frameworks for Sense Making

Frameworks are often utilized to give shape and form to nebulous ideas and concepts. Even a few days spent reading literature on emerging learning technologies reveals an overwhelming array: Twitter, blogs, wikis, podcasts, identity and presence tools, synchronous classrooms, and so on. Making sense of these tools requires a framework. Making sense of the information that flows through these tools requires yet another framework. And, using these tools for teaching and learning requires a third.

Frameworks are a particular way of seeing. As such, a framework is incomplete – it fails to capture a holistic perspective. While this is an inconvenience, it is necessary to take a certain perspective in order to begin to make sense. A holistic perspective is perhaps largely unattainable, but can be approached through the use of multiple perspectives. For the purpose of this text, new tools will be presented based on how they contribute to the changed information cycle.

Defining Social Software

A defining trait of social software today is the ability to *speak into the context others have created*. For example, a newspaper editor is able to project a certain voice (i.e. the slant of a publication) on political or social events. Feedback from readers is limited to letters to the editor – a context again controlled by the editor. Social tools permit individuals – through annotations (PLoSOne, StumbleUpon) and discussions – to have a voice. The ability to speak directly into the context of others reshapes and redistributes power in message control.

New technologies can be grouped by their affordances – action potential – in six categories (see Image 16):
- **Access** resources
- Declare or state **presence** (as currently online or in declaring physical proximity through GPS)
- **Expression** through tools such as Second Life or profile features of most social networking site
- **Creation** of new content and resources through blogs and wikis
- **Interaction** with others through asynchronous and synchronous tools like discussion forums, Twitter, Skype, ELGG
- **Aggregation** of resources and relationships through Facebook, iGoogle, or NetVibes.

Each tool possesses multiple affordances. Blogs, for example, can be used for personal reflection and interaction. Wikis are well suited for collaborative work and brainstorming. Social networks tools are effective for the formation of learning and social networks. Matching affordances of a particular tool with learning activities is an important design and teaching activity.

	ACCESS	PRESENCE	EXPRESSION	CREATION	INTERACTION	AGGREGATION
Blogs						
Skype						
Wikis						
Second Life						
Facebook						
Google Reader						

Image 16: Affordances of emerging technologies

Blog

What is it?

A blog is a basic web page with posts presented in reverse chronological order. Posts can be retrieved via an RSS reader (such as Google Reader), negating the need to visit the blog.

Google uses its blog to communicate new products or offerings. CNN uses blogs as an alternative news source. NASA has a launch blog. Well known people like Dave Barry, Scott Adams (Dilbert), and Tom Peters use blogs as well. Even the president of Iran has a blog. Blogs figured prominently into the last American president election, providing candidates with another venue to connect with voters.

The simplicity of blogs is deceptive. Blogging enables unique opportunities for educators to improve communication with (and between) learners, increase depth of learning through reflection, and enable the formation of diverse viewpoints and perspectives. Perhaps most importantly, they enable educators to connect with each other.

How does it work?

Prospective bloggers can sign up with an online services – such as Blogger or Eduspaces – or download software to a server and host their own blog (Movable Type or Wordpress).

Posts can be made through a desktop application (such as Microsoft's Live Writer) or through the interface accessible with a web-browser.

Blogs generally allow readers to provide comments. Due to spam, many bloggers use anti-spam measures such as holding comments in moderation or requiring commentators to enter information (often a captcha) to verify a person, not a script, is entering the comment.

How can it be used for teaching and learning?

Blogs are simple tools for learners and educators to use in teaching and learning. Educators can use a blogs to update learners on course activities, post reflections on in-class or online conversations, and to share journal articles and related course resources.

Learners can use blogs to reflect, connect with others, use as an e-portfolio or journal, and comment on important posts made by other learners.

Wikis

What is it?

Wikis - or more broadly, collaborative writing on the web- have captured the interest of business leaders and academics. Well known, and increasingly referenced, is Wikipedia.

A wiki is basically a simple web page that anyone can edit. At least that's the standard description or what wikis were when first started. The openness of wikis has encountered the reality of human behaviour (or more precisely - spam). Wikis are chaotic, informal knowledge spaces. Wikis enable individuals to create a collective resource. Whereas blogs enable individual voices, a wiki over-writes individuality.

The messiness of wikis can be intimidating to newcomers. Why do people contribute? What motivates individuals to spend time editing and proofreading sites? What about vandals who simply delete text? But wikis are not without governance or management. Wikipedia has extensive resources available on how to handle concerns arising from community conflict. Democracy and

openness drive actions in this space.

How does it work?

Wikis can be remote hosted (such as PBWiki, WetPaint, or collaborative Google Docs) or hosted by an institution – such as MediaWiki or the wiki feature in Moodle. Wikis can be open - where anyone can create an account and edit - or closed - requiring approval from a site administrator. Edits may be handled through simple editing with wiki markup (similar to HTML) or a Word-style formatting bar (in hosted wikis such as PBWiki).

How can it be used for teaching and learning?

Wikis, like any tool for learning, are limited in use primarily by the creativity of the instructor or designer. Common uses include:
- Course notes
- Course syllabus
- FAQ
- Collaborative writing and group work
- Brainstorming
- Inviting experts (whose work may/may not be the focus of the wiki) to review completeness of learner wikis
- Content creation with educators from other universities/schools

Social Bookmarking

What is it?

Social bookmarking is a way to store and organize bookmarks (favorites) on the web. Having bookmarks on the web means they are accessible from any computer with an internet connection and a browser.

How does it work?

Bookmarks can be posted to services such as Delicious directly through the website or through a browser toolbar. When saving a webpage, users can tag the resource, select it for private/public view, and share it with others in a network. The use of a specific tag will allow others with similar interest to discover shared resources. Services like Diigo and Stumble Upon allow users to rate, tag, and comment on specific web pages (comments are only visible to other users of the service).

How can it be used for teaching and learning?

In addition to organizing personal information, social bookmarking is a useful tool for sharing information, articles, and learning resources. For example, a course can be assigned a specific tag, and the contributions of all learners can result in a useful collection of resources.

Social bookmarking is valuable for researchers. Writing an article? Researching an industry? Slaving away on your dissertation? Delicious can be used to keep track of all the source materials and commentary. Or, a special tag can be used for an assignment or group work to easily gather all bookmarks.

Audio & Podcasting

What is it?

Podcasting is the distribution of audio online through RSS. Technology has developed to the point where an educator can record and distribute audio files with only a computer, a microphone, and internet access.

Of particular potential in audio is the increased use of different audio tools for easy collaboration (such as Seesmic or Voice Thread). While podcasting is generally a one-way flow, collaborative audio creation around images adds the learner's/listener's voice to the exchange.

How does it work?

Podcasts can be created with Audacity, Odeo, Garage Band, or digital voice recorders. Audio files can be shared via services such as PodBean, iTunes, or plugins for blogging software (such as Word Press). As with blogs, learners can subscribe to RSS feeds of podcasts. Learners can listen to podcasts on a computer or iPod (or similar audio device).

How can it be used for teaching and learning?

Podcasts can be used to:
- Record lectures
- Include external presenters
- Evaluation and feedback
- Learner created reflections and interviews
- Interviews with notable contributors to a particular field
- News or course-related updates
- Short introductions to new subject areas

Image sharing (with Flickr)

What is it?

Flickr is a web-based image sharing tool.

How does it work?

Learners can upload, tag, share, annotate, and discuss images and photos. Images can be licensed under Creative Commons license, allowing for varying levels of use. Groups can be formed around topics and themes. For example, a conference can set up an image group and all attendees can post and share images. Individual images can geotagged (tagged by location) – useful experiencing (from a local perspective) different parts of the world. Images can be annotated so individual components within the image can be described.

How can it be used for teaching and learning?

Flickr can be used to:
- Share photos within a class, school, department, faculty, college or university.
- Set up a group for a courses - share photos with group members
- Architecture/visual arts groups can use the geo-tag feature to share images/locations, etc.
- Work with international students - i.e. stimulate discussions on countries of origin
- World issues - a map for students - i.e. making it seem like more than a map by using photos and linking to real-life images
- Traveling - flickr journey - share with family, classmates

- Field research
- Use for building community in distance education - i.e. students share images of themselves, where they live, etc. "introduce yourself in flickr" - where you live, work, etc.
- Use in Telemedicine for diagnostic and therapeutic purposes.
- Use in Anatomical Pathology for diagnostic consultations.

Video

What is it?

The last decade has seen the web transition from a text-based medium to a multi-media platform with audio, video, and greater interactivity. For educators, this presents a great opportunity to add diversity and variety to courses.

While video-taped lectures have been common on university campuses for decades, the increased bandwidth available to most computer users has opened the door for a new approach to extend lectures - enabling learners to view missed (or not fully understood) lectures at their convenience.

How does it work?

Video in education runs a spectrum from easy-to-create "talking heads" (recorded with a web cam) to edited professional quality resources. Easy to create video – with a web cam, Flip Video, or video recorder – are more accessible to individual educators than studio-produced recordings.

After videos have been created and edited, they can be uploaded to a university site or posted on a public site such as YouTube or blip.tv.

How can it be used for teaching and learning?

Video can be used for:
- Short demonstrations
- Incorporate video from experts
- Incorporate video developed by other institutions/organizations as open educational resources
- Add recorded presentations of conferences (like TED Talks) as curricular resources
- Pre-class videos to place future lectures into context
- Use videos to review key concepts discussed in class (for learner review or to augment lectures)

Open Education Resources

What is it?

Open educational resources (OERs) are not tools of the same nature as others in this section, but are included here due to their potential to influence higher education.

While LMS' were gaining acceptance in education, discussion of digital learning resources (largely under the banner of "learning objects") grew to an almost fevered pitch. Proclamations of learning object repositories as the future of learning abounded. Institutional, discipline-based, provincial, national, and even international groups established repositories for their members. Unfortunately, the idea was too new, or perhaps more accurately, too unlike what educators were comfortable with. While discussions raged on the value (economical and pedagogical) of learning objects, many repositories gently slid into obscurity. A few remained - MERLOT most notably - but many moved to more institutional repositories of educational resources (like DSpace), rather than self-contained

learning objects freely available to the larger academic community.

While interest in learning objects has somewhat abated, interest in OERs has grown. OERs are materials made freely available online for educators and learners to use, repurpose, and extend. MITs OCW initiative raised questions about the value of content. MIT, in making course resources freely available, expressed a view that the economic value point for learners is found in faculty and learner interactions and accreditation not in academic content.

How does it work?

Institutions make learning resources available for others to use or view. Different licensing schemes influence appropriate use (many, for example, limit for-profit use of resources). As materials are accessible online, educators can link to and incorporate simulations, videos, lectures, and other learning activities. Depending on licensing assigned to OERs, educators can incorporate, revise, improve, and extend resources.

Publicity generated by large institutional OER initiatives (MIT, Open University, OpenYale, Connexions) overlooks an important grassroots development: collaborative content development through wiki sites like Wiki Educator.

How can it be used for teaching and learning?

OERs have numerous opportunities for teaching and learning:
- Incorporate videos, lectures, and other materials in existing courses
- Design learning activities around improving existing resources in public sites such as Wiki Educator
- Make resources freely available online (for example, a wiki textbook written by students).

Microblogging

What is it?

Microblogging involves sharing resources and engaging in short conversations with other users of the service. Twitter, Tublr, and Plurk are popular examples.

How does it work?

With Twitter and Plurk, users are limited to maximum responses of 140 characters (including spaces and punctuation). Accounts can be setup without charge. Social networking consists of adding friends (which means you follow their updates/posts) and interacting with others. The key question in Twitter is "what are you doing". Conversation ranges from meaningless – "I just finished a cup of coffee" – to meaningful "My partner just had a baby". Twitter enables the creation of strong social networks by sharing the "small details of life" that are often only experienced by people in physical proximity. Blogs lack the immediacy and personal communication found on Twitter. In additions to posts being displayed on a public timeline (or, if you wish to only share with your network, privacy settings are available), direct messages (of 140 character length) are possible.

How can it be used for teaching and learning?

The social dimension of Twitter can be overlooked when focusing on the triviality of many "tweets" (posts). Sample uses in education include:
- Ask learners to "follow" notable thinkers in a particular field
- Forming social networks with other learners
- Sharing resources
- Follow conferences within a field of study

- Track current events
- Participate in conversations with experts in a discipline
- Provide an alternative avenue for student-instructor interaction
- Provide class updates and reminders

Social Networking Software

What is it?

Social networking has been popular in various forms since the development of the internet. Social networking was initially the domain of early adopters or sub/counter-culture individuals. Newsgroups, WELL, and other online "communities" formed with the participants who possessed a degree of technical competence and ability to accept communication untethered from physical contact. As the web developed and grew in prominence, other tools of informal social connections - such as blogs - developed. The audience was again largely confined to a subset of society, often limited by technical skills or the ability to tolerate the conceptual shift of transparency in an open forum.

In the late 90's/early 2000's, social networking sites became more popular with the development of sites such as Friendster. These sites allowed people to create a profile and begin to form a network of connections with others from around the world. The development of sites such as MySpace, Orkut, and more recently, Facebook, moved social networking from the sub-culture domain to mainstream. The ease of use and ability to connect with others of shared interests resulted in rapid adoption.

How does it work?

Social networking sites are often integrated suites of tools with functionality similar to blogs, Twitter, Flickr, discussion forums, etc. Users create an account on a networking service and fill out their profile. Through site search, users can form connections with other people. Information – images, status updates, event invitations, emails, videos – can then be shared with "friends".

How can it be used for teaching and learning?

Educators are afflicted with a desire to use what is popular within society. This is largely rational - after all, if students are comfortable with computers, mobile phones, or certain web applications, why not leverage their existing skills with technology for teaching and learning? In some cases, however, different tools are used for dramatically different purposes. For most people, Facebook is a social space, used for informal conversations, building and maintaining relationships, and the voyeuristic tendency of profile surfing. The value of Facebook for formal teaching and learning is unclear. While learners will likely use Facebook to create small networks, study groups, or use its communication tools for arranging study times or clarify assignment requirements, formal use in college-level instruction may be too much of a stretch for learners.

danah boyd, is more blunt[121]: "In their current incarnation, social network sites (SNSs) like Facebook and MySpace should not be integrated directly into the classroom...I have yet to hear a compelling argument for why social network sites (or networking ones) should be used in the classroom. Those tools are primarily about socializing, with media and information sharing there to prop up the socialization process (much status is gained from knowing about the cool new thing). I haven't even heard of a good reason why social network site features should be used in the classroom."

Web Conferencing

What is it?

Webconferencing is used to facilitate group meetings or live presentations over the Internet.

In its simplest form its text messaging, at its most complex, it's videoconferencing combined with application or desktop sharing. What is common to all forms of webconferencing is that they are synchronous communication (real time) tools using computers and the internet. Most webconferencing programs now have recording capability which allows you to save your conference for later playback.

The advantage of webconferencing to videoconferencing is that webconferencing can be accessed from anyplace that has a computer with the appropriate software and an internet connection. Unlike traditional videoconferencing, expensive videoconferencing equipment is not required and the technical overhead to 'operate' a webconference is much lower. The disadvantage to webconferencing is that the quality of video in videoconferencing systems is usually superior.

How does it work?

Desktop webconferencing or online classrooms can be managed through services like Elluminate or Adobe Connect. A typical service will include an interactive whiteboard, text chat, audio, video, polling, application sharing, web browsing, filesharing, and presentation (Powerpoint) tools. Presentations can be recorded and used for future playback. Elluminate Publish! can be used to create podcasts or Flash videos of Elluminate presentations.

How can it be used for teaching and learning?

Webconferencing software has numerous uses:
- Group meetings
- Virtual classes
- Office Hours
- Grad students meeting with mentors
- Guest lecturers
- Recording classes or meetings
- Online conferences

Aggregation

What is it?

Blogs, news, social bookmarks, academic journals, Flickr images, and YouTube videos produce a sea of information that threatens to inundate us to the point of paralysis. How can learners manage these disparate sources of information in meaningful ways? With more technology of course!

Tools like iGoogle, NetVibes, and Google Reader give learners control of information. By subscribing to blogs, journals, Moodle forums, and other online services, learners can bring together meaningful resources.

How does it work?

Many websites are now producing RSS or web feeds. RSS stands for really simple syndication (or rich site summary, depending on who you ask). It is simply an XML file that can be read by software. An aggregator skims the site and updates any information added since the last visit to the site. Essentially, RSS allows information to come to you (through an aggregator) instead of you having to go to the information. If you are following 20 different websites in your field, and they all produce an RSS feed, an aggregator visits the sites and retrieves new content and displays it in a browser or

on your desktop RSS reader (depending on the type of aggregator).

Aggregators (and the RSS information sharing structure as a whole) differ from email in that the emphasis is on pulling in resources of interest. Email, in contrast, is a push technology. Through RSS, resources are intentionally solicited, whereas anyone can send an unsolicited email. By pulling in information (versus having it pushed), we have greater control over the quantity and type of information we encounter.

How can it be used for teaching and learning?

Creating personal learning environments

Learners can follow key thinkers in a field (blogs)

Learners (and educators) can subscribe to academic journals

Games, virtual worlds, and simulations

What is it?

Virtual worlds and games are common topics discussion in educational conferences. Most educators have at minimum, indirect experience with games - whether through conversations with students, the activities of their children, or their own personal use of virtual games.

Virtual games - such as World of Warcraft - generally involve the achievement of a certain goal, such as mastering a game level. Virtual worlds, in contrast, are environments where individuals can interact with each other, but may not necessarily be focused on achieving a particular goal. Traditional video game systems – XBOX and PS3 – now offer online gaming as well.

Second Life has received considerable attention from educators over the last several years. SL provides an alternative learning experience to a traditional online course, as learners interact with peers and educators through avatars, explore course material (often in a more interactive manner than only reading text), and express personal learning through visual means.

Simulations are particularly valuable as a learning tool in providing learners with a situated experience that is more cost effective than actually performing the task (such as flying). Simulations can be expensive to design and administer.

How does it work?

Games, simulations, and virtual worlds are all distinct. Discussion here will be confined to Second Life. After a user has created an account (free version is available, but to participate in the "Linden" economy, a paid account is required), she can modify her avatar (appearance, body type (or non-human), accessories, etc.). She can then form a social network by adding friends, participating in chat (audio or text), attending conferences, concerts, clubs, and other activities. Users can rent/purchase living spaces, vehicles, build homes, and almost any other activity that is possible in their "first life".

How can it be used for teaching and learning?

Games, virtual worlds, and simulations have many academic uses, including:
- Simulating real experiences (nursing and medical uses in Second Live)
- Interactions in 3D environments (valuable for architecture (design), psychology (human behaviour), and other fields)
- Galleries – art and other exhibits
- Programming and scripting
- Building objects – tables, chairs, furniture, buildings, etc
- Study social behaviour (ethics considerations are important in this instance)