

A new frontier: Web 2.0 = School 2.0

John Raiti

Head of ICT Curriculum Support, Marist College Ashgrove (QLD)

John is responsible for the design and delivery of a professional learning program at Marist College Ashgrove. His specific brief is to assist all teachers in Years 5 - 12 with integrating technology into classroom practice. In 2007 he is delivering a series of ICT conference presentations and workshops for the Australian Council for Educational Research (ACER) in Queensland. He is a member of the following committees and professional organisations:

- The Queensland Studies Authority (QSA) Senior Technology in Assessment and Moderation Procedures Sub-committee
- The International Society for Technology in Education (ISTE)
- The Australian Institute of Management (AIM).

John is also a companion member of the Australian Computer Society. His article *It's about culture: How to really integrate ICT* will appear in the August edition of *Teacher* (published nationally by the Australian Council for Educational Research).

The integration of new technologies across the curriculum has become a major priority for educational authorities and schools over the last decade. Governments and schools view ICT literacy as essential to preparing young people with the attributes and skills necessary to compete in and contribute to a global, knowledge-based world. However this scenario has evolved significantly in the last few years with the emergence of Web 2.0 tools that now dominate the new internet landscape. These new technologies provide educators with tools that can be used to facilitate engaging learning environments which emphasise literacies and skills that are considered as essential in the 21st century.

This paper examines how Web 2.0 technologies can be used as tools to be integrated into effective teaching and learning and in the delivery of library services. In particular, the paper will focus on the following:

- *A definition of Web 2.0 and the common characteristics associated with these technologies*
- *The impact of new technologies on changing literacies and pedagogies*
- *Some specific examples of Web 2.0 and their application in learning environments*
- *Implications for re-defining notions of school and library.*

The World Wide Web.....cannot be a solution to educational needs unless the creative component is included. We have to do more than teach kids to surf the Net; we have to teach them to make waves. Finding Web resources is fine; creating new ones is the key to the new education (Schneiderman 2003, p. 118).

1. What is Web 2.0?

The term Web 2.0 was coined by technologist Tim O'Reilly (2005). It essentially refers to the evolution of internet services that enable users to network and interact with other users and to the increased capabilities to produce and publish content. This is not to suggest that the technical specifications to develop Web 2.0 tools did not exist previously. Rather Web 2.0, as argued by technologists, refers to the new ways that developers use the web platform.

The development of Web 2.0 signifies a paradigm shift in the way the internet is used. In particular, Web 2.0 reflects a change from the web as a medium to access information to a networked platform that encourages collaboration and interactivity between applications and users. Examples of this are websites that encourage the sharing of content and networking such as blogs and wikis, websites that allow users to categorise and tag uploaded data (e.g. tagging uploaded photos on *Flickr*, finding bookmarks that have been tagged by other users on *del.icio.us*) and online subscriptions to updated feeds from various information sources (e.g. RSS feeds).

2. Changing culture, literacies and pedagogy

(a) Culture

Technology aside, it is more important for educators to understand Web 2.0 within a wider cultural context. In this context, Web 2.0 also represents changing cultural norms and behaviour. Boyd (2007) suggests that the term social software, that is used to describe some Web 2.0 applications and services, is significant in that the emphasis is more on human interaction and less on technology. Coates (2005) points out that social software 'derives added value from human social behaviour – message boards, musical taste-sharing, photo sharing, instant messaging, mailing lists, social networking' (Coates 2005 cited in Boyd 2007, p. 16). Boyd (2007) goes further to conclude that:

Social software is about a movement, not simply a category of technologies....we've moved on to web software that is all about letting people interact with people and data in a fluid way (Boyd 2007, p. 17).

Further to this, the proliferation of user generated content has resulted in new and different ways of organising information. In particular, information in a web environment is categorised according to folksonomies rather than taxonomies. A folksonomy here refers to a taxonomy that is user generated (traditionally taxonomies are created and managed by librarians). Hence users are able to use their own keywords (also referred to as tagging) to categorise photos they have uploaded on photo sharing websites (e.g. *Flickr* or links to websites in social bookmarking sites (e.g. *del.icio.us*).

Another characteristic of Web 2.0 technologies is the facility for different users to collaborate and share ideas in the same web space. Blogs and wikis are good examples here. In essence, what occurs here is collaborative decision making and sharing of resources or what O'Reilly (2005) refers to as 'harnessing collective intelligence'.

The emergence of Web 2.0 also highlights further the shift from an analogue or print culture to the new technologies of a digital culture. Fundamental to this shift is the understanding that analogue media offer only one-way delivery, with content being delivered from author to reader, whereas digital media offer two-way participation and interaction between author and reader and, in fact, begin to erode the categories of author and reader because of these. An obvious example is *Wikipedia* which is both an online encyclopaedia that users can read or consume and an online space within which users can produce or publish.

In a wider sense, the notion of authorship also differs within analogue and digital cultures. Past generations consumed texts within a dominant print culture where there were barriers to authorship and hence few authors. However in a digital environment, new technologies give us greater opportunities to create as well as consume or read texts. In a digital culture there are multiple authors. One only has to look at the multiple authorship and interactivity that is conventional in video sharing websites (e.g. *YouTube*) and the reality television genre that has become popular over the last few years. Programs such as *Australian Idol* and *Big Brother* encourage viewers, through the use of ICTs (e.g. digital video cameras, mobile phones and websites), to create content that is built into the program structure.

This also signifies a cultural shift from a broadcast model where information is communicated to mass audiences to a network model where different individuals, technologies and texts are linked together to communicate understandings as well as to collaborate and create new forms of knowledge. Castells (1996) contends in his influential book, *The Rise of the Network Society*, that within media culture (and in our society) networking is the new dominant paradigm.

As a historical trend, dominant functions and processes in the information age are increasingly organized around networks. Networks constitute the new social morphology of our societies, and the diffusion of networking logic substantially modifies the operation and outcomes in processes of production, experience, power, and culture. While the networking form of social organization has existed in other times and spaces, the new information technology paradigm provides the material basis for its pervasive expansion throughout the entire social structure (Castells 1996, p. 500).

(b) Literacies

The production and dissemination of information within a network paradigm that is prevalent in Web 2.0 tools necessitates different ways of reading. Whereas texts published within a print culture demand reading in a linear form, the multimodal and interactive texts produced and shared with a networked audience use a variety of codes and are hyperlinked to various other texts. Hence the dissemination of information and the texts produced in a digital culture rely on notions of hybridity and intertextuality (Luke 2000, p. 73). One only has to look at the popularity of *My Space* where users create meaning about themselves and their social network through various codes.

Meaning-making from the multiple linguistic, audio, and symbolic visual graphics of hypertext means that the cyberspace navigator must draw on a range of knowledges about traditional and newly blended genres or

representational conventions, cultural and symbolic codes, as well as linguistically coded and software-driven meanings (Luke 2000, p. 73).

Hence as educators, it is imperative that changing and evolving literacies, that are prevalent in the Web 2.0 applications and services, are central to the teaching of literacies across all curriculum areas.

(c) Pedagogy

Given the changes to literacies and the wider culture, it is imperative for learning environments (e.g. schools and libraries) to reflect on their own practices so that they continue to provide curriculum that remains contemporary and relevant. Traditionally learning in schools has reflected the industrial or broadcast *one size fits all* model where there are limited opportunities for authorship. In this case the teacher transmits information and knowledge to all students regardless of ability. Work produced by students is generally for the teacher and not shared with other individuals. In this context, the library is viewed as a source of support for teachers and students. However to accommodate the needs of learners in the 21st century, schools and teachers and libraries need to explore the impact of the wider digital culture.

The emphasis on creating texts and learning within a digital culture is also aligned to the philosophical underpinnings of constructivism i.e. the idea that learners actively construct their own knowledge and understanding of the world. As an example Dewey (1916) promoted the concept of social constructivism. He believed that constructivist learning should:

- Begin with students' interests (learning that is student-centred)
- Emphasise a connection to the real world
- Be hands-on and experience based.

Web 2.0 tools are well suited to the ideas of constructivism. Put simply, Web 2.0 provides the tools that allow learners to construct their understandings of the world. The use of *My Space* is a good example here as it highlights the way users create and disseminate their own meanings of the world through the construction of their online identities and their social network.

Further to this, the constructivist approach with the use of ICTs (and Web 2.0 tools) has removed the notion of the teacher and librarian as the gatekeeper of information and replaced it with the notion of students accessing information independently and directing their own learning. Hence the role of teachers and librarians must change from instructors/transmitters of knowledge to facilitators (expert learners) in the learning process.

3. New definitions of school

As suggested above, the emergence of a digital culture, and in particular the internet, impacts significantly on the ways we think of schooling in the 21st century. Given that we now have extensive tools to publish and create ideas and to communicate knowledge within social networks means that educators need to evaluate the discourse of schooling and determine new notions of what is meant by learning.

In the industrial economy, schools prepared students to participate in a disciplined workforce in factories and offices. Today's schools, however, have the responsibility to prepare young people with new attributes and skills that facilitate lifelong learning and enable them to navigate their way through their increasingly global world. In this brave new world the learner is central to the learning process. Education in the 20th Century was a one-size-fits-all delivery system where students adapted to what was being taught. Education in the 21st Century, in contrast, begins with learners and the system accommodates learners' needs and preferences. Essentially, in the knowledge age, context rather than content is paramount.

In a metaphorical sense, the internet has removed the walls of the industrial era classroom. In an industrial model, the classroom was viewed as the domain of the teacher (the expert) who transmitted knowledge to students. But in the digital age (and now the emergence of Web 2.0 tools) the internet offers educators and learners new ways to access information and to create knowledge. For example, digital tools give students the opportunity to publish their work to a potentially wider audience (not just for the teacher). This obviously adds social value to student work (as opposed to the practice of handing in assignments in the industrial era classroom).

In essence, ideas of the expert, knowledge, literacy and teacher have evolved as a result of new technologies. Table 1 below suggests the impact of the internet in creating a new paradigm of schooling.

Old Paradigm (Industrial era)	New Paradigm (Digital era)
Closed Content	Open Content
One Teacher	Many Teachers
Time and Space Learning	Timeless/Space-less Learning
Student produced content for limited audience	The social, collaborative construction of knowledge for large audiences
Handing in assignment tasks	Publishing work
Readers as Readers	Readers as Editors & Writers
Find and Read What "Experts" Write...	Receive and Read What Many Write...
Knowledge from few sources	Knowledge from multiple sources
Knowledge as absolute	Knowledge as relative
Information literacy	Network Literacy

Table 1 The impact of the internet in creating a new paradigm of schooling.

4. New definitions of library

Changing definitions of schooling obviously include reshaping the notion of library and its role in the school environment. Libraries have traditionally been viewed as part of our cultural memory. They have been seen here as preservers and transmitters of culture by storing information that is considered to be culturally, historically and socially significant. In this context, knowledge is viewed as static. However Web 2.0 highlights an environment where knowledge is now dynamic and fluid meaning that libraries need to give users greater opportunities to participate as active creators and producers of knowledge.

Several writers have stated that the emergence of Web 2.0 necessitates a shift to new conceptions of library and how libraries function within this new cultural context. Here the

term *library 2.0*, a term coined by Michael Casey (2005), has been popularised to articulate this paradigm shift.

In this new environment, the role of the library and librarians transcends beyond the storing and dissemination of data and information to new ways of learning. Specifically, the role of the library in this new context is to personalise learning by accommodating different learning styles, preferences and tastes and to act as facilitators and expert learners.

What good librarian would choose to hand ‘truth’ down from the shelves to those who passively consume it, rather than engage in a dialogue with participative lifelong learners? Is it not preferable to help users build their understanding of the world around them with reference to a wealth of experiences from across formats, media contexts, and their analogue and digital manifestations? (Miller 2006, p. 2).

Mannes (2006) articulates the personalisation of libraries that emphasises the role of the user by outlining four essential elements of library:

- It is user-centred (users participate in the creation of content and services)
- It provides a multimedia experience
- It is socially rich (the library provides opportunities for users to participate via synchronous [e.g. instant messaging] and asynchronous [e.g. wikis] communication)
- It is communally innovative (libraries do not change on their own but rather in partnership with users. As Mannes (2006) states, ‘as communities change, libraries must not only change with them, they must allow users to change the library’.

Lankes, Silverstein and Nicholson (n.d.) extend this further by stating that emergence of participative technologies mean that libraries have a significant role as facilitators of conversation. They suggest here that the idea that knowledge is created through dialogue and conversation is not a radical notion as we have always discussed ideas in books (a notion that goes back to Socrates and the Socratic Method). However the emergence of Web 2.0 tools has made participation in conversations easier.

The opportunities inherent in participatory networks have not emerged because of current Internet developments such as Web 2.0, but, rather, these technologies make it easier to meet an identified and long-standing role of libraries. Wikis, blogs, and recommender systems replace dial-up bulletin boards and local databases as a means to empower our communities. What’s more, these technologies can bring the ideal of the participatory model to our most fundamental library systems. Libraries should adopt participatory network concepts and software not because they are new or sexy, but because they match our most fundamental mission: knowledge creation and dissemination (Lankes, Silverstein & Nicholson n.d., p. 3).

Given that libraries are facilitators of services in an online space, it is imperative that their services are available throughout the whole school. This means that the library is more than a physical space (a building where you bring your class occasionally). It is an environment that delivers services to all learning areas in the school. Due to the emergence of new

technologies, students and teachers should be able to seamlessly access and interact with resources and services from the library in their classrooms. This could simply mean students accessing online subject guides created by librarians, adding their own social bookmarks to a subject guide, editing a library wiki on a topic area or adding comments to a book discussion on the library blog. This means that classes do not have to book a physical space in the library as the library is everywhere.

The creation and dissemination of library services into all learning areas across the school will assist with establishing the library as the central symbol and hub of information services across the campus. This requires librarians to work closely with ICT staff, in ways closer than they have done previously, to establish an online presence. This includes librarians taking an active role alongside ICT staff in designing and creating online services and services that facilitate user participation.

5. Using Web 2.0 in the classroom

5.1 Duty of care

It should also be stated at the outset that the use of new interactive tools implies further responsibility for librarians and teachers with regard to the online safety of their students. Web 2.0 tools promote collaboration with an audience that goes beyond classroom walls. Hence there are opportunities for outside experts to communicate with librarians and teachers and their students. The librarian and teacher here have a responsibility to check those who are involved in this process. At the same time, students who publish information on the World Wide Web (e.g. via blogs, wikis) should be educated about the need to keep their personal identities anonymous in an online environment. For obvious safety reasons, it advisable that Web 2.0 tools are created, where possible, within a protected intranet environment.

5.2 Some new ways of learning from the web: Wikis, weblogs, podcasts and RSS and social bookmarks

In using the World Wide Web in learning environments, one could add new technologies such as podcasts, RSS, social bookmarks, wikis and weblogs as useful tools that can be used to address a differentiated approach to curriculum delivery.

(a) Wikis

A wiki is a free online encyclopedia which is best described as a collaborative environment that allows learners to share knowledge. This is facilitated by allowing learners to add new content on the *Wikipedia* website and to edit existing content.

Other wiki sites that are available in the public domain for adding and/or editing content include the following:

- Wikibooks – a collection of open-content books
- Wikitext - textbooks for different subject areas
- Wikinews – news content

- Wiktionary – a collaborative multilingual dictionary
- Wikiquote – an online collection of quotations
- Wikisource – a repository of primary source texts
- Wikispecies – an open online directory of species
- Wikipedia Commons - a repository for images (e.g. animation, paintings, photos), music, sound & video clips
- Wikitravel – travel guide of worldwide destinations.
- Wikiversity - a free learning community.

The use of wikis does challenge traditional practices and thinking. In one sense, the idea of using a resource that can be authored and/or edited by anyone in the world can be viewed as a leap of faith for some teachers who are more comfortable with textbooks. This is because textbooks appear to have greater authority due to the credentials of an established author. However at the same time there is potential here to create opportunities that encourage students to develop their critical literacy skills. In other words, the open authorship of content in wikis promotes further the need to question the validity of information.

The notion of collaboration that is encouraged by wikis also challenges traditional practices in that teachers are required here to relinquish some of their *control* (as in teacher-directed learning environments) and give students greater scope to work with their peers in creating and publishing content. However in doing so, teachers are creating several meaningful learning opportunities.

(wikis are) a very democratic process of knowledge creation. In using wikis, students are not only learning how to publish content; they are also learning how to develop and use all sorts of collaborative skills, negotiating with others to agree on correctness, meaning, relevance and more. In essence, students begin to teach each other. Teachers who impose a lot of right and wrong on that process can undermine the effectiveness of the tool (Richardson 2006, p. 65).

Further to the existing wikis that are available on the World Wide Web, there are also several free tools that can be used to create new wikis which can be accessed only by authorised users. These tools include *PBwiki* and *Wikispaces*. In particular, these tools allow users to create password protection so that only authorised students and/or classes have rights to edit and publish content. Further to this, these tools allow authorised users to upload images and files.

(b) Weblogs

Weblogs (commonly known as blogs) have become increasingly popular. They allow users to publish content to personal websites and are generally written in the form of a diary or journal.

Blogging has become mainstream following its success in presenting eye-witness accounts during the war in Iraq and as a tool in promoting political candidates and in covering political events. More recently, blogging has raised new questions about citizen journalism given that major news outlets sometimes rely on blogs for content. The popularity of blogs is also

evident in the competition between search engines (e.g. *Google* and *MSN*) to provide users with easy access to blog creation tools and with the convergence with other technologies (e.g. the use of mobile phones for moblogging).

Within an educational context, blogging is a tool with not only the potential for sharing ideas and collaboration but also for reflection of events, issues and processes. The greater emphasis placed on the learning process in student-centred environments (as put forward by constructivists) gives learners greater opportunity to structure well considered opinions and reflect on their own critical thinking and decision making. This form of metacognition is particularly evident in subject areas where student journals are an integral part of the learning process.

The use of blogs provides several other advantages. In the first instance, blogs can target a wide potential audience for student work. Ideas and opinions can reach real audiences beyond classroom walls. Secondly, blogs support different learning styles. The student who is reluctant to express opinions in classroom discussions may find a *voice* in an online environment. This is because the reflective nature of blogs give students *time* to think about their own perceptions and ideas before articulating well considered opinions. In classroom discussion there is sometimes the pressure of constructing ideas and statements in a relatively short space of time.

Thirdly, blogs promote information literacy. Olofson (1999) states that ‘the extent of our collective knowledge doubles every 18 months’ (Olofson 1999 cited in Richardson 2006, p. 28). Hence Richardson (2006) asserts that:

it’s imperative that we give our students the skills to analyse and manage it (information). The act of writing in a weblog or “blogging” can go a long way to teaching skills such as research, organization, and synthesis of ideas (Richardson 2006, p. 28).

Finally the introduction of blogging can be used to scaffold student learning. For example, it may be a more appropriate starting point for students to start with the basic task of finding websites relevant to a topic and then writing descriptive information that is useful about these sites. Students could then build on these skills by moving on to higher order skills (reflection, metacognitive writing, analysis and synthesis).

(c) RSS

Blogs also have links to syndicated RSS (XML) feeds. RSS is an abbreviation for Rich Site Summary or Really Simple Syndication. In simple terms it is commonly referred to as a feed to news headlines, summaries of news content, authors and other blogs that are accessed by RSS readers or aggregators. One example is bloglines which allows users to access content updates from various sources on a regular basis. Learners may use this tool to follow the development of a particular event and/or issue and to follow commentary from various authors, blogs and news sources. Hence RSS can be used as a useful research tool to organise content and to assist with making conclusions and as a social networking tool.

(d) Social bookmarking

Another Web 2.0 tool that also promotes collaboration and interactivity is social bookmarking. Websites such as *del.icio.us* and *Furl* allow users to follow and annotate favourite websites. Some tools such as *Furl* also allow users to save a snapshot of a bookmarked web page. This provides the advantage of retrieving pages that no longer exist. Further to this, users can add keywords (tags) to categorise information. These features can be simplified further by downloading a widget that is a plug-in to the web browser.

On the surface, this appears to be the same as the favourites feature in a standard web browser. However social bookmarking software offers the following significant advantages that are synonymous with the Web 2.0 environment:

- (1) The bookmarks can be accessed anywhere (usually through a login)
- (2) The bookmarks can be shared with like-minded people.

The idea of sharing bookmarks with like-minded people is a powerful tool. An example is the website *An Inconvenient Truth*. This site is based on former US Vice President Al Gore's recent film of the same name on global warming. If one bookmarks this site on *del.icio.us* with the keywords (tags) global warming, one will also receive links to others who have bookmarked the same site and who share the same interests. More importantly, one will also see links to other websites that have been bookmarked under global warming.

The advent of social bookmarking has also marked a shift in the way information is organised. Traditionally we have relied on librarians, as trained professionals, to categorise and classify information through taxonomies. However in this new Web 2.0 environment, users are able to categorise and classify information in their own way and to share this with others. Hence as Richardson (2006) states, 'the process (of organising information) is no longer taxonomy but folksonomy' (Richardson 2006, p. 92).

In the classroom context, social bookmarking sites can be used to build a list of relevant online resources that can be shared among learners. Students may begin their research in a topic area by looking for relevant online information and then by adding or bookmarking sites under relevant categories and classifications. Hence students are initially organising information which is part of the information literacy process.

(e) Podcasting

Put simply, podcasting refers to the publishing of audio programs on the internet that can be downloaded to computers and/or portable audio players. The word podcasting is a combination of broadcasting and iPod. However this is misleading as an iPod is not required to access a podcast.

Learners (and educational institutions) are able to access podcasts by subscribing to RSS feeds that are available on websites. Some useful podcasts that can be used as learning resources include the following:

- Australian Broadcasting Corporation (ABC) -

A new frontier: Web 2.0 = School 2.0

© 2007, Australian School Library Association Inc., and therein by its author

Page 10 of 15

- Education Network Australia (Edna)
- Special Broadcasting Service (SBS)
- Macquarie University TV
- University of Sydney Podcasts

Further to this, podcasting allows learners to produce audio programs that can be published online. This can be done by using free audio software (e.g. *Audacity*).

The Apple iPod (and other portable audio players) is best known for downloading music files to .mp3 or AAC (Apple iTunes) format. As a result, there is sometimes a negative discourse surrounding the use of iPods as some teachers see this technology as a distraction to effective learning. This viewpoint fails to recognise the potential of the iPod as a learning tool. Such a viewpoint ignores the capacity to store photos and podcasts as well as music.

A voice recorder can also be used to record voice onto the iPod. This can be used by learners to record observations and thoughts during learning activities. Further to this the recorded voice can be imported into audio recording software (e.g. *Audacity*) and mixed with other audio tracks (e.g. music) to create audio programs (podcasts).

6. Some ideas of what Library 2.0 may look like

So what are some practical ways we can facilitate the conversations in our libraries? Table 2 below is a list (by no means exhaustive) of some of the possibilities that can be used by libraries to promote vibrant conversations and facilitate the active production of knowledge and ideas among users:

Web 2.0 Technology	Possible Uses in Library 2.0
Blogs	<ul style="list-style-type: none"> • Set up a library blog as a way of facilitating the following: <ul style="list-style-type: none"> ◦ Conversation between librarians and users ◦ Comments from users ◦ Photos of library events ◦ Reminders of library events ◦ Book Discussions with an author and/or with students from another school • Give your blog RSS facility so that students can be updated on new events in the library. A good example of how blogs can be used in libraries is the Madison-Jefferson County Public Library.
Wikis	<ul style="list-style-type: none"> • Working with teachers, set up wikis for different classes and subject/topic areas. Wikis can be set up using free online wiki tools (e.g. <i>PBwiki</i>, <i>Wikispaces</i>). Make sure that your wiki is password protected so that students and teachers can add comments to relevant wikis. • Set up a wiki for different library events e.g. visit by an author. • Set up a wiki that give users an opportunity to give librarians feedback on resources and services
Podcasts	<ul style="list-style-type: none"> • Create a series of podcasts that outline the services provided by the library or tutorials. A good example here is the Curtin University of Technology. • Record interviews with students, authors etc. and post these as podcasts on the library website.
Social Bookmarking	<ul style="list-style-type: none"> • Create subject guides for different topic areas. This can be done on <i>del.icio.us</i>. Students could add bookmarks (and tags) and subscribe to a RSS feed (so that they are informed of the latest additions to a subject area). Examples include the following: <ul style="list-style-type: none"> ◦ University of Pennsylvania Libraries.

	<ul style="list-style-type: none"> ○ Padua College Kedron (Qld) where social bookmarking is used to disseminate web resources in the Science Key Learning Area: <ul style="list-style-type: none"> ▪ Padua College (Year 8 Science) ▪ Padua College (Year 9 Science) ▪ Padua College (Year 10 Science)
RSS	<ul style="list-style-type: none"> ● Set up a login to an RSS aggregator at your library (e.g. <i>Bloglines</i>). This can be used to track a range of topics.
Discussion Forms	<ul style="list-style-type: none"> ● Set up a discussion forum e.g. discussion on a book or a topic area. Some schools already have content or learning management system that have facilities for discussion forums. For those schools that do not have this, you could use <i>My Space</i>. An example is Clark County Public Library Springfield, Ohio Another useful tool is <i>imbee</i> that has a service dedicated to teachers.

Table 2 Possible ways for libraries to promote conversations and facilitate knowledge production

7. Conclusion

New digital technologies (including Web 2.0 tools) have created a new culture of authorship, individual expression and learning preferences as well as new forms of social collaboration which were not valued in print (analogue) cultures. Yet our schools are traditionally influenced by practices and resources that reflect the characteristics of a print (analogue) culture. This has presented the significant challenge of re-conceptualising notions of curriculum, learning, library and schooling that are better suited to learners in the 21st century. While the integration of ICTs is now a high priority within schools, it is imperative that educators and librarians explore extensively how technology can be deployed within a new cultural framework. This challenge is essentially the design and delivery of differentiated services that promote learning that is contemporary and relevant in the 21st century and that also values the needs, participation and preferences of diverse learners.

References

An inconvenient truth, viewed 10 July 2007, <<http://www.aninconvenienttruth.com.au/truth/>>

Audacity software download, viewed 10 July 2007, <<http://audacity.sourceforge.net/>>

Australian Broadcasting Corporation (ABC), viewed 10 July 2007, <<http://www.abc.net.au/services/podcasting.htm>>

Bloglines, viewed 10 July 2007, <<http://www.bloglines.com>>

Boyd, D 2007, *The significance of social software*, viewed 3 July 2007, <<http://www.danah.org/papers/BlogTalksReloaded.pdf>>

PBwiki, viewed 10 July 2007, <<http://pbwiki.com>>

Casey, M 2005, *Working towards a definition of Library 2.0*, viewed 3 July 2007, <<http://www.librarycrunch.com>>

Castells, M 1996, *The rise of the network society*, Blackwell, Oxford.

Clark County Public Library Springfield, Ohio -
<<http://profile.myspace.com/index.cfm?fuseaction=user.viewprofile&friendID=72802938>>

Curtin University Library, viewed 10 July 2007,
<<http://library.curtin.edu.au/podcast/introductory.html>>
<<http://library.curtin.edu.au/tours/index.html>>
<<http://library.curtin.edu.au/tours/virtualtour.html>>

Curtin University of Technology, viewed 10 July 2007,
<<http://library.curtin.edu.au/podcast/index.html>>

del.icio.us, viewed 10 July 2007, <<http://del.icio.us>>

Dewey, J 1916, *Democracy and education*, Macmillan, New York.

Education Network Australia (Edna), viewed 10 July 2007,
<<http://www.edna.edu.au/edna/go/news/podcast>>

Education Network Australia (Edna) Groups, viewed 10 July 2007,
<<http://www.groups.edna.edu.au/mod/wiki/view.php?id=16399>>

Flickr, viewed 10 July 2007, <<http://www.flickr.com>>

Furl, viewed 10 July 2007, <<http://furl.net>>

Lankes, D, Silverstein, J & Nicholson, S n.d., *Participatory networks: The library as conversation*, Information Institute of Syracuse, Syracuse University's School of Information Studies, viewed 3 July 2007, <<http://iis.syr.edu/projects/PNOpen/ParticipatoryNetworks.pdf>>

Luke, C 2000, 'Cyber-Schooling and technological change' in *Multiliteracies: Literacy learning and the design of social futures*, B Cope and M Kalantzis, (eds.), Routledge, London.

Madison-Jefferson County Public Library, viewed 10 July 2007, <<http://www.mjcpl.org>>

Mannes, J 2006, *Library 2.0 theory: Web 2.0 and its implications for libraries*, Webology Volume 3 Number 2 June 2006, viewed 3 July 2007,
<<http://www.webology.ir/2006/v3n2/a25.html>>

Macquarie University TV (MQtv), viewed 10 July 2007, <<http://www.mqtv.mq.edu.au>>

Miller, P 2006, *Library 2.0: The challenge of disruptive innovation*, viewed 3 July 2007, Talis, <http://www.talis.com/resources/documents/447_Library_2_prf1.pdf>

O'Reilly, T 2005, *What is Web 2.0: Design patterns and business models for the next generation of software*, O'Reilly Media Inc., viewed 3 July 2007,
<http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>

Padua College (Year 8 Science), viewed 10 July 2007, <<http://del.icio.us/paduasci08>>

Padua College (Year 9 Science), viewed 10 July 2007, <<http://del.icio.us/paduasci09>>
Padua College (Year 8 Science), viewed 10 July 2007, <<http://del.icio.us/paduasci10>>

Richardson, W 2006, *Blogs, wikis, podcasts, and other powerful web tools for classrooms*, Corwin Press, California.

Schneiderman, B 2003, *Leonardo's laptop*, MIT Press, Cambridge.

Special Broadcasting Service (SBS), viewed 10 July 2007, <<http://www20.sbs.com.au/podcasting/>>

University of Pennsylvania Libraries, viewed 10 July 2007, <<http://tags.library.upenn.edu/>>

University of Sydney Podcasts, viewed 10 July 2007, <<http://www.usyd.edu.au/podcasts/>>

You Tube, viewed 10 July 2007, <<http://www.youtube.com>>

Wikipedia, viewed 10 July 2007, <<http://www.wikipedia.org>>

Wikibooks, viewed 10 July 2007, <<http://en.wikibooks.org>>

Wikitext, viewed 10 July 2007, <<http://wikitextbook.co.uk>>

Wikinews, viewed 10 July 2007, <<http://en.wikinews.org>>

Wiktionary, viewed 10 July 2007, <<http://en.wiktionary.org>>

Wikiquote, viewed 10 July 2007, <<http://en.wikiquote.org>>

Wikisource, viewed 10 July 2007, <<http://en.wikisource.org>>

Wikispecies, viewed 10 July 2007, <<http://species.wikipedia.org>>

Wikipedia Commons, viewed 10 July 2007, <<http://commons.wikimedia.org>>

Wikispaces, viewed 10 July 2007, <<http://www.wikispaces.com>>

Wikitravel, viewed 10 July 2007, <<http://wikitravel.org>>

Wikiversity, viewed 10 July 2007, <<http://en.wikiversity.org>>

Bibliography

Imbee, viewed 10 July 2007, <<http://www.imbee.com/teacher>>

Library 2.0 in 15 minutes a day, viewed 10 July 2007, <http://instructionwiki.org/Library_2.0_in_15_minutes_a_day>

Library success: A best practices wiki, viewed 10 July 2007, <<http://www.libsuccess.org>>

RSS in plain English, viewed 4 July 2007, <<http://www.youtube.com/watch?v=0klgLsSxGsU>>

Social networking in plain English, viewed 4 July 2007, <http://www.youtube.com/watch?v=6a_KF7TYKVc>

Wagga Wagga City Library viewed 10 July 2007, <<http://www.wagga.nsw.gov.au/www/html/564-library-home.asp?intSiteID=1>>

Web 2.0 ... The machine is us/ing us, viewed 4 July 2007,
<<http://www.youtube.com/watch?v=6gmP4nk0EOE>>

Wikis in plain English, viewed 4 July 2007, <<http://www.youtube.com/watch?v=-dnL00TdmLY>>