Mobile Blogging: A Guide for Educators.

Thomas Cochrane

Unitec, Auckland

tcochrane@unitec.ac.nz

Abstract: *This paper provides a short overview of the educational usefulness of blogging, followed by an overview of the key issues involved in mobile blogging, and an overview of various options available for mobile blogging today. The emphasis is on keeping it simple, so that the technology does not get in the way of the pedagogy. The paper provides the background for an interactive session on implementing mobile blogging that can be found on the author's wiki page (Cochrane, 2007). The interactive session will provide an overview of mobile blogging options for SMS, and Java capable cellphones. How staff can create interactive learning communities with minimal IT knowledge and cost, using freely available blog hosting and RSS newsreading options. Participants of the interactive session will require a cellphone and access to a computer with the Firefox web browser installed and an Internet connection.*

Introduction

> A junior at the university, Eric wakes up and peers at his PC to see how many instant messages (IMs) arrived while he slept. Several attempts to reach him are visible on the screen, along with various postings to the blog he's been following. After a quick trip to the shower, he pulls up an eclectic mix of news, weather, and sports on the home page he customized using Yahoo. He then logs on to his campus account. A reminder pops up indicating that there will be a sociology quiz today; another reminder lets him know that a lab report needs to be emailed to his chemistry professor by midnight. After a few quick IMs with friends he pulls up a wiki to review progress a teammate has made on a project they're doing for their computer science class. He downloads yesterday's chemistry lecture to his laptop; he'll review it while he sits with a group of students in the student union working on other projects. After classes are over he has to go to the library because he can't find an online resource he needs for a project. He rarely goes to the library to check out books; usually he uses Google or Wikipedia. Late that night as he's working on his term paper, he switches back and forth between the paper and the Internet-based multiplayer game he's trying to win (Oblinger & Oblinger, 2005).

The above snapshot of today's learners gives us an idea of their characteristics:

- Technically literate
- Multitasking
- Collaborative
- Connected

To engage these learners we need to thoughtfully integrate their preferred means of communicating into the teaching and learning environment.

Pedagogy and today's learners

Technologies (hardware and software) should be chosen according to their fit with the underlying pedagogies guiding the course delivery.

Teaching and learning innovations are best implemented when informed by learning theory. A pedagogical framework for implementing social software tools via wireless mobile devices can be developed by drawing on concepts from: constructivism (Bruner, 1966; Piaget, 1973), social constructivism (Vygotsky, 1978), communities of practice (Wenger, 2005), a conversational model of learning (Laurillard, 2001), and the social construction of technology (Bijker, 1995).

Thus a mobile (m-learning) pedagogical model will focus upon enhancing communication, collaboration, and will be student-centred.

Constructivism

Constructivism is based on the work of Piaget (1973), Dewey and Bruner (1966). According to these theorists, knowledge is constructed from our own experiences, and enabled by teachers. The learner learns best by being involved in the learning process, discovering new concepts.

> A student who achieves a certain knowledge through free investigation and spontaneous effort will later be able retain it; he will have acquired a methodology that can serve him for the rest of his life (Piaget, 1973).

The role of the teacher varies in the thinking of these founders. For Piaget the teachers role was mainly to provide a stimulating environment for learning, while for Bruner the teacher plays a much more significant role in directing the student in their construction of knowledge. Constructivism is a synthesis of these various ideas.

> The main constructivist proposition is that the child constructs his own version of reality from his own unique experiences. It is this construction he then uses to deal with any new experience in that field. The process of constructing his own knowledge is an active one. He does so by forming new relationships between ideas he already has. To these he incorporates new pieces of information... the most important thing for teachers to know is what each pupil knows. The teacher can then plan a learning programme for each pupil, taking his initial knowledge and learning strategies as the starting-point (Sutherland, 1992).

Social Constructivism

Some of the seminal thinking behind Social Constructivism is attributed to Vygotsky, according to whom the social context is very important in constructing knowledge. Vygotsky argued that learning is a collaborative process.

> Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals (Vygotsky, 1978, p57).

According to Vygotsky the role of the teacher is to create and maintain the Zones of Proximal Development (Head & Dakers, 2005) – an environment that will help move the learner from

their current understanding to a potential deeper level. Bandura (1986) is one of the theorists who have expanded upon Vygotsky's ideas.

> Instructional models based on the social constructivist perspective stress the need for collaboration among learners and with practitioners in the society … Social constructivist approaches can include reciprocal teaching, peer collaboration, cognitive apprenticeships, problem-based instruction, webquests, anchored instruction and other methods that involve learning with others (Kim, 2001).

Social constructivism forms the underlying basis for learning theories such as 'Communities of Practice' and the 'Social Construction of Technology'.

Web2

'Social Software' (interactive collaborative software) is one of the key features of what has been termed 'Web2' (O'Reilly, 2005). Examples of current and emerging social software tools include blogs, wikis, RSS, instant messaging, podcasting, social book marking, etc… (Farmer, 2004; Glogoff, 2005; Kaplan-Leiserson, 2004). The key characteristics of social software fit well with the pedagogies described above, enabling a natural and relatively simple approach to creating collaborative learning communities.

Web2 is about:

* Moving beyond CONTENT
* Ease of use
* Interactivity
* Collaboration & sharing
* Customisation
* Personal Publishing

To illustrate the end-user emphasis of web2, Time magazine named 'You' as person of the year for 2006 (Grossman, 2006). The educational implications of web2 social software is the source of recent interest (Alexander, 2006; Alexander *et al.*, 2006; Anderson, 2007; Becta, 2006, 2007; Bryant, 2006; New Media Consortium, 2007).

Wireless Mobile Devices coupled with open-source Social Software tools potentially provide the basis for enhancing teaching and learning in virtually any discipline, providing an environment that stimulates reflection, critique, collaboration, and user generated content – i.e. a social constructivist environment.

An article in the latest New Zealand TUANZ Topics magazine asks: "Are web2 communication tools such as blogs, wikis, webcasts and podcasts now an essential part of the teacher's toolkit?" (The article is written from a secondary school perspective). They conclude:

> You and I are the last generation that has the prerogative of deciding whether or not we're going to embrace technology. But the kids we are teaching now, the ones that are under my watch in the classroom, they aren't given that same prerogative. If they don't master these skills, I'm actually dooming them to a lower level of opportunity...

> The thing we need to understand about the type of learners coming to us today is that not only do they have different tools, but they actually process differently.
>
> Most kids are walking around with one or two cellphones in their pocket, using them to text their friends, surf the Web, take photos, and post to their blogs. And yet as soon as they get to school they're told to turn the cellphones off.
>
> If we'd just let students work to their strengths, instead of their weaknesses, we'll start to celebrate what they can do, and what they come to the classroom with - and that is a propensity toward technology (Putt, 2007).

Blogs

A Blog is a reverse chronological online journal, the newest postings appear at the top of the blog while older postings are archived. Only the owner of the blog, and those given group membership by the owner can make blog postings. However, visitors can add comments to blog postings, and automatically check for new postings via an RSS/Atom newsreader. A blog is a much more personal space than a typical LMS asynchronous discussion forum. Blog hosting software usually provides customisable templates, and add-on widgets for embedding multimedia files. Additionally a blog is usually accessible via the Internet without requiring institutional passwords, and remains the property of the student/owner after the completion of their course. Bloggers therefore have a potential worldwide audience and can form international networks with like-minded people. Some employers are googling potential employees to check their suitability. These aspects add incentive to students to develop and maintain a quality blog.

There are a variety of free online blog hosts, the most popular being http://www.blogger.com. Others include:

- http://edublogs.org
- http://wordpress.com
- http://my.opera.com/community/
- http://www.vox.com

Blog posts can be made via a web browser, a dedicated blogging application, via email, SMS, or via plug in extensions to web browsers like Firefox or Flock, or even MS Word. Readers interested in regularly following a blog can subscribe to it via its RSS feed.

There has been a lot of interest in the educational applications of blogs (Educause, 2005; Educause Learning Initiative, 2005; Farmer & Bartlett-Bragg, 2005; Luca & McLoughlin, 2005; Trafford, 2005). In an educational context, blogging can be utilised as an online reflective journal. The use of reflective journals in education is well established (Bain *et al.*, 1999). You can use similar strategies for assessing and moderating blogs to those used for the familiar online discussion forums utilised in most LMS's. An assessment rubric may cover: expected number and regularity of blog posts, quality of reflections, references to external sources, number of comments, use of multimedia, alignment with the course or project content/context etc… Student Blogs linked via RSS feeds and using a Tutor blog to notify students of important details using RSS can form the basis for a rich online collaborative community (Farmer, 2004). Blogging enhances the following skills (Panday, 2007):

- Sharing — thoughts, concepts, experiences, knowledge
- Analyzing
- Reflecting — Critiquing, Writing, Questioning, Reacting
- Reading

- Communication
- Record keeping — thoughts, concepts, and experiences
- Collaboration — with peers, people (experts, students) around the world

Variations on blogging include image and video blogging. Currently two of the most popular examples are http://www.flickr.com (image blogging) and http://www.youtube.com (video blogging). Emerging Mobile multimedia blogging sites include: http://www.splashblog.com and http://www.mojungle.com.

RSS

Rich Site Summary, or Real Simple Syndication, RSS provides a way of subscribing to content via news reading software (e.g. http://www.newsgator.com/). RSS can be used as an enabling/delivery mechanism common to most social software tools (Kaplan-Leiserson, 2004; Wenger *et al.*, 2005). RSS is a real time saver. Instead of logging onto all of your favourite websites one at a time, use a newsreader application to automatically download the headings of new posts, and then you can choose to visit the site for more information or not.

RSS is a great companion to Blogs - you can subscribe to your entire classes blogs in one simple window and keep track of your students' progress.

Most news type websites now have RSS feeds. There will be an orange 'XML' or 'RSS' or 'FEED' symbol on the site, click this to find the sites RSS feed address and put it into your preferred RSS newsreading software.

There are two main types of feeds:

1. RSS
2. ATOM

Blogger.com uses atom feeds, e.g. my Blog feed is: http://tcblogtest.blogspot.com/atom.xml

Online News Aggregators

You can subscribe and read RSS feeds online using several free online news aggregator systems:

Newsgator (http://www.newsgator.com) allows you to subscribe to your favourite RSS feeds and read them on any Internet connected computer with a web browser. It also supports synchronization with dedicated RSS newsreading software on Mac (NetNewsWire) and PC (FeedDemon), and the ability to synchronize subscriptions between multiple registered computers with one Newsgator account.

Bloglines (http://www.bloglines.com) is very similar to Newsgator, but also has free support for mobile devices. This is a pay - 'premium' option with Newsgator.

Google Reader (http://www.google.com/reader) is the challenger to the online RSS reading throne. Google Reader is part of a suite of free online Google tools that provide simple mobile interfaces (including GMail, Google Calendars, Search, Maps, Picasaweb etc…) making it a good option.

Mobile Blogging

Why mobile?

> The convergence of ubiquitous broadband, portable devices, and tiny computers has changed our concept of what a phone is meant to be. A pocket-sized connection to the digital world, the mobile phone keeps us in touch with our families, friends, and colleagues by more than just voice. Our phones are address books, file storage devices, cameras, video recorders, wayfinders, and hand-held portals to the Internet—and they don't stop there. The ubiquity of mobile phones, combined with their many capabilities, makes them an ideal platform for educational content and activities. We are only just beginning to take advantage of the possibilities they will offer. (New Media Consortium, 2007)

Today's mobile phones are powerful computers. The catch phrase of Nokia's current add campaign for its N-Series smart-phones is: "It's what computers have become" (Nokia, 2007). Mobile phone ownership in New Zealand has almost reached 100 per cent (81.1% 2004 (Cameron, 2006)). Its rise to ubiquity is described as a

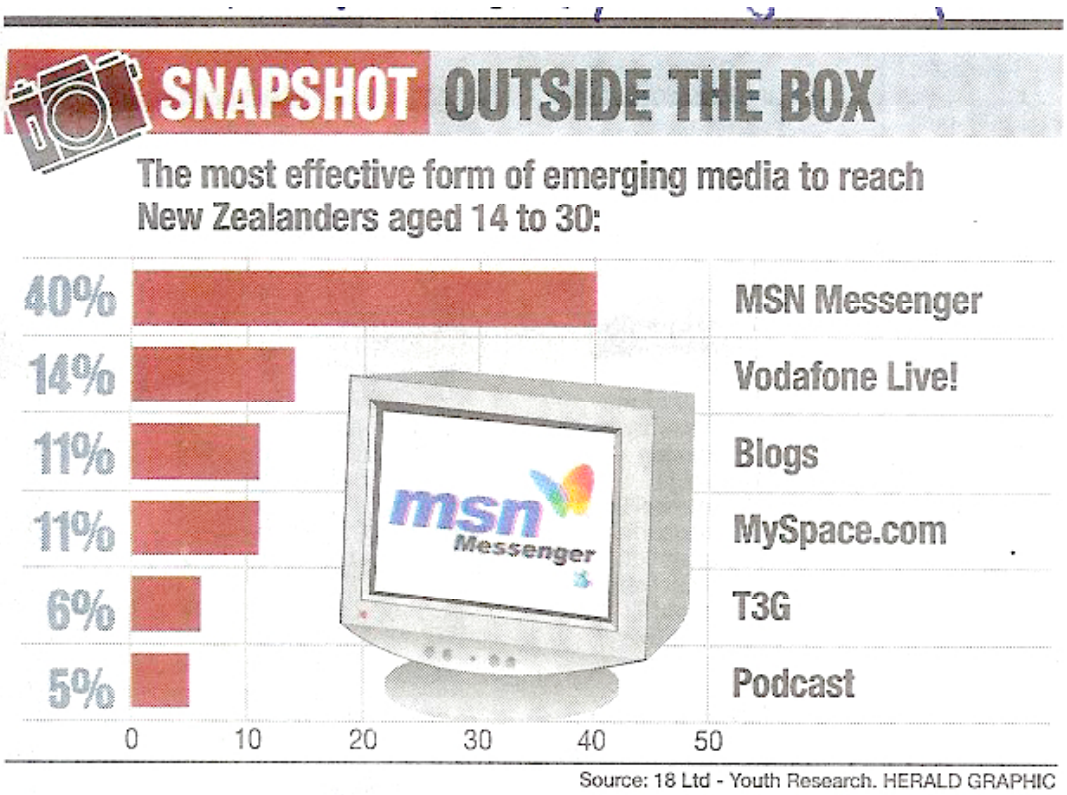
> …stealthy but rapid shift from a telephony device towards a portable, personal media hub that enables an increasing range of personalised and customised communication, entertainment, relationship management and service functions. Its reach is pervasively global and trans-cultural, possibly more so than any other media form including the internet and world wide web (Cameron, 2006).

The largest growth area regarding Internet usage is mobile access. "'Mobile, mobile, mobile,' were the words of Google chief executive Eric Schmidt this week when asked what technologies are most intriguing to the computer web search leader" (Wakabayashi & Auchard, 2007). Marc Prensky remarks: "What can you learn from a cell phone? Almost anything!" (Prensky, 2005).

Overview

Mobile devices are inherently social, enabling rich social interaction, and the potential for enhancing group work and communication within educational settings. Today's learners are constantly connected to their social networks via their wireless mobile devices. Their preferred method of communication is text messaging (65% (Cameron, 2006)), followed by instant messaging (New Zealand Herald, 2006).

Fig 1. The most effective form of emerging media to reach New Zealanders aged 14 to 30.



Mobile devices coupled with wireless networks have been described as 'disruptive technologies', and so have the web2 social software tools that have developed (blogs, wikis, podcasting, vodcasting, online photo blogging etc…) (Alexander, 2004; Fielder, 2004; Lamb, 2004). Their disruptive nature forces a rethink of pedagogical strategies and relationships in education.

Blog options for mobile include: SMS, MMS, email, mobile formatted web interfaces, Java clients, and specific OS application clients for smart-phones (Windows Mobile, Palm OS, Symbian, Linux). Most mobile blogging options initially require the blog host to be set-up using a PC before being accessed via the mobile, although there are some exceptions.

Key Issues

Technical support and mobile configuration

Mobile carriers are attempting to make Internet configuration of mobiles relatively simple. In New Zealand, all Telecom mobiles come pre-configured for the internet, while Vodafone provide an SMS auto configuration service (Vodafone NZ, 2007c). Parallel imported phones can usually be set-up from SMS auto configuration forms found on the manufacturers local website.

As every different mobile manufacturers web browser is different, to keep the user experience as similar as possible, use the Opera mini web browser, which can be downloaded to almost any internet and Java capable mobile phone by typing the URL http://operamini.com into the phones built-in WAP or web browser.

Fast mobile data access is not required for blog posting and RSS reading, as these are basically text based. However, 3G data access is required for multimedia blogging (picture,

audio or video uploading). 3G coverage maps are available from both Telecom (Telecom New Zealand, 2007c) and Vodafone (Vodafone NZ, 2005).

Data costs

For mobile email and Internet access a data account is required. For basic mobile blogging and RSS reading a low data plan (10-20MB/month) will probably suffice. For multimedia blogging a 'broadband' mobile data plan will be required. If you do not have a data plan, you will be charged at the 'casual data' rate:

- Vodafone NZ (Vodafone NZ, 2007b) = 1c per Kb = $10000/GB
- Telecom NZ (Telecom New Zealand, 2007b) = 5c per Kb = $50000/GB

Table 1. Vodafone Mobile Data Plans (Vodafone NZ, 2007a).

Plan	Monthly access fee	Included data	Additional Cost per MB	Type of Usage
Casual	$0	0 MB	$10.00	Less than 200 emails
Mobilise Data 3MB	$10.00	3 MB	$2.00	600 emails
Mobilise Data 15MB	$19.00	15 MB	$1.50	3,000 emails
Broadband Starter	$39.95	200 MB	$0.50	Heavy data usage
Broadband Everyday	$59.95	1 GB	$0.50	Very heavy data usage

Table 2. Telecom Mobile Data Plans (Telecom New Zealand, 2007a).

Plan	Monthly Access Fee	Included data	Additional Cost per MB	Type of Usage
Casual	$0	0 MB	$8.00	Occasional use
Flexi	$10.00	0 MB	$1.00	Very low use
Mobile Broadband 20	$22.22	20 MB	$1.00	Smartphones only
Mobile Broadband 50	$35.00	50 MB	$0.95	Medium PDA/Smartphone users
Mobile Broadband 100	$52.44	100 MB	$0.71	Low – Medium Use
Mobile Broadband 200	$65	200 MB	$0.60	Medium use
Mobile Broadband 200+	$39.95	200 MB	$0.50	Medium - high use
Mobile Broadband 400	$99.00	400 MB	$0.50	High Use
Mobile	$59.95	1 GB	$0.50	Heavy Use

Broadband 1GB+				

Variety of handsets

There are at least nineteen mobile manufacturers supplying cell phones to the New Zealand market. However, as there are only two mobile carriers who promote a small set of handsets during various specials, the actual variety is relatively small compared to the worldwide market. Thirteen handsets, from five manufacturers currently hold seventy one percent of the New Zealand market. Mobile users update their mobile phone on average every eighteen months. However, teenagers tend to update much more often, and generally have two mobiles to catch both of the Telecom and Vodafone specials.

Table 3. Manufacturer market share in Oceania – New Zealand, March 2007 (Mobref, 2007).

Manufacturer	Market Share
Motorola	33.97%
Nokia	23.6%
Sharp	21.69%
Sony-Ericsson	9.31%
Samsung	2.2%

Integration into teaching and learning

One of the biggest challenges is the changing role of the teacher. This includes the need to become techno-savvy in order to model the educational use of the technology, particularly if the teacher is also the technology steward for the class/community. Support structures can be developed utilizing the concept of communities of practice. A community of practice can be based around the course/class – incorporating the teacher, technical support (if outside), and students. A community of practice that provides teacher support can also be created from like-minded teachers. The members need not be limited to your local institution – use the tools: create a support blog, subscribe to relevant blogs, use instant messaging to communicate with peers worldwide etc…

Small screen size

The small screen size of mobiles makes them an inherently personal device. In a classroom setting, demonstrating the set-up and use of mobile blogging requires some creative pre-planning. This may mean either using remote screen controlling software on a PC connected to a video projector, or creating slides/movies using screen-grabbing software on the mobile and transferring the screenshots to a PC via USB, or bluetooth. Another alternative is to use the SDK java application development kits that most manufacturers provide for free, but then you are limited to demoing Java applications only. Videos taken directly of mobile use tend to be of poor quality for viewing detail, but give an idea of their usage. Bluetooth mobiles can stream pictures and audio via bluetooth multimedia convertors, but do not mirror the mobiles on screen displays. Finally, the latest Nokia handsets (N95 and N93) supply direct video out ports for large screen viewing – at the expense of battery usage.

SMS Blogging

The simplest mobile blogging solution is to use text messaging to post to your blog. The main limitation is the 160-character limit of text messages, so your SMS blog posts will always be short. Most mobile carriers provide an SMS blog service for their customers, however their blog software is usually not as configurable as the more popular mainstream blog hosts. To SMS post to these 'mainstream' blog hosts requires an intermediary service. One such free service is http://letmeparty.com. This is simple to set-up, and works with the most popular blog hosts. First use a PC with Firefox (letmeparty.com does not support Internet Explorer Jscript) to create a free registration at letmeparty.com, register your mobile phone number (in international format: i.e. +6421xxxxxx for Vodafone NZ), enter your blog host type, address, username and password. Finally send your SMS to +13128047068 and letmeparty.com forwards your SMS to your blog as a post.

Email and MMS blogging

Older blog hosts supported mobile blogging via email and MMS, although almost all blog hosts offer this as a mobile blogging option. This requires the set-up of your blog host on a PC, followed by obtaining your secret email address to access your blog (found in your blog settings). Your mobile must be configured for sending email via your mobile carrier. Then you can put your blog email address into your mobile address book, and simply send an email to this address to blog. The email subject becomes the post title, while the main text of the email becomes the text of your blog post. Attaching pictures, audio, or video to your blog email address will usually allow uploading of this content to your blog host.

Web2 Mobile Blogging

A revolution has been underway with the convergence between web2 social software and mobile devices. These mobile web2 services enable constructivist collaborative environments with very little technical overhead required by the lecturer or students.

The recent release of the Opera mobile and mini web browser (Opera Software, 2006) for almost every mobile phone and PDA has opened the door for viewing many standard web sites and web2 services on mobile devices without any translation. However, the best mobile experience comes from blog hosts that have dedicated mobile friendly versions for viewing and posting, e.g.

- http://m.wordpress.com
- http://m.flickr.com
- http://my.opera.com
- http://www.splashblog.com
- http://moblog.co.uk

Fig 2. Mobile Wordpress interface.

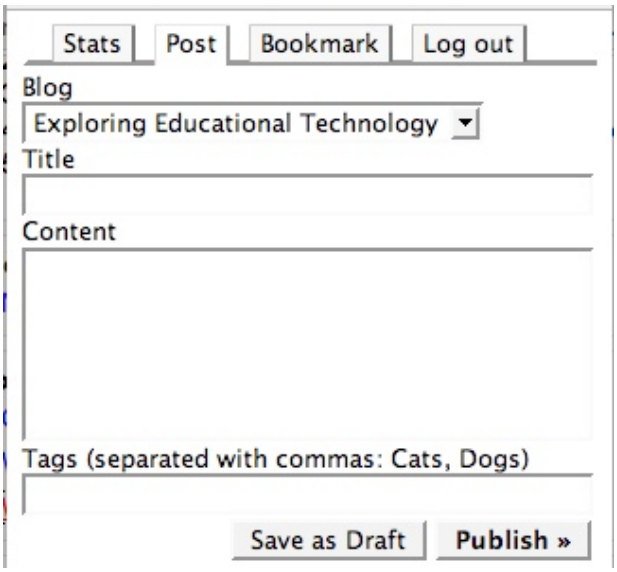
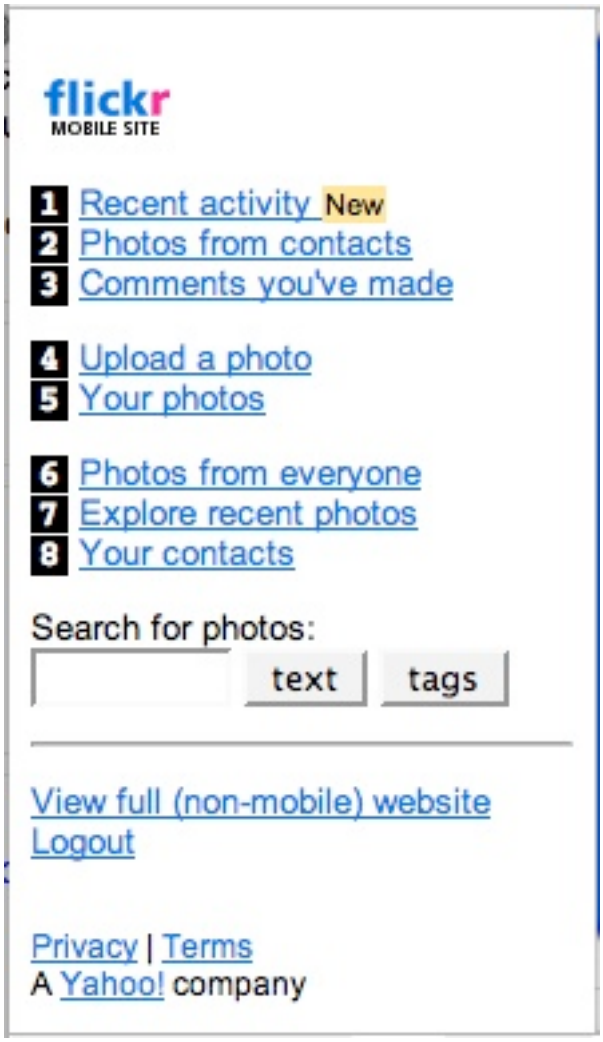


Fig 3. Mobile Flickr Interface.



The Opera mini web browser also supports most camera phones for picture blogging directly to http://my.opera.com, and includes a built-in RSS reader for a limited number of on device subscriptions. There is an online demo of the Opera mini web browser at http://www.operamini.com/demo.

Web2 Mobile RSS

Most online newsreading sites now have mobile access, though not all provide this facility for free. Good examples are:

- http://www.google.com/reader/m/view/
- http://www.bloglines.com/mobile/

Fig 4. Mobile Google Reader Login.

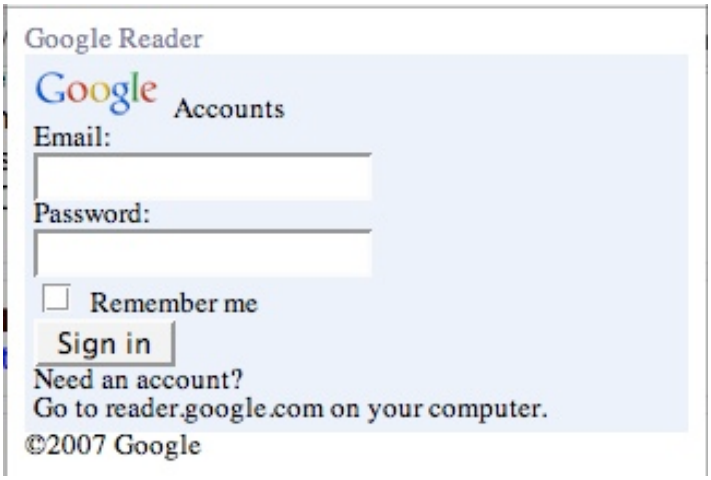
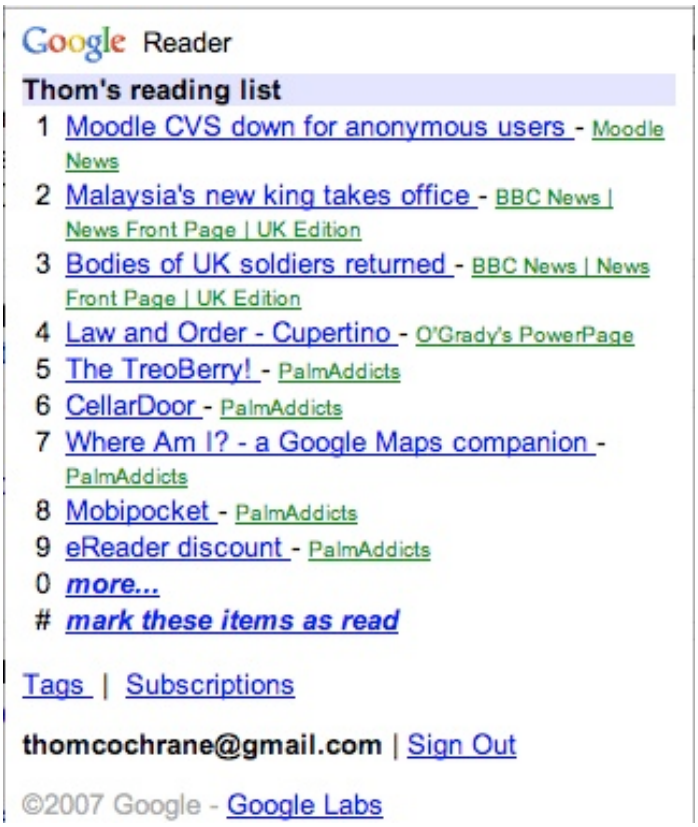


Fig 5. Mobile Google Reader Interface.



Java Clients

Java clients are small applications that can be downloaded via a PC and installed onto your mobile (via USB or bluetooth), or installed directly onto your mobile 'over the air' (OTA) by putting a download URL into your mobile's built-in web or WAP browser. The Java application lives on your mobile, and requires configuring with the address, username and password for your blog and RSS host. The mobile device must be configured with appropriate Internet access settings for your mobile carrier, and a data account is recommended. These Java clients do not require specific mobile versions of blog hosts, but provide a simple mobile interface to most standard blog hosts. While most modern mobiles support Java applications, there are differences between manufacturers and even models that make wide compatibility difficult.

Example Java Blogging clients

- Kablog
- Blogplanet
- Opera mini

Example Java RSS clients

- http://www.litefeeds.com
- Opera mini

For more information visit the author's wiki page on mobile learning (Cochrane, 2006). To view screencasts outlining how to implement mobile blogging, and for supporting web links, seethe authors mobile blogging links wiki page (Cochrane, 2007).

Conclusions

The educational benefits of social software, in particular blogging, have been discussed. The alignment with social constructivist pedagogy and new learner preferences provides the potential for the development of collaborative learning communities, enhancing student-student and student-tutor communication and interaction. Mobile blogging coupled with social software tools potentially provide the basis for enhancing teaching and learning in virtually any discipline, providing an environment that stimulates reflection, critique, collaboration, and user generated content (i.e. a social constructivist environment). Issues and options around mobile blogging have been discussed, providing a starting guide for educators who want to engage with mobile blogging.

References

Alexander, B. (2004, September/October). Going nomadic: Mobile learning in higher education. *Educause Review, 39,* 28-35.

Alexander, B. (2006, March/April). Web 2.0: A new wave of innovation for teaching and learning? *Educause Review, 41,* 33-44.

Alexander, B., Brown, M., Doogan, V., Johnson, L., Levine, A., Sabean, R., et al. (2006). *The horizon report 2006 edition*: A collaboration between The New Media Consortium and the Educause Learning Initiative.

Anderson, P. (2007). What is web 2.0? Ideas, technologies and implications for education. Retrieved March, 2007, from http://www.jisc.ac.uk/whatwedo/services/services_techwatch/techwatch/techwatch_ic_reports2005_published.aspx

Bain, J. D., Ballantyne, R., Packer, J., & Mills, C. (1999). Using journal writing to enhance student teacher's reflectivity during field experience placements. *Teachers and Teaching, 5*(1), 51-73.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall.

Becta. (2006). Emerging technologies for learning. Retrieved 6 April, 2006, from http://www.becta.org.uk/corporate/publications/

Becta. (2007). Emerging technologies for learning: Volume 2 (2007). Retrieved March, 2007, from http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_ap_03&rid=11380

Bijker, W. (1995). *Of bicycles, bakelites, and bulbs. Toward a theory of sociotechnical change*. Cambridge: MIT Press.

Bruner, J. (1966). *Toward a theory of instruction*. Cambridge: Belknap Press of Harvard University.

Bryant, T. (2006). Social software in academia. *Educause Quarterly, 2*, 61-64.

Cameron, D. (2006, 4-7 December). *The rocket in your pocket: How mobile phones became the media by stealth*. Paper presented at the 2nd joint JEANZ/JEA conference, Rendevous Hotel, Auckland, New Zealand.

Cochrane, T. (2006). Mlearning overview. from http://ltxserver.unitec.ac.nz/mediawiki/index.php/MlearningOverview

Cochrane, T. (2007). Mobile blogging. from http://ltxserver.unitec.ac.nz/mediawiki/index.php/MobileBlogging

Educause. (2005). Videoblogging. *7 Things You Should Know About.*, 2005, from http://www.educause.edu/LibraryDetailPage/666?ID=ELI7005

Educause Learning Initiative. (2005). Blogs. *7 Things You Should Know About.*, 2005, from http://www.educause.edu/LibraryDetailPage/666?ID=ELI7006

Farmer, J. (2004, 5-8 December). *Communication dynamics: Discussion boards, weblogs and the development of communities of inquiry in online learning environments.* Paper presented at the 21st ASCILITE Conference: Beyond the comfort zone, Perth.
Farmer, J., & Bartlett-Bragg, A. (2005, December 4 - 7). *Blogs @ anywhere: High fidelity online communication.* Paper presented at the 22nd ASCILITE Conference: Balance, Fidelity, Mobility. Maintaining the Momentum? Brisbane.
Fielder, S. (2004, June 24). Introducing disruptive technologies for learning: Personal webpublishing and weblogs. from http://static.cognitivearchitects.com/gems/Seblogging/EdMediaSymposium.pdf
Glogoff, S. (2005). Instructional blogging: Promoting interactivity, student-centered learning, and peer input. *Innovate, 1*(5), http://www.innovateonline.info/index.php?view=article&id=126.
Grossman, L. (2006). Time's person of the year: You. *Time, December 13*.
Head, G., & Dakers, J. (2005). Verillon's trio and wenger's community: Learning in technology education. *International Journal of Technology and Design Education, 15*, 33-46.
Kaplan-Leiserson, E. (2004). Rss: A learning trend. Retrieved 4 April, 2005, from http://www.learningcircuits.org/2004/may2004/0405_Trends.htm
Kim, B. (2001). Social constructivism. In M. Orey (Ed.), *Learning, teaching, & technology*. http://www.coe.uga.edu/epltt/SocialConstructivism.htm: The University of Georgia College of Education.
Lamb, B. (2004). Thewayitwasmeanttobe. *Educause review, September/October 2004,* 36-48.
Laurillard, D. (2001). *Rethinking university teaching: A framework for the effective use of educational technology* (Second ed.). London: Routledge.
Luca, J., & McLoughlin, C. (2005, December 4 - 7). *Can blogs promote fair and equitable teamwork?* Paper presented at the 22nd ASCILITE Conference: Balance, Fidelity, Mobility. Maintaining the Momentum? Brisbane.
Mobref. (2007). Manufacturer market share in oceania - new zealand (march 2007). Retrieved 23 April, 2007, from http://www.mobref.com/statistics/OC-NZ/manufacturer/All
New Media Consortium. (2007). The horizon report: 2007 edition. *The Horizon Report*, 2007, from http://www.nmc.org/horizon/2007/report
New Zealand Herald. (2006). The most effective form of emerging media to reach new zealanders aged 14 to 30. Auckland: New Zealand Herald.
Nokia. (2007). Nokia nseries. Retrieved 26 April, 2007, from http://www.nseries.com/index.html
O'Reilly, T. (2005). What is web 2.0: Design patterns and business models for the next generation of software. Retrieved March, 2006, from http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html
Oblinger, D., & Oblinger, J. (2005). Is it age or it? First steps towards understanding the net generation. In D. Oblinger & J. Oblinger (Eds.), *Educating the net generation* (pp. 10-29): Educause.
Opera Software. (2006). Opera mini. Retrieved June, 2006, from http://www.opera.com/products/mobile/operamini/campaign/
Panday, P. P. (2007). Why blogs? Retrieved April, 2007, from http://www.educause.edu/LibraryDetailPage/666?ID=CSD4902
Piaget, J. (1973). *To understand is to invent*. New York: Viking Press.
Prensky, M. (2005). What can you learn from a cell phone? Almost anything! *Innovate, 1*(5), http://www.innovateonline.info/index.php?view=article&id=83.
Putt, S. (2007, March/April). Get with the program. *TUANZ Topics, 17,* 35-38.
Sutherland, P. (1992). *Cognitive development today. Piaget and his critics*. London: Paul Chapman Publishing Ltd.
Telecom New Zealand. (2007a). Mobile broadband data plans. Retrieved 26 April, 2007, from http://www.telecom.co.nz/content/0,8748,202032-201933,00.html
Telecom New Zealand. (2007b). Mobile internet. Retrieved 26 April, 2007, from http://www.xtra.co.nz/mobile/0,10311,00.html
Telecom New Zealand. (2007c). Our mobile coverage: Telecom new zealand. Retrieved 26 April, 2007, from http://www.telecom.co.nz/coverage
Trafford, P. (2005). Mobile blogs, personal reflections and learning environments. *Ariadne*(44), 9.
Vodafone NZ. (2005). New zealand 3g coverage. Retrieved 26 April, 2007, from http://www.vodafone.co.nz/coverage/3g/cities/Auckland/maps.jsp?image_id=1_1&item=3g
Vodafone NZ. (2007a). Data plans for your mobile. Retrieved 26 April, 2007, from http://www.vodafone.co.nz/pricing_plans/mobile_data.jsp?item=mobile_data
Vodafone NZ. (2007b). Mobile data. Retrieved 26 April, 2007, from http://www.vodafone.co.nz/business/10.2.1.7_mobile_data.jsp

Vodafone NZ. (2007c). Vodafone internet access (gprs) configuration. Retrieved March, 2007, from http://wireless.vodafone.co.nz/m2minternet/

Vygotsky, L. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.

Wakabayashi, D., & Auchard, E. (2007). Mobile phones: Google's next frontier. *New Zealand PC World, 23 April*.

Wenger, E. (2005, 14 October). Communities of practice: A brief introduction. Retrieved 17 July, 2006, from http://www.ewenger.com/theory/index.htm

Wenger, E., White, N., Smith, J., & spa, K. R.-. (2005). Technology for communities. Retrieved 14 July, 2006, from http://technologyforcommunities.com/