Incorporating blogs, social bookmarks, and podcasts into unit teaching

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Abstract
The use of emerging e-learning technologies to build life-long learning solutions is on the rise in academic settings. However there is a need to further explore these technologies in educational contexts and find novel ways of combining them in unit design. This paper presents our experience of incorporating a combination of blogs, social bookmarks, and podcasts in teaching a Web programming unit. An iterative action research methodology has been adopted to carry out the study. The study outcomes are encouraging in terms of usage and acceptance of incorporated technologies. They fulfill the basic objectives of the study and highlight the key areas of improvement for follow up studies.

Keywords: Emerging E-learning Technologies, Unit Teaching, Action Research, Experiment Study.

1 Introduction
The 2006 annual Horizon Report (New Media 2006) describes social computing and personal broadcasting as emerging e-learning technologies which are likely to have large impacts on teaching, learning or creative expression within higher education in the years to come (Long 2006). Social computing tools include blogs, wikis, instant messengers (IM), and social bookmarks, while personal broadcasting tools include podcasts and vodcasts. Because these tools promote ease of use, portability, and rapid development and deployment time, they provide opportunities for effective knowledge generation, knowledge sharing, collaboration, learning, and collective decision-making within educational contexts. However, some recent studies strongly recommend the need for effective research in determining best practices and finding novel ways of combining these technologies in unit design (Boulos et al. 2006). This paper presents our experience of incorporating a combination of blogs, social bookmarks and podcasts in teaching the Web programming unit, the first in a series of Web development units offered at Faculty of ICT, Swinburne University of Technology.

The study also aims at enhancing collaboration, communication, knowledge generation, and knowledge sharing as well as facilitating the teaching and learning process through the use of blogs, social bookmarks, and podcasts. The choice of the technologies was made keeping in mind the above objectives as well as the nature of the unit delivery. Since Web programming is being offered solely on-campus, IM would not be suitable, as it is more appropriate for distance learning environments or geographically distributed students. Similarly, wikis are more useful for shared editing and group project collaboration, neither of which was required for this unit. Existing research on blogs suggests that they provide opportunities for subsequent reflection, analysis and feedback. They also help learners to understand the relational and contextual basis of knowledge, knowledge construction and meaning making (Ferdig and Trammell 2004). Similarly, social bookmarks can help in generating shared interests and collective knowledge (Barsky and Purdon 2006). Podcasting can be used as a knowledge management tool and provides a way for people to improve their communication, collaboration and social networks (Ractham and Zhang 2006). All these characteristics seem to support our research objectives, and hence make blogs, social bookmarks, and podcasts suitable for our study. An action research (AR) methodology has been adopted to carry out the study. This involves a cyclic process of posing questions, gathering data, reflection, and deciding on a course of action (Ferrance 2000).

The first phase of this action research study was to conduct an initial survey which helped in collecting the students’ current experiences with Internet technologies with a focus on blogs, social bookmarks, and podcasts. The next phase involved experiments with a blog for this unit along with a bookmarks page and podcasts of the lectures. The last phase was to conduct a feedback survey which highlighted the student’s preferences for the above technologies, shortcomings of the study, and key areas for improvement. The results of this study will help to redefine our research objectives for subsequent studies. Overall, we consider this study a success because a reasonable majority of students were exposed to emerging e-learning technologies and our objectives were achieved in general.

The rest of the paper is organised as follows: Section 2 presents an introduction to blogs, social bookmarks and podcasts and a literature review of academic applications. We discuss the action research methodology in Section 3. The results of the initial survey are addressed in Section
4. Section 5 presents details of SWINblog, SWINbookmark, and our lecture podcasts. The results of the feedback survey are presented in Section 6. We present a detailed discussion of study results in Section 7, and conclude in Section 8 with pointers to our future work.

2 Related work

A weblog (or blog) is a Web site that contains dated entries in reverse chronological order about a particular topic (Answers.com 2007). A typical blog functions like an online journal and may contain text, images, and even search facilities and links to other blogs, Web pages, and media (Wikipedia 2007a). Some of the notable academic blogs are Weblogs at Harvard Law, the MBA blog at Brisbane Graduate School of Business, Blogging at the University of Maryland, and many more (Williams and Jacobs 2004). On one hand, enhanced levels of subject understanding, learning from experts in the blog network, and the ability to categorise and manage learning contents in a personalised manner are reported as some positive aspects of students’ experience with blogs. On the other hand, difficulty with learning new software formats, identifying and establishing networks, feelings of uncertainty in regard to writing publicly, and lack of motivation to post regularly are reported as some negative aspects (Farmer and Bartlett-Bragg 2005). Thus blogs can be very useful in academic settings if deployed with careful planning, clear objectives, and by addressing the end user requirements. We handle these issues while incorporating blogging into the delivery of a Web programming unit.

Social bookmarking is the practice of saving bookmarks to a public Web site and “tagging” them (saving links with one or more keywords that describe them) (Lomas 2005). Social bookmarking for academic purposes is a fast growing trend because it allows quick and easy access to online resources and provides an ‘insiders’ guide to information and references (Asmus et al. 2005). Social bookmarking can also help learners to reduce the high-cognitive-load activities of searching and evaluating information, and can help build a pool of useful online resources on a particular topic. Despite its limited usage in education, social bookmarking deployed in academic settings has the potential to provide opportunities for collaboration, knowledge generation, knowledge sharing, and virtual community formation. The need is to find novel ways of incorporating this technology into unit delivery, and that is what we wish to explore during the course of this study.

A podcast is a digital media (audio or video) file that is distributed over the Internet using syndication feeds for playback on portable media players and personal computers (Wikipedia 2007b). The apparent benefit of podcasting in education is to make audio and video recordings of classroom lectures available for students to use round the clock and on the move. The first and most notable example of academic podcasting is the Duke iPod first-Year Experience project in which Duke University used iPod (an MP3 player from Apple Computers) as a course content dissemination tool, a classroom recording tool, a field recording tool, a study support tool, and a file storage and file transfer tool (Belanger 2005). Podcasting is also reported as a more flexible and effective method than traditional methods of using Websites and printed handouts (Chan and Lee 2005). Thus podcasting has the potential to complement lecture contents in a variety of mediums, making it a strong choice for our study.

3 Method

As mentioned earlier in Section 1, an action research (AR) plan has been adopted to carry out this study. AR is considered as a collaborative activity for finding ways to improve teaching and increase student achievement. It is characterised by spiralling cycles of problem identification, systematic data collection, reflection, analysis, data-driven action taken, and, finally, problem redefinition (Kemmis and McTaggart 1988).

The first case study reported in this paper, which we call AR1, involves students enrolled in the HIT3323/6323 (Web Programming) unit for Semester 1 in 2007. AR1 comprises the following phases: collecting and analysing data of students’ current experience with blogs, social bookmarks, and podcasts; experimenting with a unit blog, unit bookmarks and audio/video recordings; and finally, collecting and analysing students’ feedback on the above experiments. The outcomes of AR1 would help redefine our research objectives for subsequent case studies in this AR cycle.

4 Initial survey results

We designed a questionnaire to collect students’ current experience with blogs, social bookmarks, and podcasts.

Demographics: With a total number of 204 enrolled students, over half (51.4%, N=105) participated in the initial survey including 90 (85.7%) males and 15 (14.3%) females, a proportion that reflects the student population in the unit. Nearly 70% reported their Internet usage as more than 15 hours per week, and 82.2% described Study as their major use of the Internet. This shows that the majority of the class were well aware of Web usage in educational settings and familiar to some extent with Web based e-learning tools.

Experience, usage and preferred features of blogs, social bookmarks, and podcasts: The survey results show that 68.3% reported at least some experience with blogs. Among them, the majority (60.2%) reported that they used blogs at least once per week. The most often visited blog types were Educational (70.5%), Science and Technology (52.3%), and Personal (42.2%). The most preferred purpose of using blogs was Ideas and Information Sharing (64.1%), followed by Education (62.6%) and Entertainment (43.6%). Ideas and Information Sharing was reported as the best feature of blogs (57.5%), followed by Education (25.5%) and Self Learning (25.5%) (The percentages do not add up to 100 because participants were allowed to choose more than one option.) These results suggest that the majority of
participants were aware of the blogging phenomenon and its applications in education.

For social bookmarks, only 37.4% reported at least some experience, and among them 56.4% reported that they accessed social bookmarks at least once per week. The most preferred types of bookmarked Web sites were News (50.8%) followed by Educational (45.4%), and Science and Technology (40.2%). Online Record of Personal Bookmarks was reported as the best feature of social bookmarks (35.1%), followed by Ideas and Information Sharing (30.7%) and Sharing of Common Interests (15.3%). These results suggest that although the majority of students had limited interaction with social bookmarks, they were not unaware of its inherent characteristics of information and ideas sharing – a key element in academic learning.

For podcasts, 56% reported at least some experience, and among them 67.8% reported that they accessed podcasts at least once per week. The most preferred types of podcasts were Music (51.2%), Educational (44.2%), and Movies (42.5%). Entertainment was reported as the best feature (48.7%), followed by Information Sharing (37.8%) and Education (29.6%). These results suggest that, as with blogs and social bookmarks, a reasonable majority were also aware of podcasting applications in education.

Future use of emerging e-learning technologies in education: 76.3% of participants either agreed or strongly agreed that podcasts could be used as a learning and teaching tool, 70.1% supported the idea of using blogs, but only 40.7% were in favour of social bookmarks, possibly due to their limited experience. Nearly 70% of students also agreed with the campus wide use of blogs, social bookmarks, and podcasts. These results encourage us to explore the use of these emerging e-learning technologies in the Web programming unit.

5.1 SWINblog

The unit blog was set up on Blogger as SWINblog with the following objectives in mind: (1) to get quick feedback on teaching and learning issues from students; and (2) to enhance collaboration among students. To achieve the first objective, we used a weekly minute paper on the SWINblog. Minute papers are considered as a way to promote meta-cognition thinking amongst students and to provide academics with ungraded and immediate feedback in order to assess how well and how much students have learned (Murphy and Wolff 2005). A minute paper comprises two simple questions: "what is (are) the most significant thing(s) you have learned in this lecture, and what question(s) remain unclear in your mind?" (Figure 1). Students were encouraged to post in the minute papers. To achieve the second objective, we strongly encouraged students to post replies to the queries raised in the minute papers. It was intended to help students publish their thoughts, become critical thinkers, help others understand lecture content, enhance online communication and collaboration, create a virtual community, and thus improve the overall level of understanding of the unit contents.

5.2 SWINbookmark

The unit bookmark was set up on Delicious as SWINbookmark with the following objectives in mind: (1) to make a repository of online Web programming resources for easy access to everyone in the class; and (2) to engage students in this knowledge building and sharing process. To achieve the first objective, lecturers contributed their resources on the SWINbookmark on a weekly basis for the topics covered in that week. For easy access to relevant topics, the resources were also bundled (grouped) into individual text book chapters (Figure 2). To achieve the second objective, students were strongly encouraged to maintain individual accounts on Delicious and to make frequent postings on Web programming

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**SWINblog**

Monday, May 21, 2007

**Minute Paper-Week12**

1. What is (are) the most significant thing(s) you have learned in lecture 11?
2. What question(s) remain unclear in your mind?

Posted by Swinblog at 4:55 PM 67 comments

Monday, May 14, 2007

**Minute Paper-Week11**

1. What is (are) the most significant thing(s) you have learned in lecture 10?
2. What question(s) remain unclear in your mind?

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**Figure 1: Screen shot of SWINblog**
related topics. Each participating account was also added in the SWINbookmark network list. This allowed lecturers to monitor students’ participation and provided fellow students a chance to see what others were contributing. This would enhance collaboration among students, participation in knowledge building and sharing, and creation of a virtual community. We also expected to have a big pool of Web programming related resources at the end of the semester.

![Figure 2: Screen shot of SWINbookmark](image)

### 5.3 Lecture podcasts

The local Lectopia services at Swinburne were used to record and publish audio and video recordings of the lectures. Lectopia provides excellent recording facilities through well equipped lecture theatres across the campus and allows students to access these recordings in three different formats: live streaming, manual download, and automatic subscription. It also allows access to these recordings from within Blackboard (http://www.blackboard.com), which is used as an integral course management system at Swinburne. All lectures were recorded and published with the aim of complementing teaching and learning through podcasting.

### 6 Feedback survey results

As part of the AR methodology, a feedback survey was conducted at the end of the semester. The aim of the feedback survey was to get insight of students’ experience with SWINblog, SWINbookmark and lecture podcasts, and to highlight the strengths and weaknesses of the study. A total of 88 responses were received from 204 students (43%), which is a low response. But this was beyond our control as the students’ participation was purely on a voluntary basis.

#### 6.1 Feedback on SWINblog

**Usage:** Entries on the SWINblog pages revealed that 40.7% students never participated in blogging activity. However, the participating students did make a substantial contribution, with a total of 538 posts published in 12 weeks, which means an average of nearly 45 posts per week or 2.6 posts per student for the whole class over the semester. The results from the feedback survey revealed that over 70% of the respondents accessed SWINblog at least once per week and more than 81% posted one or more answers during the semester to the queries raised in the weekly minute papers.

**Minute paper:** 79.5% of those who participated in the feedback survey agreed that they liked the idea of using minute papers and posting answers to queries on SWINblog. This shows students’ confidence in the minute paper as well as their willingness to comment on teaching issues. It also reflects that they are ready to share their knowledge with others, make online collaboration on unit matters, and be part of the teaching and learning process.

**Learning and teaching:** 60.2% agreed that activities on SWINblog not only improved students’ understanding of the unit contents but also improved lecturers’ performance in content delivery, whilst 38.7% were neutral on this issue. This shows that SWINblog helped in reinforcing the lecture contents.

**Privacy and security:** 37.5% of the respondents agreed that they preferred to be anonymous on SWINblog and their identity hindered their participation, while 45.5% were neutral on this issue. This shows that privacy and security were key concerns for students when interacting on SWINblog. When asked about alternatives to SWINblog, the majority (69.3%) preferred to use either the discussion board or the blog integrated within Blackboard. This is a clear indication that privacy matters when interacting on a public blog.

**Collaboration:** 67% agreed that SWINblog improved collaboration and communication not only among students but also between lecturers and students; only 4.5% did not agree with this idea. This is another promising result which strengthens our study outcomes.

**Overall satisfaction:** 71.6% participants were satisfied overall with the use of SWINblog.

#### 6.2 Feedback on SWINbookmark

**Usage:** Entries on the SWINbookmark pages showed that only 25% students participated in the social bookmarking activity. However, this minority did contribute 202 useful Web programming resources with an average of nearly 4 bookmarks per participant, which means only 1 bookmark per student for the whole class. This indicates that SWINbookmark is not utilised by the majority. However, we still managed to generate a healthy pool of Web programming online resources.

**Collaboration:** 61.4% of those who responded to the feedback survey agreed that SWINbookmark not only improved the collaboration and communication not only among students but also between lecturers and students; only 4.5% did not agree with this idea.

**Privacy and security:** As with SWINblog, privacy and security were key concerns for the students when
interacting on SWINbookmark, because 45.5% agreed that they would prefer to be anonymous while posting bookmarks and their identity hindered participation on SWINbookmark. 37.5% were neutral on this issue. These results suggest that we need to seriously address this issue in our future unit bookmarks if we wish to increase student participation in these activities.

**Overall satisfaction:** 72.7% participants were satisfied overall with SWINbookmark.

### 6.3 Feedback on lecture podcasts

**Usage:** Audio and video recordings of the lectures emerged as the most preferred e-learning tool, since there were 1064 hits reported for 11 recorded lectures, an average of nearly 97 hits per lecture, or 5 hits per student over the whole semester. From the survey results, only 10.2% reported no participation. This shows that podcasting has made a significant contribution in complementing lecture contents.

**Access and device preference:** The most preferred way to access lecture podcasts was the Manual Download to PCs, voted by 75% of the respondents, as compared to Live Streaming (21.6%) and Automatic Subscription (3.4%). However, 61.4% did download the lecture podcasts on their portable devices like MP3/MP4 players, iPods, PDAs, or mobile phones. 78.8% preferred to use lecture podcasts at home while 15.9% used them while commuting to or from the campus (the total percentage does not add up to 100 because participants were allowed to choose more than one option). These results show that lecture podcasts are effectively used by the majority and support the notion of anytime-anywhere access of lecture contents.

**Medium preferences:** 59.1% reported that they would prefer video recordings of the lectures as compared to audio in their future units. An interesting downside of podcasting is that 58.8% of the participants agreed that the availability of lecture podcasts had an impact on their class attendance, while 48.9% also agreed that they would prefer to use podcasts at their convenient time than attending the lecture. These results are challenging to lecturers and require them to be more interactive to prevent lower attendance rates and to counter the effect of podcasting.

**Overall satisfaction:** 86.4% participants were satisfied overall with the use of lecture podcasts.

### 7 Discussion

The spiralling cycles of study described in section 3 resulted in the initial survey for collecting students’ current experience with blogs, social bookmarks, and podcasts; experiments with SWINblog, SWINbookmark and lecture podcasts in the light of the initial survey results; and finally the collection and analysis of students’ feedback on the case study.

The analysis of initial survey results reveals the limited exposure of our students to the technologies of blogs, social bookmarks, and podcasts. However, their basic awareness of the academic uses of these technologies was sufficient to incorporate a unit blog (SWINblog), a unit bookmarks page (SWINbookmark) and a series of lecture podcasts in a Web programming unit.

In the light of feedback survey results, lecture podcasts emerged as the most preferred and most used e-learning tool (5 hits per student). An average of 97 hits per lecture means that nearly half of the class accessed lecture podcasts every week. We believe that the above figures represent individual hits and are not dominated by a small majority of the class because students would not normally download multiple copies of large media files of the same lecture recording. The feedback survey results suggest that the majority of students would prefer to use video recording of the lectures over audio in their future units. This is because video gives a virtual classroom effect and reinforces the lecture contents in a more natural way. However, some also complained about the large size or slower downloading of video files. We plan to discuss these technical issues with the Lectopia staff at Swinburne. Another downside of podcasting emerged as the reduced attendance rate in the lectures. This situation is challenging to lecturers and highlights the need for more interactive lecturing to counter-effect podcasting. For future units, more effort needs to be put in to make lecture delivery more interactive while continuing to promote podcasting.

SWINblog also had an encouraging response (2.6 posts per student) from a reasonable majority as evident from feedback survey results. The actual entries on SWINblog reveal that nearly 60% of the class participated in the blogging activity. Therefore, like lecture podcasts, blog participation is not dominated by a small majority in the class. Weekly minute papers generated a good number of queries with sufficient responses and thus helped to highlight teaching and learning issues and promote student collaboration, online learning, and self-publishing. However, the user feedback also highlighted the privacy and security issues on SWINblog since the majority felt uncomfortable when interacting with SWINblog and reported that posting on the public blog hindered their participation. This could be prevented either by restricting the public access of the SWINblog or by integrating the blog within Blackboard. Some also suggested the need for a better interface and threaded discussion. All these issues will be addressed in our future studies.

SWINbookmark emerged as the least used e-learning tool (1 bookmark per student) probably because this is a relatively new trend in education and also because the majority of our students reported very little or no experience with social bookmarks in the initial survey results. However, despite its low usage, we still managed to generate a healthy pool of Web programming related resources, which will serve as a repository for future offerings of this or other relevant units. As with SWINblog, privacy and security were reported as the main issues when interacting with SWINbookmark. One possible solution would be to integrate social bookmarks within Blackboard, which will be addressed in our future studies.
We believe that outcomes of this study are generic, and also apply to off-campus or distance education because of the Web-based nature of the tools whose use was explored in the study.

8 Conclusions and future work

Our experience of incorporating a unit blog, unit bookmarks, and lecture podcasts into a Web programming unit provides us a launching pad to further explore emerging e-learning technologies in educational settings and find novel ways of combining them in unit design. We consider this experience a success as it helped us incorporate emerging e-learning technologies into unit design based on a well-known research methodology, i.e., action research; provided sufficient exposure to our students; and received reasonable acceptance at the end. Some novel ways of incorporating the above technologies in unit delivery were also devised, like using minute papers in SWINblog to enhance collaboration among students or generating a pool of Web programming resources in SWINbookmark. The study also helped in highlighting new avenues for development and improvement in blogs, social bookmarks and podcasts from an educational perspective, such as the need for a threaded discussion in blogs and the integration of blogs and social bookmarks within existing course management systems such as Blackboard.

To reflect on the research outcomes of this study and to build on our current experience, we plan to carry out follow-up studies in the next level Web development units, by continuing to follow the principles of action research.

9 References