

CONNECTING SOCIAL TECHNOLOGIES WITH INFORMATION LITERACY

Journal of Web Librarianship

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Abstract:

Social technologies such as weblogs, wikis, and social bookmarking are emerging both as information resources and as tools for research. This paper reflects on these technologies and suggests they may be well placed to build fluency in the higher-order thinking skills outlined in various information literacy frameworks, particularly in an educational context. A high proportion of today's learners are very comfortable with technology and Web 2.0 resources. The characteristics of the information they are accessing are also changing, bringing a stronger need for sophisticated evaluation and analysis skills. Where do social technologies fit within information literacy frameworks, and where can they be used in the day to day instruction of information skills? This paper suggests social technologies perform a dual role: they are not only useful sources of information but also resources to be used to develop ideas and research, using collaboration and community platforms with which learners today are familiar with. Librarians who provide information literacy instruction would benefit from an awareness of these tools and where they sit within today's information environment.

Introduction

For librarians and information professionals, the tools emerging under the umbrella of Web 2.0 provide unprecedented opportunities for information literacy instruction in ways that engage learners, using resources familiar to them from day to day activities. For example, a recent undergraduate biology research skills class at the University of Bath used a wiki located within the students' virtual learning environment in order to brainstorm the broad

topic of the cloning of extinct animals. Students had very little instruction on the use of a wiki, yet they tuned into the collaborative editing functions easily and quickly. They bounced ideas off each other, finding inspiration in their peers' earlier submissions. The students had time to reflect on their comments and discuss submissions with their neighbors. It was a clear example that librarians who provide instruction can use these tools to build information literacy instruction and present learning activities in ways that today's learners are comfortable and familiar with. This paper suggests that online social technologies such as weblogs, wikis and social bookmarking can be used to build fluency in the skills required to be information literate. It links the changing characteristics of learners and of information in the digital age with social technologies, then suggests how these match the higher order skills associated with information literacy.

Learners today

There's been much discussion recently over the changing nature of learners, particularly those in secondary or tertiary education. The learner demographic today is varied, but a substantial portion is still the traditional student, direct from secondary education. Born after 1982, this group is occasionally called Generation Y, Millennials, or the Google or Net Generation. Their learning preferences reflect their growing up with the internet always available. Indeed, current research indicates the Millennials exhibit different characteristics to previous generations,^{1,2} implying they will have new requirements and expectations in a learning environment. Their learning preferences tend toward teamwork and experiential activities, and they prefer structure and the use of technology. Their strengths include multitasking, goal orientation, positive attitudes, and a collaborative style.³

Although this group has grown up in the digital age and may use computers and the internet effortlessly, the Millennials may not have a sophisticated approach to the use of content. The ability to Google a search topic does not necessarily come with the ability to differentiate between results or evaluate findings. Learners can be ill-acquainted with concepts of intellectual property and plagiarism.⁴ Recent research suggests Millennial students have poor academic research skills and frequently don't see anything wrong with

copying other people's work.⁵ The challenge for information literacy instruction is to develop information skills in learners who may already consider themselves effective internet users. An effective way to do this is to use familiar technologies with structured, collaborative and experiential activities.

Information characteristics

One challenge for information literacy today is the increasingly unstructured and unfettered nature of information. It is the age of the amateur for information creation and re-creation, and cottage industries of publishing are flourishing online. The hierarchical classification mechanisms for organizing paper-based information are not suited to a non-linear networked information environment. As Owens points out, our knowledge structure has been determined by the economies of organizing things on paper, and new technologies allow different approaches.⁶ Information characteristics are changing from strictly classified disciplines and subjects to more fluid, responsive practices that allow us to organize information in ways that are significant to us at different times in different ways.⁷

There is now bottom-up rather than top-down classification of information, found in social bookmarking, tagging, and folksonomies. Recommendation and reputation within communities online is increasingly important, and reflection and feedback are important collaborative processes. Tools like weblogs, wikis, and collaborative online word processors demonstrate these activities. It is important that these characteristics are recognized by information literacy instructors as they make regular appearances on the list of resources encountered by today's learners.

Information Literacy

What was once termed bibliographic instruction has matured into information literacy (or information fluency), with the same underlying principles of information gathering but widening out into a school of thought that places emphasis on embedding, evaluating and measuring qualitative aspects.

Most statements prepared by libraries regarding information literacy agree that the information literate person is one who has learned how to learn. They will know how information is organized, where to find what they need, and how to process and package what they find and communicate this with others.⁸ We have developed frameworks and standards for mapping out the competencies identifying understanding of each of these principles. This paper is premised on the assumption that most people will be aware of these frameworks – if not, there is a wealth of information on the internet about information literacy frameworks, including many good examples from professional bodies such as ALA’s Association of College & Research Libraries (ACRL), the Council of Australian University Librarians (CAUL) in Australia, and the Chartered Institute of Library and Information Professionals (CILIP) in the UK.⁹ For example, the competencies required to be information literate, as defined by CILIP, are based on understanding of a number of principles that make for effective use of information. This definition is intended for application across all information-using communities, under the banner of lifelong learning.

On the other hand, the draft ACRL IL Standards for Science and Technology are specifically focused on measuring “progress towards information literacy of students of science and engineering or technology at all levels of higher education.”¹⁰ This set of competencies covers the same skill set as the CILIP Information Literacy Skills but includes more specific outcomes for the use of primary information such as investigative or experimental data. Most information literacy frameworks reflect the flavor of the body they are designed to inform, yet keep to the core tenets of identifying, locating, processing, and sharing information in an ethical manner.

What then are the key endeavors of our information literacy instruction? These days, more than ever, the focus is on the higher-order skills of analyzing, evaluating, and creating. There is information synthesis, or as John Seely-Brown terms it, “bricolage,”¹¹ finding something concrete and using it in a new way and in a new context. Before instructors can use these discovered things, however, there are evaluative skills that need to be exercised. There are judgments to be made about whether to trust these borrowed thoughts or statements

and finding out who wrote them, making quality judgments and deciding upon their trustworthiness. This is the construction of new knowledge, built on critical thinking and problem-solving skills. These higher-order thinking skills present new challenges to those involved in information literacy instruction.

Matching social technologies with Information Literacy Instruction

With these instructional objectives in mind, we start to look for tools suited to these types of activities and find the emerging social technologies of weblogs, wikis, social bookmarking and RSS webfeeds.

The strength of these tools lies in their capacity for communication, interaction and collaboration, all of which are familiar activities for today's learners. This new wave of technology may perhaps be considered by some as popular culture, removed from the lofty endeavors of education and not worth investing time and money in. No doubt this is sometimes true. There is no harm in being cautious and waiting to see how technologies mature. For many of us, getting to grips with these tools consumes precious time that could be spent elsewhere, and sometimes it seems like a never-ending cycle of change. That said, these technologies are stabilizing and are being integrated into library and information science activities. The following section considers what contribution they might make to the development of information literacy skills by matching characteristics of these technologies with information literacy competency standards.

Weblogs

Wikipedia describes a weblog as “a website in which journal entries are posted on a regular basis and typically displayed in reverse chronological order. The term blog is a shortened form of weblog or web log.”¹² Libraries have embraced weblogs, particularly as a communication tool to disseminate news and events. Outside of the library sphere, awareness is growing of the other uses and even benefits that weblogs might provide. One insightful look at weblog benefits comes from an unexpected source — doctoral mathematics student Craig Laughton at the University of Manchester in England. Laughton uses his weblog (gooseania.blogspot.com) as a reflective tool that helps him to see the path of progression in

his studies.¹³ He comments on how regular posting has improved his written communication skills and how a math-blogger community has developed through the sharing of experiences and achievements. Similarly, Rochelle Mazar notes blogs strengthen evaluation skills and “help encourage the habit of seeing the world of discourse as a conversation rather than an avalanche of information . . . being prepared to respond means your critical thinking hat is never off.”¹⁴

Blogging tools are frequently freely available and easy to use, requiring little coding or web development knowledge. There is also the opportunity for easy linking or acknowledging of sources in this environment, and linking to the author of a particular idea or phrase helps build skills in the ethical use of information. Furthermore, the track-back feature of a weblog is also perhaps analogous to cited reference searching in indexing databases, allowing the reader to see who has quoted or linked to one particular article.

Many journals are also including companion weblogs to allow a faster response to controversial topics perhaps signalling an opening for blogs as an acceptable forum for scholarly communication — take, for example ‘The Sceptical Chymist,’ the chemistry blog from *Nature Chemistry*, and ‘Free Association’ from the editors of *Nature Genetics*. Weblogs as a mechanism for information dissemination are now maturing into a format used to communicate not just personal thoughts and opinions but also academic work in progress, notification of new research, and a discussion platform.

Keeping these issues in mind, we can match blogging characteristics to information literacy skills. The ACRL Information Literacy Framework Standard 3 (Performance Indicator 6) states the information literate student “validates understanding and interpretation of the information through discourse with other individuals, small groups or teams, subject-area experts, and/or practitioners,”¹⁵ and goes on to give an example of participation in electronic communication forums designed to encourage discourse. As mentioned, by their collaborative nature, weblogs encourage people to see the world of discourse as a dialogue, engaging in critical thinking and evaluation of information. The CILIP skill of “understanding how to communicate or share your findings” gives an example of

“participating effectively in collaborative writing and publication, including use of collaborative software”¹⁶ such as weblogs. As a research tool, weblogs themselves provide a place for critical reflection and journaling of findings, which is a key component of the higher order thinking skills found in information-literate people. They also permit the sharing of ideas and allow for different perspectives outside of the learners’ immediate community. We can see the higher-order skills of critical thinking, evaluating and creating, as outlined by Bloom’s revised taxonomy¹⁷ demonstrated by using weblog tools.

The information-literate person will also critically evaluate information, examining reliability, validity, authority and timeliness.¹⁸ Because of their less formal nature, weblogs often give away more personal information about the author than regular websites. This encourages the identification of purpose and the audience of a potential resource. This builds evaluation skills and helps raise awareness of the need to check for bias and accuracy of the author. Weblogs are time-stamped automatically, so checking for currency is easily done. They also have value as a primary source of information, and with the addition of RSS webfeeds are a useful tool for keeping up to date on a topic.

RSS Webfeeds

RSS webfeeds are another social technology resource that can be used to build information literacy skills. As librarians, we’re in the information management trade, yet one of the most common issues we hear from our clients is information overload. Learning how to manage the explosion of information brought by the web is an important skill, and tools like RSS newsfeeds and companion aggregators or feedreaders help compartmentalize and organize new information. RSS newsfeeds and feedreaders are tools for organising new information and as such they make it easier to keep up to date. In fast moving disciplines such as genomics or stem cell research, new research is announced every day, and scientists can benefit from technologies that push updates efficiently from selected websites to their desktop.

RSS and its companion format, Atom, are XML file formats for syndicating web content. RSS is a feature on websites that update frequently, acting as an alerting service to

push updates in small manageable chunks to users' desktops. Weblogs are one form of website to use RSS, but feeds can also be found on regularly updated websites from societies and organizations and publications like journals (table of contents alerting) and newspapers. Libraries are adding RSS feeds to their websites to inform their clients of new books and resource announcements.

RSS newsfeeds are specifically mentioned in the CILIP information skills under "understanding how to find information," which contains a note identifying an information literate person as someone who "would also understand that, in addition to purposive searching, information can be acquired by browsing, scanning and monitoring information sources [such as] scanning RSS and news feeds."¹⁹

Additionally, social technologies such as weblogs and RSS webfeeds help to support Standard 5 of the ACRL framework. It states "The information literate student recognises the need to keep current regarding new developments in his or her field."²⁰ This includes the establishment of current awareness services, using citation searching, online table of contents scanning, and other forms of rapid communication literature. This emphasis on keeping up to date is clearly the place for RSS newsfeeds pushing contents and updates from journals and other publications.

Social bookmarking services.

Social bookmarking is very much like having a favorites or bookmarks list from a web browser available from any internet connected PC. Bookmarking is done by "tagging" a website with meaningful words or phrases, and adding it to a profile on a social bookmarking service such as Connotea, Citeulike or Del.icio.us.²¹ It is an excellent way of organizing, finding, and sharing online resources. In the classroom, for example, "social bookmarks can provide a useful way to pass information among teachers and to learners ... as a reading list."²² Not only does this help build skills in managing sources, but also helps widen research and discover relevant material from others who are using the same tags.

For social bookmarking, the clearest link with information literacy is the ability to know that information can be acquired by browsing, scanning, and monitoring information

sources. Becoming familiar and using social bookmarking sites like Connotea and Citeulike helps keep up to date with information sources and investigative tools. These tools can also be used for the recording of pertinent citation information for future reference and retrieval. As the information-literate person will manage information they have collected or generated,²³ the organization, storage, and classification of information is another important skill that social bookmarking can help to develop.

Wikis

Wikis have the online collaborative encyclopedia Wikipedia to thank for their recent rise to prominence on the internet. Wikis come in a variety of shapes and sizes, from websites to commercial or open-source software hosted either locally or remotely. At their simplest, wikis are websites that are easy to create and allow for editing by multiple authors. This means there can be more of a focus on the content of the website rather than on web authoring skills. For collaborative or group work, wikis provide a space for project development allowing for peer review, and many wiki sites provide a history to allow for tracking to see who has contributed what. As Marieke Guy points out, wikis “allow students to create conference style presentations, work on specific activities and are good for reflection on written work (critical assessment and peer review).”²⁴ Feedback and comments are easily provided and can be monitored by RSS webfeeds.

Wikis encourage higher-order thinking skills such as construction of new information and evaluation or judging of content. They allow learners to confer with others to identify a research topic or other information need. Using a wiki to record findings and document the development of a topic helps to show that the search process is evolutionary and nonlinear. It provides a forum for learners and researchers to communicate their findings and new understandings, and the participation in collaborative writing encouraged by wikis encourages discourse on a topic — all skills from ACRL and CILIP information literacy competency standards.

Conclusion

Having pointed out some of the salient features of these Web 2.0 technologies with regard to information literacy competencies, how then does this actually fit into the day-to-day delivery of instruction to develop information literacy skills? Learning to judge whether to trust what they find is clearly a major issue for today's learners, who are technologically savvy but not necessarily fluent in the evaluation or analysis of the information they find.

It's important to point out that many of these social technologies are a first port of call for ideas and topics, rather than authoritative research sources. Learners need to understand these sources are based on the wisdom of crowds, not the attention of experts. As Chris Anderson says in *The Long Tail*, results need to be taken with a grain of salt.

“Wikipedia should be the first source of information, not the last. It should be a site for information exploration, not the definitive source of facts.”²⁵ Using the model of the information cycle helps demonstrate to learners that social technologies can be used to identify and locate information at the stage when it's most difficult to find, as research in progress or new ideas. The information cycle is a circular pattern where information is initially very current but difficult to locate, formed as ideas and discussions, which becomes research in progress first documented primarily in conference papers, journal articles, and reports. After time, these ideas mature and are documented in easier to find but less current secondary information sources such as books and review articles. Finally, this information can be found summarized in tertiary sources such as encyclopedias and handbooks.

It is within the first stages of the information lifecycle, the development of ideas and discussions, and finding research that social technologies really unlock previously difficult-to-find sources. Additionally, technologies like weblogs and wikis allow for input and contribution to these evolving ideas, building evaluation and creation skills in learners – each of which are essential higher-order thinking skills important to information literacy.

Finally, information literacy instruction can show that social technologies are sources of information and also tools to be used by learners when gathering information and researching. There is clearly a place for RSS newsfeeds and weblogs in classes on keeping up

to date with new research output, impressing on students the advantages of organizing and compartmentalising updates so as not to be overwhelmed by this influx of information. Those of us who present sessions on new scholarly communication trends could include the maturing format of weblogs and social bookmarking as a mechanism for inviting comment on research and progress, reaching communities that would not normally constitute a readership in traditional formats like journals. This is particularly useful for emerging hybrid fields of research — take human computer interaction as an example, crossing disciplines of psychology, neuroscience, and computer science.

Discussion about the changing nature of learners and the evolving creation and production of information has highlighted issues to be addressed by those of us providing information literacy instruction. Drawing on emerging technologies such as weblogs, social bookmarking, RSS webfeeds, and wikis as learning and teaching tools allows us to both expose these as sources of information that are particularly current and otherwise difficult to locate, and identify them as tools to be used when reflecting and collaborating on research topics. Drawing parallels with information literacy frameworks shows how these collaborative technologies link into higher-order thinking skills to be developed in order to continue to learn in today's information environment. Librarians who provide information literacy instruction would benefit from an awareness of these tools and the possibilities they offer.

Further Reading:

EDUCAUSE produce regular helpful documents on Information Literacy and emerging technologies. These are available from <http://www.educause.edu/> and include:

- Alexander, Bryan. *Web 2.0: A New Wave of Innovation for Teaching and Learning* (March/April 2006).

- Windham, Carie. (Oblinger, Diana G., ed.). *Getting Past Google: Perspectives on Information Literacy from the Millennial Mind* (September 2006)
- Lorenzo, George & Dziuban, Charles. (Oblinger, Diana G., ed.). *Ensuring the Google Generation is Net Savvy* (September 2006).

OCLC also produce in-depth reports and studies on current topics in library and information issues. Many of these are available from the reports section of the OCLC website at <http://www.oclc.org/reports/default.htm>. This includes the oft-cited *College Students' Perceptions of Libraries and Information Resources* (2006).

There are a number of authors working on combining Information Literacy with social technologies who are recording their efforts and thoughts in the blogosphere. These often give practical examples of best practice in instruction and their informal style makes them easy to read. Look for the blogrolls, or favourite sites on each to lead to further reading:

- Joyce Valenza's *NeverEndingSearch* Blog: <http://joycevalenza.edublogs.org/>
- Sheila Webber's *Information Literacy Weblog*: <http://information-literacy.blogspot.com/>
- Peter Godwin's *Information Literacy meets Web 2.0* Blog: <http://infolitweb.blogspot.com/>

Notes

¹ Diana Jonas-Dwyer and Romana Pospisil. “The Millennial effect: Implications for academic development”, *HERDSA 2004 Conference Proceedings*.

<http://www.herdsa.org.au/conference2004/Contributions/RPapers/P050-jt.pdf>
(accessed January 10, 2007).

² Diana Oblinger. “Boomers, Gen-Xers & Millennials: Understanding the new students,” *Educause*, July/August (2003): 36-47.

³ Diana Jonas-Dwyer and Romana Pospisil, *ibid*.

⁴ Lynn Brindley, “A world of contrasts: information literacy in the digital world.”
(paper presented at LILAC, Leeds, England, March 27-29, 2006).

⁵ Professor Sally Brown, qtd in “Net students ‘think copying OK’,” *BBC News Online*, June 18, 2006, Education section (accessed January 10, 2007).

⁶ Martin Owens, Lyndsay Grant, Steve Sayers and Keri Facer. *Social Software and learning* (Bristol, UK: Futurelab, 2006), <http://www.futurelab.org.uk/> (accessed January 11, 2007).

⁷ *Ibid*

⁸ American Library Association. Presidential Committee on Information Literacy. *Final Report*. (Chicago: American Library Association, 1989).

⁹ The American Library Association (<http://www.ala.org>), the Council of Australian University Librarians (<http://www.caul.edu.au>) and the Chartered Institute of Library and Information Professionals in the UK (<http://www.cilip.org.uk>) all have information literacy frameworks or statements, with links for further information.

¹⁰ ACRL. *Information Literacy Standards for Science and Technology (DRAFT)*. (Washington: American Library Association, 2005),
<http://www.ala.org/ala/acrl/acrlstandards/infolitscitech.htm>.

- ¹¹ John Seely Brown. *Learning, Working & Playing in the Digital Age*. (paper presented at the Conference on Higher Education of the American Association for Higher Education, 1999).
- ¹² Wikipedia. *Blogs*. <http://en.wikipedia.org/wiki/Weblog> (accessed January 11, 2007).
- ¹³ Craig Laughton, "Exploring the blogosphere," *Mathematics Today*, 42.1 (2006): 16.
- ¹⁴ Rochelle A. Mazar, comment on 'Faculty blogs: good idea or bad idea?', comment posted May 4, 2005, http://mazar.ca/archives/2005/05/faculty_blogs_g.html (accessed January 11, 2007).
- ¹⁵ ACRL. *Information Literacy Standards for Science and Technology (DRAFT)*.
- ¹⁶ CILIP. "Information Literacy: the skills" CILIP, <http://www.cilip.org.uk/professionalguidance/informationliteracy/definition/skills.htm> (accessed January 12, 2007).
- ¹⁷ Lorin Anderson and David Krathwohl, eds., *A taxonomy for learning, teaching and assessing : a revision of Bloom's taxonomy of educational objectives* (New York: Longman, 2001), 18.
- ¹⁸ Alan Bundy (ed), *Australian and New Zealand Information Literacy Framework: principles, standards and practice*. (Adelaide, Australia: ANZIIL, 2004), 17.
- ¹⁹ CILIP, "Information Literacy: the skills".
- ²⁰ ACRL. *Information Literacy Standards for Science and Technology (DRAFT)*
- ²¹ *Connotea* is a social bookmarking service from Nature publishers, available from <http://www.connotea.org>. *Citeulike* is a similar service available from <http://www.citeulike.com>. *Del.icio.us* is a more general bookmarking site, available from <http://del.icio.us/>

²² Marieke Guy. "Social Bookmarking," *Higher Education Academy Centre for Bioscience Bulletin* 19 (2006): 12.

²³ Alan Bundy, *ANZIL Framework*, p. 18.

²⁴ Marieke Guy. "Wiki or Won't He? A Tale of Public Sector Wikis," *Ariadne* 49 (2006) <http://www.ariadne.ac.uk/issue49/guy/>.

²⁵ Chris Anderson. *The Long Tail*, (London: Random House, 2006), 69.

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