Going for gold: a moblogging case study

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This paper introduces a research project that explores the integration of Web2 and wireless mobile devices in tertiary education. It discusses the results of the first mobile learning trial undertaken as part of the research. The paper argues that wireless mobile devices can be used to intentionally create disruptive learning environments that facilitate a social constructivist approach to teaching and learning.

Keywords: mobile, blogging, social constructivism

Trial1: Diploma Landscape Design

Overview

The use of Wireless Mobile Devices (WMDs) as part of the teaching and learning environment requires changes in pedagogy and integration into the teaching and learning processes. The researcher is an Academic Advisor at the Centre for Teaching & Learning Innovation at Unitec (CTLI), and is investigating innovative ways of integrating wireless technologies into teaching and learning at Unitec to support diverse learning styles.

The research project involves a series of reflective action research trials using WMDs to harness the potential of current and emerging social constructivist e-learning tools (e.g. Moodle, Blogs, Wikis, PodCasting etc…). The first trial began in February 2007, with Diploma Landscape Design students implementing the use of Blogs, online image sharing, eportfolios and RSS aggregation to create a collaborative team-based project design for the Ellerslie International Flower Show (November 2007). With research funding made available in July 2007, we were able to provide students with Nokia N80 smartphones to post to their blogs and upload photos and videos to their online eportfolios via 3G or WiFi networks. This provided students with a flexible collaborative and context-sensitive mobile learning environment with which to document their Flower show projects. This has proven very useful, as much of the project involves sourcing materials, ideas and plants from a wide variety of locations that are off campus, and beyond the formal learning environment. It is this flexibility and context-awareness in which mobile wireless devices enhance learning. The project is investigating implications for learner support, and pedagogical changes that these disruptive technologies introduce.

Disruptive technologies are those technologies that challenge established systems and thinking, requiring change and are thus viewed by many as a threat to the status quo. Disruptive technologies democratise education environments challenging the established power relations between teachers and students. Mishra et al (2007) argue that "appropriate use of technology in teaching requires the thoughtful integration of content, pedagogy, and technology".

> The addition of a new technology reconstructs the dynamic equilibrium between all three elements forcing instructors to develop new representations of content

and new pedagogical strategies that exploit the affordances (and overcome the constraints) of this new medium. Similarly, changing pedagogical strategies (say moving from a lecture to a discussion format) necessarily requires rethinking the manner in which content is represented, as well as the technologies used to support it" (Mishra et al., 2007).

The introduction of WMDs in education requires changes in pedagogical strategies, content (reformatted for small screens and lower data bandwidths), and contexts (beyond the face-to-face classroom environment). In a social constructivist view of learning, creating a student centred, self-directed learning environment is seen as necessary for deep learning to occur. Hence it is postulated herein that WMDs are disruptive technologies that are useful in challenging established pedagogies, providing a catalyst to move tertiary education towards social constructivism.

Data gathering consisted of:

1. Pre-trial surveys of lecturers and students, to establish current practice and expertise
2. Post-trial surveys and focus groups, to measure the impact of the wireless mobile computing environment, and the implementation of the guidelines.
3. Lecturer and student reflections via their own blogs during the trial.

The trial was a combined project between the course tutor, CTLI, and the course students. The partnership between CTLI and the course tutor had been established during a community of practice investigating educational technology in 2006 (Cochrane, 2006a, 2006b; Cochrane & Kligyte, 2007). Research into communities of practice had also highlighted the role of a 'technology steward' (Wenger *et al.*, 2005) to guide a group in successfully integrating technology. The researcher thus took on the role of the 'technology steward' for the trial, supporting the course tutor and students.

The project pedagogy is based upon social constructivism (Bandura, 1986; Head & Dakers, 2005; Kim, 2001) and a conversational model (Laurillard, 2001, 2007) of teaching and learning. Students work in teams to research, conceptualize, design and build their garden exhibitions. The integration of mobile and web2 tools is designed to facilitate communication, reflection and group work. Group and technology support principles were borrowed from research and practice of intentional communities of practice (Cochrane, 2007; Lave & Wenger, 1991; Wenger, 2005; Wenger *et al.*, 2002; Wenger et al., 2005).

The students for the trial were selected by the course Tutor. The course is an optional negotiated project that students elect to participate in, their selection is finalised on their presentation of a concept proposal for a garden exhibition at the annual Ellerslie International Flower Show. The students were all second year Diploma Landscape Design students. Surprisingly, not all students had access to either a desktop or laptop computer at home. None of the students owned a PDA or a smartphone, neither did all of the students own their own cellphone. None of the students had previous experience of subscribing to blogs or owning their own blog, or of a range of web2 services. Only three students had previously used instant messaging. Their ages ranged from 18 to 49, with an average age of 30, and a gender mix of three male and five female students.

Mobile Blogging

The unique element of this project was the incorporation of mobile blogging (moblogging) and the investigation of the benefits of wireless mobile devices to enhance the learning environment. Two previous trials in 2006 had used Palm TX PDAs. These PDAs have WiFi access but no cell phone connectivity and no built-in camera. Feedback from students involved in these previous trials indicated their preference for wider wireless connectivity than WiFi, and for the inclusion of a built-in camera in the mobile device. These previous trials had also indicated that students would prefer to own their own wireless mobile device rather than borrow an institution provided loan model. Because a partnership with Palm had been already established and a set of Palm blogging applications already trialled, it was decided to use the new Palm Treo 680 as the wireless mobile device for the 2007 trial. A wholesale price was negotiated with Palm for the students to purchase their own Treo 680 each. However the Palm Treo failed to grab the students' imagination, with only one student taking up the offer. Reasons for this include:

- The Treo's lack of WiFi and 3G connectivity – GPRS only
- The poor resolution of the built-in camera (VGA)
- The size of the handset – students preferred a smaller handset

This left the mobile aspect of the trial in limbo while an alternative device and approach was investigated. In lieu of using a PDA or smartphone, students were shown how to use SMS to blog from their own current basic cellphones.

The core activity of the project was the setup and development of students' blogs as reflective journals on their flower show design process. Drawing on experiences from previous student blogging projects in 2006, Wordpress (Automattic Inc, 2007) was chosen as the online blog host on the basis of its configurability, speed of access, and its option of a mobile web2 interface. Students found Wordpress easy to setup, however not a lot of interaction between student blogs occurred.

The project was supported via the Moodle (Dougiamis, 2005) learning management system (LMS). Three technology workshop sessions introduced students to creating and configuring their blogs, Flickr (http://wwww.flickr.com), and Google Reader (http://reader.google.com) accounts. Supporting notes, links, discussion forums and tutorials were hosted on Unitec's Moodle server. This approach allowed the 'technology steward' to remain in contact and offer online support while in Sydney during April and May of 2007.

The project was re-evaluated at the end of semester one 2007. At this point students were expected to have decided upon their team project design concepts, and in the following semester to implement the designs, including sourcing materials and fund-raising to cover the projects costs. The course tutor wanted to explore using an eportfolio to enable collection of rich media documenting the build process. The Vox software (Six Apart Ltd, 2007) was chosen as a suitable free online hosted eportfolio system. Vox supported the project by providing the following features:

- Allowing collections of rich media (photos, video, audio, text, documents) to be uploaded and shared from both mobile devices and PCs
- Providing a customizable blog, RSS feeds, and links to a variety of popular web2 services (e.g. YouTube, Flickr…)
- Providing mobile web2 integration, including a Vox client for Symbian S60, Windows Mobile, and Palm OS mobile devices.

- Providing an online community via definable Vox 'neighbours' and a weekly neighbourhood activity update email notification.
- Providing tools to import Wordpress blog posts into the Vox blog – so students would not lose their previous Wordpress investment.

Vox included a selection of online tools including aspects of social networking without the usual clutter found on the more popular social networking sites (e.g. MySpace, Facebook, and Beebo).

During the re-evaluation of the project, the Innovation and Development Fund (IDF) funding was finalised, providing the trial with the funds to purchase a class set of suitable smartphones. Of the currently available smartphones the Nokia N80 (Nokia, 2007) was the most cost-effective solution that fulfilled the requirements identified for the project. The N80's were purchased through a parallel importer, configured for the Unitec WiFi network, and supplied with a pre-paid Vodafone network SIM card for mobile voice and data. The Nokia N80 includes the following specifications:

- WiFi and 3G connectivity
- 3MP camera
- 512MB memory card
- Compact size
- High resolution screen
- Access to a wide range of Symbian S60 mobile applications, including a Vox and Flickr client.
- Nokia cellphone market share = 45% of worldwide cellphone market

Students were required to sign acceptable use forms for the N80s, including taking liability for returning the units at the end of the trial.

Several technology sessions were run for students and the course tutor covering the use and set-up of Vox and moblogging via the N80. Unlike the Treo 680, students were excited about working with the N80. Students were shown how to blog and upload photos and video from their smartphone to Vox and Flickr and via Shozu (A moblogging service http://www.shozu.com) to their Wordpress blog if they preferred. Unfortunately these sessions were poorly attended by one of the three student project teams.

The culmination of the project was the judging of the student teams garden designs at the Ellerslie International Flower Show in November 2007. This was a huge success with all three teams winning a gold award for each of their gardens (Koubaridis, 2007).

Mobile research results

Disruptive pedagogical implications
There were three student groups (teams) involved in the trial. Of these, two groups engaged with the mobile technology aspect of the trial and the move to Vox, while one group chose not to. This led to a stark contrast in feedback on the usefulness of mobile technology in supporting education between the engagers and non-engagers. Discussions with students during the technology sessions and the end of trial student survey indicated that the 'engagers' responded enthusiastically regarding the ability of mobile devices to enhance education experiences, while the non-engagers responded strongly in the negative. There was

no obvious demographic reason for this contrast. The contrasting response from participants is not unusual, as is illustrated by a similar response from non-engaging students within a mobile learning smartphone trial conducted by Cook et al (2007). What is needed are strategies for early identification and scaffolding for such learners. This will be explored in the design of the next mobile learning trial.

However, the non-engaging group were characterised by:

- Reluctant bloggers
- Attended less than 50% of the technology support sessions
- Did not attend the technology sessions introducing the smartphone and mobile blogging
- Either forgot to carry the smartphone with them, or forgot to keep it charged – it did not become part of their social experience.
- Change adverse – they preferred to keep their Wordpress blogs going rather than move to Vox when it was introduced mid way through the project.
- Exhibited little online community building – i.e. they made no comments on each other's blogs, or the other groups blogs.
- A preference for using their own mobile phone and separate digital camera

While initial setup support was required for students moving from Wordpress to Vox the increased level of collaboration exhibited by the increase in comments on each other's Vox blogs compared to Wordpress comments made the move worthwhile. This can be accredited to the way Vox facilitated a group work environment via its 'neighbourhood' feature. Students who used Vox assigned each other as Vox neighbours and were automatically provided with email notifications of comments on their Vox blog and new posts on neighbour Vox blogs. Vox also sends out a weekly email news notification with a summary of Vox neighbourhood activity.

Use of mobile technology
Below is an example of one of the student's thoughts regarding the introduction of the N80 to the project.

> Today at tech class I learnt how to blog and check emails from the telephone. I am feeling very pleased with myself and also lucky to have such a patient teacher as Thom. But this is where it gets really good. While checking my emails with the newly acquired skills I saw I'd had a reply from a possible sponsor I'd approached... This is both exciting and scary all in the one go. I've called this project an adventure before, and it certainly has not disappointed us on that level. (Student blog post)

For the majority of the students the N80 became an integral part of their social life and a tool for capturing project events and activities where ever they were. Three students expressed interest in purchasing the smartphone at the end of the trial, and one student purchased the SIM card used during the trial.

> Thanks so much for the N80s! They have been fantastic. In fact I have become quite attached to mine and would like to purchase one - it would be great for my new job. (Student email feedback)

The N80 was fantastic, easy to use and had every feature you could think of needing and more. I am definitely going to invest in buying one for future use as with work it will be easy to stay in contact with people, check emails etc. (Student Survey feedback)

Students valued the camera, the ability to upload to their blog, and the txt and phone call functions of the smartphone the highest. The cost of 3G data meant that most students either waited until they were on the Unitec campus for WiFi upload access, or uploaded their photos and videos from the smartphone to their PC via USB and then uploaded the files to their blogs. One student had a WiFi broadband Internet connection at home that they used with the N80.

Focus group feedback

Students valued the ability of their blogs to provide a dynamic link between their projects and their friends, family, and project sponsors. They also highly valued the photo capabilities of the smartphone and its basic communication functions (txt and voice calls). One student's mother learnt how to txt during the project to send encouraging messages during long project hours on site. Students requested that the smartphones be made available earlier in the trial next time. One student summed up their experience of the mobile project as:

I enjoyed taking photos - blogging them was so much easier and faster than using a digital camera and PC.
I also appreciated being able to link up to the local wireless network so that I didn't have to pay Vodafone extra money.
It was faster to use the phone to check my email, than it would be to start up a computer, connect to the Internet and get the messages that way. (Diploma Landscape Design student, 2007)

Participants rated the mobile technology highly effective in increasing communication between students, and between students and tutors. However they saw the mobile technology as a complement to their communication with their tutor, rather than a replacement of face to face meetings. A common theme emerged regarding the essential nature of the technology sessions for supporting the setup of the mobile devices. The students and tutor also wanted more time for exploring the full potential of the smartphone. The integrated nature of the phones communication and recording capabilities was perceived as making access to information easy. In response to the question: "In what situations would the WMDs be most effective?" one student replied: "As a mobile computer – instead of a laptop, and as a communication tool for a team who are in different places at the time, too busy to meet, to transfer information, pictures, documents etc…".

Discussion

The project was built upon the partnership established between the tutor and the researcher/technology steward during a community of practice investigating the use of educational technology in 2006 and subsequent mobile blogging trial using Palm WiFi capable PDAs. Thus the tutor was prepared for the issues regarding disruptions to pedagogy and the continuing changes surrounding mobile and web2 technologies. This allowed the project to undergo appropriate re-evaluation and subsequent modification during its life cycle.

Due to several factors the mobile part of the project was implemented at the start of the busiest time of the project for the students. This led to two distinct reactions – two groups that embraced the smartphones, and one group that did not. Because the non-engaging group missed the critical mobile set-up and mobile blogging technology support sessions they struggled to learn how to operate the smartphone, and preferred to use their own simple non-smartphones for txting and phone calls. This group was offered a separate technology support session for smartphone configuring and moblogging, however they attended the session either without their smartphone, or with it uncharged. The group members were also offered individual technical assistance but did not take up the offer. They stated they were too busy to learn how to use the smartphone. Their use of the smartphones was limited to experimenting at home with them. In contrast, the other two student groups enthusiastically attended the mobile technology support sessions, coming prepared with their smartphones. This engaging group used their smartphone everywhere they went, and enabled them to turn any context into a learning context. They found the user interface to be user friendly. However help in the initial set-up of the smartphone (in particular its wireless connectivity set-up) was considered essential.

The N80's key effectiveness was seen in its ability to be used as a communications and event-recording device. The N80 was used extensively for documenting processes and events via its built-in camera. Thus the smartphone's communications capabilities were valued most highly, followed closely by its photoblogging capability. The ability to send and receive email remotely was also highly rated by students. Additional time was required to explore other potential uses of the smartphone. This will be addressed in the following trial. Student's experience of group work was positively enhanced by the use of blogs and mobile blogging. They generally found the N80 easy and fun to use. Communication, a sense of community, quality, convenience and access to learning were all perceived to be enhanced by the use of the N80. There was general support for further use of mobile devices in other courses as a result of their experience, except by the non-engaging team.

Students rated the cost of the smartphone as their key issue in its pruchase. This was followed by the quality of the built-in camera, then the smartphone's size (students preferred small phones), the inclusion of WiFi (offsetting the cost of 3G data connectivity) and the ease of moblogging. Students commented they would have blogged more from the N80 if the cost of 3G data was lower, as WiFi coverage was mostly limited to on campus. Significantly those students with the least computer skills at the start of the project became the most avid bloggers (producing the most blog posts and comments) in both the 2006 and 2007 trials. They have found the experience empowering and the support of other students and the technology steward invaluable.

This trial has highlighted the following issues relevant to the overall research questions:
(1). What are the key factors in integrating WMDs within tertiary education courses?

- Good pedagogical design of contextual learning environments is essential.
- Tutor professional development and technology support is critical.
- An ethos of the educational use of mobile web2 technologies needs to be developed within the teaching and learning environment.
- Technology support for students is critical and must be integrated early into the course.
- Student preferences must be considered when choosing appropriate wireless mobile devices.

- The excessive cost of 3G mobile connectivity is a major deterrent, producing a reliance on free WiFi data access.
- Time to develop skills in the use of the technologies for both students and tutor.

(2). What challenges/advantages to established pedagogies do these disruptive technologies present?

The research trials so far indicate that:

- A context spanning social-constructivist learning environment is facilitated.
- Teachers require a new pedagogical toolkit to capitalise on this environment.
- Students require explicit scaffolding in this environment.

(3). To what extent can these WMDs be utilized to support learner interactivity, collaboration, communication, reflection and interest, and thus provide pedagogically rich learning environments that engage and motivate the learner? To what extent can WMDs be used to harness the potential of current and emerging social constructivist e-learning tools?

- The capabilities of affordable smartphones are constantly increasing, as is the availability of free mobile web2 services. These can be matched to create highly collaborative and motivating learning environments.

Conclusions

The mobile blogging trial has built upon the experiences and insights gained from previous trials in 2006, and provides valuable insights for the next trial in 2008. The introduction of disruptive technologies (WMDs and social software) facilitated a social constructivist pedagogical environment and challenged learner expectations. An action research approach to the project enabled aspects of the trial to be re-evaluated and reworked during the trial, leading to better alignment of the trial with the project goals. 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, and across multiple learning contexts, providing an environment that stimulates reflection, critique, collaboration, and user generated content (i.e. a social constructivist environment). Future trials will build on this foundation. While the core activity of each trial will be the creation and maintenance of a reflective Blog or eportfolio as part of a course group project, the WMD can be used to enhance almost any aspect of a course. The next trial will investigate integrating the use of WMDs and social software across an entire course, rather than just a project within a course.

The next trial will use the WMD and computers for the following activities (based upon supporting a social constructivist pedagogy):

- A reflective Blog (Vox.com)
- An eportfolio (Vox.com)
- Email (GMail)
- RSS (Newsgator.com)

- Shared Calendars (Google Calendars)
- Image Blogging (Flickr)
- Video Blogging (YouTube)
- Podcasting
- Instant Messaging and Skype
- Shared bookmarks (Upcode and Moodle)
- Accessing the Course Management System (Moodle or Blackboard)
- Document reading (Word, Excel, Powerpoint, PDF using QuickOffice and Google Docs)

To facilitate greater student reflection the issue of ease of text entry on WMDs will be addressed. Finally the issue of off-campus wireless connectivity will be tackled by providing students with a 1GB per month 3G mobile data plan.

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