

3. Implementing New Technologies in Higher Education

3.1 Implementation Planning Resources

This section of the toolkit contains planning resources that were developed and used during the Implementation stage of the Educating the Net Generation project. The implementation planning resources include the following documents:

- **Mapping Educational Rationales for Prospective Educational Technology Implementations** (*pages 34-38*)
- **Template for Implementation Project Descriptions** (*page 39*)
- **Technical Reviews: Selecting Tools to Meet Requirements of Implementation Projects** (*pages 40-48*)
- **Checklist for Responsible Conduct of Research into Learning and Teaching with Technology** (*pages 49-50*)

Mapping Educational Rationales for Prospective Educational Technology Implementations

This document maps learning and teaching purposes of possible educational technology implementations. It summarises implementation project ideas that were put forward through consultations within the Net Gen project team and between team members and teaching staff colleagues in three participating universities. It outlines the eight educational technology implementation projects that proceeded.

1.1 Overview of potential advantages for managing student learning, mapped to relevant technologies:

- Facilitate collaboration (blogs, wikis, photo taking and sharing, podcasting, social bookmarking, social networking)
- Facilitate communication between dispersed students (blogs, photo taking and sharing, social networking, instant messaging)
- Develop sense of community among students (blogs, photo taking and sharing, social bookmarking, social networking, instant messaging)
- Enable student and staff access to wider range of resources (photo taking and sharing, social bookmarking)
- Facilitate teacher feedback to students on their work (blogs)

1.2 Aims of supporting student learning, mapped to ideas for potential implementation projects

- **Encourage students to reflect on their experiences/learning**
 - 2.2.1 Student reflective journal
 - 2.4.1 Photo taking and sharing
 - 2.7.1 Students sharing online resources
 - 2.8.1 Student communities of practice
- **Encourage peer learning and knowledge/opinion sharing**
 - 2.2.1 Student reflective journal (blog)
 - 2.2.2 Teacher provocateur (blog)
 - 2.3.1 Collaborative publishing project
 - 2.4.1 Student generated digital photo archive
 - 2.5.1 Student generated podcasts
 - 2.7.1 Students sharing online resources
 - 2.8.1 Student communities of practice
 - 2.9.1 Online 'virtual tutorials' for distance education
- **Develop students' thinking by writing/producing resources**
 - 2.2.1 Student reflective journal
 - 2.2.2 Teacher provocateur (blog)
 - 2.3.1 Collaborative publishing project
 - 2.3.2 Teacher provocateur (wiki)
 - 2.5.1 Student-generated podcasts
- **Improve group working skills**
 - 2.3.1 Collaborative publishing project
 - 2.3.2 Teacher provocateur (wiki)
 - 2.5.1 Student-generated podcasts
- **Encourage critical evaluative thinking**

- 2.2.1 Student reflective journal
- 2.2.2 Teacher provocateur (blog)
- 2.3.2 Teacher provocateur (wiki)
- 2.4.1 Student generated digital photo archive
- 2.5.1 Student-generated podcasts
- 2.7.1 Students sharing online resources
- **Encourage independent research**
 - 2.3.1 Collaborative publishing project
 - 2.3.2 Teacher provocateur (wiki)
 - 2.4.1 Student generated digital photo archive
 - 2.5.1 Student-generated podcasts

2.0 Summary of ideas put forward for potential implementation projects, by technology

2.1 Texting using mobile phones

There were not many ideas in this area: as handsets in large group lectures; as a tool in experience sampling. There was a concern about cost to students and also that these implementations were too narrow or specific.

2.2 Blogging

2.2.1 Student Reflective Journal

There is a general consensus that blogs could be valuable as reflective journals for students particularly when undergoing work placements (e.g. in education, health sciences, forestry, etc.). Students would be asked to regularly contribute to their journal (possibly on particular topics) while on placement. The educational purposes/rationale/advantage of the activity would be to (i) encourage students to reflect on their practice (ii) encourage peer learning and knowledge/opinion sharing (allowing students to share experiences –students read each other’s blogs, provide opinions and feedback) (iii) develop students’ ‘thinking’ by writing (iv) provide students with a valuable way of learning about professional practice (v) allow teachers to comment on students’ progress and experience , (vi) facilitate communication between students who are physically dispersed, (vii) encourage critical evaluative thinking (reviewing and responding to others’ blogs).

2.2.2 Teaching Provocateur

A teacher/lecturer would establish a blog and make regular contributions on discipline-related topics. A lecturer contribution may vary depending on the purpose (i.e. be provocative, one-sided, factual with or without errors). Students are required to comment on the contribution (or key aspects of it) on a regular basis. Students may also comment on others’ comments. Students can get individualised feedback (lecturer’s response to their comments) and formal (or informal) assessment could be based on both the level and quality of comments by students. The educational purpose/rationale/advantage of the activity would be to (i) encourage critical evaluative thinking (ii) encourage peer learning and knowledge/opinion sharing (students read each other’s posts and provide opinions and feedbacks) (iii) develop students’ ‘thinking’ by writing, (iv) allow teachers to comment on students’ thinking and understanding.

2.3 Contributing to a Wiki

2.3.1. Collaborative Publishing Project

Students form groups and are required, as part of a project related to their course (e.g. research project, project-based learning task, prac task, formal review task, field trip notes etc) to undertake a collaborative piece of writing and publishing using a wiki. Lecturers can moderate the written work (or particular subsections of it, e.g. in science the 'method' or the 'results') as it progresses. Students can draw on other sources of information on the web to populate the wiki (clear potential overlap with social bookmarking). The educational purpose/rationale/advantage of the activity would be to (i) improve students' skills in working in a group (ii) encourage peer learning and knowledge/opinion sharing (iii) develop students' thinking by writing (iv) support review and reflection, (v) develop independent research skills, (vi) allow teachers to comment on students' progress and thinking.

2.3.2 Teacher Provocateur

A teacher/lecturer would establish a wiki entry on a discipline relevant topic(s) which was deficient or problematic in some way or another. Students would be required to edit the entry based on their own research (and justify these edits), with the edits being moderated by the lecturer. Edits could include linking to other outside sources of information. Assessment (either formal or informal) could be based on the number and quality of edits made by individual students (students could also work collaboratively in small groups). The educational purpose/rationale/advantage of the activity would be to (i) encourage critical evaluative thinking, (ii) develop independent research skills, (iii) develop thinking by producing/creating, (iv) develop collaborative working skills (possibly).

2.4 Photo Taking and Sharing

2.4.1 Student Generated Digital Photo Archive

Students would be asked to use digital cameras (phone or traditional) to take photographs related to a particular topic of study or activity. These images would then be posted to a collective website and act as a student generated digital archive that would be shared among the cohort. A pre-existing architecture could be used (e.g. taxonomies in biological sciences; rock classifications for geology; common architectural features etc.) or part of the activity would be to ask students to use their collected photographs to drive the development of a classification (with lecturer input). Students would be asked to tag/annotate their images and the site could be linked to both RSS feeds (alerting students to when a new image is posted) as well as blog/wiki. The educational purpose/rationale/advantage of the activity would be to (i) allow students to practice and develop their skills in conceptual aspects of classification/taxonomy (ii) draw in off-shore, distance and on-campus students from diverse locations who would potentially have access to diverse specimens, expanding the experience for all participants, (iii) encourage peer learning and knowledge-sharing, (iv) encourage students to reflect on their experiences, (v) encourage critical evaluative thinking, (vi) develop independent research skills.

2.5 Podcasting

2.5.1 Student-generated podcasts

Allow students to generate and publish study related podcasts as educational resources for other students. Rather than asking students to present a paper or hand in an assignment on a topic of study they would be asked to create a podcast expressing their understanding of a problem or topic. Podcasts would be syndicated (RSS) and open for other students to listen to (on computer, MP3 player, mobile phone) and comment on (blogs or wiki). This would be archived as a revision resource for students and would be support student-rather than staff-generated learning resources (different from recordings of lectures). The educational purpose/rationale/advantage of this activity is very closely aligned with the learning strategy associated with discussion lists: fundamental notions of the utility of peer-to-peer collaboration in learning. This learning strategy is based on the idea that in learning, student-generated material and peer-peer collaboration is as important as teacher-generated material and teacher-student interaction. Further potential advantages include that the activity could (i) develop students' 'thinking' through producing content (ii) encourage peer learning and knowledge/opinion sharing, (iii) develop independent research skills, (iv) encourage critical evaluative thinking.

2.6.Using RSS Feeds

The use of syndication really only makes sense when coupled with another technology. So RSS could be really useful educationally as an enabling technology – alerting students about other students' posts to a blog, wiki, photo archive or their posting of a podcast. As such we don't need to talk about it on its own.

2.7 Social Bookmarking

2.7.1. Students sharing online resources

Students in a single cohort are given access to a social bookmarking site. During their investigation of a (lecturer) proposed topic, students locate and tag relevant websites and online resources and add them to the social bookmarking site. This would build an individual and a collective corpus of documents. Students would be asked to use the comments/notes field of resources to 'review' the resource. Public (collective) bookmarks provide a means for students to 'recommend' resources to each other. RSS feeds could be used to inform other group members of new bookmarks. The educational purpose/rationale/advantage of the activity would be to (i) develop critical evaluative thinking/reviewing skills (encouraging critical reflection on the resources) (ii) encourage peer learning and knowledge-sharing, (iii) community building.

2.8 Social Networking

2.8.1. Student Communities of Practice

Students who are completing a part of their study that is relatively specialised and possibly isolated (e.g. professional placements) could join a social networking site that is devoted to this. There is potential to have this activity take place across Universities, which would particularly be suited to courses of study with low numbers. Lecturers or course coordinators could lead discussion (if this is supported) and ask students to publish material (text, photos, etc.) related to their experiences.

The educational purpose/rationale/advantage of the activity would be to (i) develop communication skills, (ii) facilitate professional networking, (iii) encourage peer learning and knowledge/opinion sharing.

2.9 Instant Messaging

2.9.1. Online 'virtual tutorials' for distance education

Instant messaging could be used as a way of running a 'virtual tutorial' for distance education students. Students could be given a specific time each week when they could communicate with their lecturers and other students, in small groups. The educational purpose/rationale/advantage of the activity would be to: (i) facilitate communication between students and between students and teachers, (ii) enable physically dispersed students to communicate in real-time, (iii) facilitate community-building amongst distance education students, (iv) encourage peer learning and knowledge/opinion sharing.

Template for implementation project descriptions

Title of Implementation Project:	
Implementation Project Coordinator:	
Email:	Telephone:
University:	
Faculty:	Department:
Course:	Subject:
Students:	
Department/Faculty staff involved in the project:	
Name:	Role: (subject coordinator, IT manager, tutor)
Email:	Telephone:
Overview of Implementation Project:	
What course documents have been collected by the project coordinator?	
The Learning Activity:	
What specifically will students be asked to do?	
Will the activity be assessed? If so, how (e.g., summative, hurdle requirements)?	
When in the semester will the implementation take place? For how long?	
How does the activity fit into the curriculum?	
What technology will be used (e.g., components of an LMS, specific software or tools)?	
What technical support will be required to implement this technology?	
What technical support will students and staff require during the activity?	
Will the technology be used to record students' activity/work for assessment or evaluation purposes, and if so how?	
The Learning Objectives / Proposed Learning Outcomes:	
What learning outcomes do you want students to gain from this activity?	
This could be specific to the content area or be related to more general skills.	
The Pedagogical Rationale:	
How do you think the activity associated with the implementation will help students to achieve the learning objects/outcomes?	
What impact (if at all) do you think the activity will have on teaching?	
Other Concerns / Expectations / Potential Benefits:	
Do you have any other expectations or concerns about this implementation?	

Technical Reviews: Selecting Tools to Meet Requirements of Implementation Projects

Outline of Implementation Projects and Technologies Used

Project	Activity	Discipline/ Year Level	Tool	Page
Blogging	Student reflective journal writing	Journalism, 1 st year	<i>WordPress</i> http://www.wordpress.com	41
	Student publishing	Education, 3 rd & 4 th year	<i>Sakai BlogWow</i> http://sakaiproject.org	42
Collaborative writing	Teacher provocateur and collaborative publishing in wikis	Psychology, 1 st year	<i>PBwiki</i> http://pbwiki.com/	43
Imaging sharing	Student-generated digital photo archive	Chemistry, 1 st year	<i>Flickr</i> http://www.flickr.com/	44
	Student-generated digital photo archive	Biology, 2 nd year	<i>Sakai Resources tool</i> http://sakaiproject.org	45
	Student-generated digital photo archive	Education, 3 rd year	<i>Flickr</i> http://www.flickr.com/	46
Podcasting	Student-generated podcasts	Medicine, 2 nd year	<i>Problm</i> (custom-built)	47
Social bookmarking	Students sharing essay resources	Arts, 1 st year	<i>Diigo</i> http://www.diigo.com	48

Blogging: Student reflective journals in teacher education

What were the educational requirements for the implementation?
<p>The activity was part of an assignment requiring students to reflect on their classroom management approaches while on a five-week professional experience placement.</p> <p>Prior to commencing the placement, students were required to post a blog entry summarising their main ideas about classroom management.</p> <p>While on placement students were required to post at least two entries describing mini case studies of the application of their approach, as well as four comments on other students' posting.</p> <p>Upon returning to campus students were required to post one final blog entry providing an overall reflection on the use of blogs.</p> <p>There were 91 students enrolled in this subject, comprising 3rd and 4th year on campus undergraduate Bachelor of Education (Primary) students.</p>

Technical Review

a. What tools did you consider to meet the requirements?
A number of blog tools were considered, including the BlogWow tool within Sakai, Edublogs, and mainstream tools like Blogger and WordPress.

b. What tools did you discard and for what reasons?
<p>Because of the need to restrict access to the blogs to the subject community because of the potential for students to reveal confidential details about children and teachers in their schools, Blogger and WordPress were ruled out as being too difficult to make private. EduBlogs was considered, but ultimately BlogWow was chosen because setting up a closed community using EduBlogs would have required a paid subscription. Additionally, the use of a tool within the Sakai learning management system, the platform on which the University's Interact online learning system is built, meant manual set up of student logins was required.</p> <p>Although BlogWow is somewhat restricted in the range of publishing tools provided, the mechanisms for creating links between blog postings, and the mechanisms for searching and sorting postings, the team felt that they did not need the full range of capabilities provided by the more advanced or mainstream tools and BlogWow had the key features needed.</p>

c. What tool did you end up choosing and for what reason?
Although BlogWow is somewhat restricted in the range of publishing tools provided, the mechanisms for creating links between blog postings, and the mechanisms for searching and sorting postings, the team felt that they did not need the full range of capabilities provided by the more advanced or mainstream tools and BlogWow had the key features needed.

Post Mortem

a. As the planning for the implementation and the implementation itself progressed, what unexpected things did you learn about the new tool?
Not provided.
b. Knowing what you know now, what would you have done differently in relation to the selection and use of the tool?
Not provided.

Blogging: Student publishing in journalism

What were the educational requirements for the implementation?

Students in first year journalism were required to establish and maintain a blog in which they published news stories about their suburb.

Each student would develop a news and resource blog for their local area that included:

- Three current news stories (300 words each)
- Two short profiles of local people (400 words each)
- A set of links to local resources (400 words)
- A description of the local area that includes a brief history and description of local attractions and/or problems (400 words)
- Photographic elements to enhance their entries

Technical Review

a. What tools did you consider to meet the requirements?

WordPress was chosen because it had been successfully used in the subject the previous year and was judged by the teacher to be most appropriate. The teacher was aware that students may experience some technical difficulties but used the tool himself to ensure he could provide adequate support.

b. What tools did you discard and for what reasons?

Not applicable

c. What tool did you end up choosing and for what reason?

See above

Post Mortem

a. What the planning for the implementation and the implementation itself progressed, what unexpected things did you learn about the new tool?

Not provided.

b. Knowing what you know now, what would you have done differently in relation to the selection and use of the tool?

Not provided.

Collaborative writing: Teacher provocateur and co-publishing through wikis in psychology

a. What were the educational requirements for the implementation?

Activity 1: Reflective discussion
 The lecturer will post commentary texts to encourage students to reflect on and comment on:

- A general provocation, “What are you learning from the lectures?”
- Two questions relating to the lecture topics:
 - What is the nature of an individual’s internal representation of the world and what is its relationship to the external environment?
 - How does this contribute or inform our broader understanding of what Psychology is?

The aim of activity one is to encourage student reflections, comments and discussion using the comments section of the wiki.

Activity 2: Collaborative writing
 Students will be divided into (approximately 30) teams based on tutorial groups and asked to work together to use the wiki to develop a set of “lecture notes” that represent the shared, communal understanding of the group as to the “point of the lecture” in the context of the whole course. The idea is to create notes based on concepts and ideas rather than facts. Students will also be encouraged to extend on lecture material by researching further on the Internet.

This is a class of approximately 1000 students so will require RSS to assist with assessing the task.

Technical Review

a. What tools did you consider to meet the requirements?

We looked at a range of Wiki software (in addition to PBwiki) including the wiki module for Blackboard, MediaWiki (the software behind Wikipedia) and Stikipad.

b. What tools did you discard and for what reasons?

Stikipad was our initial tool of choice (it had the best feature set and was very easy to use) but was eventually rejected because of perceived support issues. MediaWiki was rejected because it lacked RSS feeds and a WYSIWYG editor. The Blackboard wiki module was rejected because of a general lack of features.

c. What tool did you end up choosing and for what reason?

None of the wiki tools were ideal and in the end, PBwiki was selected because it had most of the features we required (including RSS feeds and group access control). We were required to upgrade our PBwiki site from the basic (free) version by purchasing a not inexpensive annual subscription so as to access RSS feeds for the site.

Post Mortem

a. As the planning for the implementation and the implementation itself progressed, what unexpected things did you learn about the new tool?

As with the Flickr implementation, RSS feeds proved to be problematic. PBwiki’s authentication method for accessing private wikis seemed to prevent many RSS aggregators from gathering data from RSS feeds and it was difficult (if not impossible) to access feeds for page-level edits despite the fact that these were supposedly available. Support from PBwiki to solve these issues was not great and took at least a few weeks to resolve. Then, once these issues had been resolved (more or less) we ran into the same issue we had with the Flickr feeds (the inability to capture all activity during busy periods).

PBwiki released a new version of the wiki tool soon after the completion of the implementation (which may explain their reluctance to fix ‘bugs’ in the existing tool) and this new tool appears to solve many of the problems we were experiencing with the earlier version. As of the new version, it is not necessary to have a paid subscription to access RSS feeds.

b. Knowing what you know now, what would you have done differently in relation to the selection and use of the tool?

The selection of PBwiki was always something of a compromise. While there were a number of technical issues leading up to and during the implementation, the implementation appeared to run with few (technical) issues from an end-user’s perspective. Having trialed the new (and much improved) version of the PBwiki software I would have no hesitation in using it in future implementations or recommending it to others.

Image sharing: Creating a shared image resource in chemistry

What were the educational requirements for the implementation?

The “Chemistry in Daily Life” implementation requires students to take two photos of chemistry concepts studied in first semester, first year, and post them to an online community with an explanatory description. The aim of the activity is to encourage students to find examples of chemistry concepts around them – in their home, at university, at work, as they travel etc – and communicate these to their peers. Students are allocated two Chemistry topics for their photos, and required to use prescribed tags. They are also able to create and use their own folksonomy tags. At the end of the activity, students are asked to view the photos in their allotted topics and vote on their favourite examples.

This is a class of ~1000 students; it is important that technical solutions work on a large scale.

We are seeking a tool that allows us to:

- Share digital photos with students and staff online
- Place descriptions / comments on photos
- Tag their photos – including some prescribed tags
- Rate photos or vote on favourites
- Sends RSS to academic staff regarding student activity – so that assessment doesn’t require manual checking.

Technical Review

What tools did you consider to meet the requirements?

We investigated a range of commercial photo sharing tools – the main contenders being Flickr, Photobucket and Picasa.

b. What tools did you discard and for what reasons?

Picasa was rejected because it required a software download. Photobucket didn’t allow the creation of ‘private’ groups.

c. What tool did you end up choosing and for what reason?

For the voting, we decided to use the UM Learning Management System. Although this required students to complete the task on two separate tools, the reliability and utility of LMS was seen as an advantage.

As far as the photo sharing tool goes, Flickr satisfied all the educational requirements, provided a good level of control over individual and group access, and was backed by a large company (Yahoo).

Post Mortem

a. As the planning for the implementation and the implementation itself progressed, what unexpected things did you learn about the new tool?

The biggest ‘problem’ that was encountered during the implementation involved the rate at which students could be added to the group (Flickr imposed a weekly limit to the number of users that could be invited to join a group - ostensibly to prevent spammers – that was not evident until we started issuing invitations).

The other notable issue was that because of the number of students involved in the implementation, the RSS feeds for the Flickr group produced very high levels of activity – so much so that even regular updating of feeds failed to capture all the activity within the group. This is not a problem with Flickr per se but with RSS feeds. The only way around it appears to be to have an ‘always on’ RSS feed aggregator that updates feeds at very regular intervals (in the order of every few minutes) over the life of the task, so that no activity is ‘missed’.

b. Knowing what you know now, what would you have done differently in relation to the selection and use of the tool?

Although it is by no means perfect, Flickr appears to have been an appropriate choice for our implementation. The ‘invitation’ issue is problematic but can be worked around by asking students to initiate a request to enter the group rather than waiting for an invitation from the group itself. I have dealt with the RSS feed issue above.

Image sharing: Creating a shared image resource in biology

What were the educational requirements for the implementation?

A 'traditional' assignment that required individual students to collect and categorise beetles was translated into an online, shared exercise. On-campus and distance students were required to capture digital photos and audio files representing a diverse range of beetles, and to upload them to an online *Beetle Gallery*.

There were 25 on-campus students and 19 distance education students enrolled. This was a level 2 subject with predominantly 2nd year student enrolments (noting that distance students are generally part-time and may be in a later year of study).

Technical Review

a. What tools did you consider to meet the requirements?

The *Resources* tool provided by the *Sakai-based Interact* online learning system used across all subjects at the university was considered to be adequate for this activity. Although the tool has limited capabilities for searching for resources and for attaching meta-tags to resources, these capabilities were not considered important for the activity.

b. What tools did you discard and for what reasons?

Not applicable

c. What tool did you end up choosing and for what reason?

See above

Post Mortem

a. What the planning for the implementation and the implementation itself progressed, what unexpected things did you learn about the new tool?

Not provided.

b. Knowing what you know now, what would you have done differently in relation to the selection and use of the tool?

Not provided.

Image sharing: Documenting and sharing practical experiences in environmental education

What were the educational requirements for the implementation?

Students were required to document a school-based practical exercise in environmental education by taking photos of the activities they conducted with children to create an image database for the class. Students would take photos and record notes on their visit to the school, then upload the photos to a group space for the class, add text descriptions and tags, and review the full set of images. Finally, students would then vote on which of the class' images should be developed into a presentation to be provided to the school as a record of the activities.

Technical Review

What tools did you consider to meet the requirements?

The team considered a number of image collection options and chose *Flickr* because it allowed the creation of a private group for sharing the photos. This was essential because the images might include school children and it was important that their identities were protected. An option was included for the teacher to moderate the content of the group, allowing any photos that included the faces of children to be removed. This was an important consideration because even though students were aware of the need not to include photos with the faces of children, some may have been uploaded unintentionally.

A private group also made the process of sharing more manageable because it ensured that only images for that group would be included. Other image sharing sites did not offer the private group option and other options for sharing images (e.g. using the learning management system) did not allow for tagging and searching.

b. What tools did you discard and for what reasons?

Not applicable

c. What tool did you end up choosing and for what reason?

See above

Post Mortem

a. What the planning for the implementation and the implementation itself progressed, what unexpected things did you learn about the new tool?

Not provided.

b. Knowing what you know now, what would you have done differently in relation to the selection and use of the tool?

Not provided.

Podcasting: Student generated podcasts in medical education

What were the educational requirements for the implementation?

The Problem implementation requires students to reflect on issues relating to the problem of the week (POW) and contribute student-generated audio recordings to a podcasting website. The educational aim is to provide a collaborative learning environment: students might create podcasts with others, and published podcasts can be an educational resource for other students to listen to, post written comments or rate.

Students will be encouraged to podcast in three categories:

- Aha! – I get it! podcasts that offer an explanation of some aspect of the POW.
- Huh? – I don't get it. Podcasts that express a difficulty about the POW.
- IMHO – In My Humble Opinion. Podcasts that offer a comment on something related to the POW or course in general.

Students will also be able to receive notification about new podcasts via RSS. Tools will potentially need to accommodate use by up to 300 students.

Technical Review

a. What tools did you consider to meet the requirements?

We considered the use of existing software that would fulfil the functional requirements to create, to upload, to listen to, to rate and to comment on podcasts. We had in mind the functionality of YouTube but restricted to audio. Existing tools that might fulfil the administrative functions above included learning management systems (LMSs) such as the University of Melbourne LMS or the Moodle LMS. Tools to create podcasts require a method of recording and editing digital audio. Again, we considered existing freely available tools for recording and editing as well as the possibility of setting up a recording suite for use by students.

b. What tools did you discard and for what reasons?

We rejected both LMSs as they were too difficult to use. They could be made to perform the functions above, but we felt that the user experience would be compromised by the restrictions imposed by the systems on how people needed to interact. People couldn't perform the listening and collaborating functions together in the LMS. These would have to be done in different parts of the system and consequently we felt that creating too many pages or clicks would be barriers for uptake. YouTube was rejected because we couldn't restrict access to our cohort. In addition a restriction of the learning design meant that students' access to future work needed a time restriction. Recording and editing software that was not both Macintosh and Windows compatible was rejected. This reduced the choice quite a lot.

c. What tool did you end up choosing and for what reason?

Because of the specific requirements we decided to build a custom system to combine all the features we needed in one location. We hoped this would minimise barriers to uptake. It would handle the functions of upload, listen to, comment and rate but not record. It would restrict access to a cohort and allow time delayed release of curriculum information. To record and edit podcasts we decided to use a freely accessible cross platform tool, Audacity, for both those reasons.

Post Mortem

a. As the planning for the implementation and the implementation itself progressed, what unexpected things did you learn about the new tool?

The tool that we developed seemed to work well. It would have perhaps been worthwhile to add a search feature to help users locate particular areas of interest but this then raises the issue of applying appropriate metadata or tags to the information. One aspect of Audacity proved difficult for users. We wanted the users to create an mp3 file for upload. Audacity doesn't do this by default. The users needed to download and install a plug-in that allowed this conversion. This may have been a barrier for some users. Audacity, while cross platform, didn't produce a recognisable mp3 file on the Macintosh. This may be a general problem or it may be specific to our system. Nonetheless, we developed a workaround where the file was resaved by using iTunes. It was then recognised as an mp3 file.

b. Knowing what you know now, what would you have done differently in relation to the selection and use of the tool?

I think we did a good job on the development of the tool. If an alternative to Audacity exists, it should perhaps be considered.

Social bookmarking: Students sharing essay resources in arts

What were the educational requirements for the implementation?

This implementation requires students to link to, analyse and evaluate websites and web-based resources in preparation for their subject essays. Students will be encouraged to work collaboratively with others using tags, comments etc. It is also an aim of the implementation to dovetail with information literacy activities, such as briefings run by librarians.

The proposed learning outcomes of the implementation are for students to:

- Develop skill in the use of emerging information technologies
- Develop an increased capacity for locating and evaluating research resources
- Develop a capacity for critically analysing the evaluations of others
- Recognize the value of co-operative scholarship

This activity is an elective, hurdle requirement. While the student cohort is very large (approximately 1000 students) it is anticipated that a smaller portion of the cohort will take up the elective activity.

Technical Review

a. What tools did you consider to meet the requirements?

In addition to Diigo we looked at a range of social bookmarking tools including generalist tools such as Delicious, Digg, Reddit, StumbleUpon and BlueDot/Faves and the more academically focused CiteULike and Connotea. A Blackboard (Learning Management System) social bookmarking module was also investigated.

b. What tools did you discard and for what reasons?

CiteULike and Connotea were rejected in favour of more generalist tools because we felt they were probably too academic in focus for first year students and did not handle non-academic resources (and we were particularly thinking of websites here) particularly well. Each of the other tools had valuable features but as with the photo sharing and wiki implementations, it was the combination of flexible group access/management features and extensive RSS support that swung it in favour of the selected tool (Diigo). Diigo also offered some advanced features, such as the ability to add highlighted areas and shared 'sticky notes' to bookmarked sites that added to its appeal. The ease-of-use of most of the generalist tools was similar. The two 'academic' tools typically required users to provide more information when creating bookmarks.

c. What tool did you end up choosing and for what reason?

See above

Post Mortem

a. As the planning for the implementation and the implementation itself progressed, what unexpected things did you learn about the new tool?

There were no obvious technical problems or issues with the tool before or during the implementation. It is worth noting that this implementation attracted few student participants and that these participants used the tool only sparingly – hardly the conditions to give the tool a 'good workout'.

b. Knowing what you know now, what would you have done differently in relation to the selection and use of the tool?

Nothing probably, although it might be worth looking at some of the tools again (or investigating others) prior to a future implementation given that the feature set of many tools is continuing to evolve.

Checklist for Responsible Conduct of Research into Learning and Teaching with Technology

This checklist is intended to assist planning and practice for practitioner-researchers in e-learning and teaching in universities, and presumes that research data may be collected about students and staff in such research projects. This checklist does not aim to offer exhaustive coverage of the issues, but to provide a foundation for reflection and action.

Before you start... Do you have access to the policy and practice documentation relating to:

	Human ethics research at your university?
	Teacher-research at your university?
	Students' authorship, intellectual property and moral rights at your university?
	Teacher-research – produced by your professional association?
	Human ethics research – produced by a national governing body?
	Research – produced by your granting body?

1. Research project design

	Does the design of the learning activity and research project build in protections for students' learning and education experiences?
	Does the design of the learning activity and research project strive to allow student participation to be genuinely voluntary and allow opportunities to withdraw participation and data?
	How will you obtain informed consent from participants? Are there additional challenges for e-learning? For example, if participants are transient visitors to e-groups, or in online environments using alternate identities?
	Will students' participation in the learning activity be affected by underlying issues of access and equity, cultural norms or ICT literacy?
	Are there technological issues that need to be considered in terms of protecting (student / staff) participants' anonymity / confidentiality / privacy?
	Are there technical issues to be considered in de-identifying data collected?
	How will you be able to check if participants require a guardian to provide consent? For example, those who have not reached legal majority.
	How will you make provision for participants who might require support or counselling as a result of the research project? Such as those experiencing psychological, physical or financial stress as a result of time spent online.
	Are teacher-researchers in actual or perceived relationships of authority to students and other staff who are project participants and how will these relationships be mitigated to support genuinely voluntary participation? (For students, staff who mark their work, write recommendations for scholarships or sit on selection panels etc.; for staff, colleagues who can influence employment contracts or promotion).
	How will issues such as confidentiality and identify be approached where participants are drawn from small groups or communities?
	How are you approaching the issue of incentives to participate and does the e-learning environment offer any specific challenges for administering this with probity?
	What is the influence of third-party proprietary technologies on the design and conduct of research? – nature of the relationship (research or teaching linkages, commercial arrangements, consultancies, commission research etc.), transparency, accountability.

2. Obtaining human research ethics approval

	Does your local human research ethics committee require hardcopy or online application?
	What is the time typically taken for approval?
	What level of risk is involved in your project?
	Does your university offer advisory services for drafting a human research ethics application?

3. Conducting the research

	Have researchers conducting face-to-face research interviews / focus groups / observations etc. been briefed on issues of voluntary participation / confidentiality etc.
	How will participants receive a Plain Language Statement and give their formal consent especially if their communication with researchers occurs only through electronic or online channels?
	How will you manage storage of data – including issues of privacy and security? Will there be costs involved in archiving and backing-up electronic data? What provisions will be made for storage of and access to raw data, from social software sites for example, for the required period of time? Including what technical support is required? On what server? What electronic security is in place? What legal circumstances might require release of data to authorities?
	How will you manage the potential involvement of graduate research students (now or in the future) and access to data / inclusion in ethics applications etc?

4. Use of student work

	Does your institution have existing policy relating to issues of intellectual property, moral rights or copyright for students?
	If you plan to make student work public outside the scheduled learning activity (for example, through publishing / presenting your research), how will you obtain students' written permission?
	If you plan to use student work as future teaching materials, how will you obtain students' written permission?
	Would students like to be identified as creators of the work you are making public (in terms of their moral rights)?
	If students would like to be identified as creators of their work, how will this be balanced with requirements for anonymity / confidentiality / privacy within the human research ethics framework? Could acknowledgement be included separately from the student work, i.e. at the end of a presentation / publication?
	In terms of informed consent, are students being given the full picture of how their work will be described in public settings? For example, if it might be used as an example of poor quality work, do they know?

5. Helping people feel safe online

	If you are creating an online community, will it be confined to the class, accessible to others in the university or open to the public?
	How will teachers / researchers approach offensive or mischievous content or behaviour by students, staff or the public?
	Could teachers / researchers be exposed to offensive or mischievous content or behaviour and, if so, what options are open to them?
	If students are exposed to offensive or mischievous content or behaviour, what can they do?
	How will the learning activity help people feel safe in terms of their privacy, their confidence and self-esteem, their study-work-life boundaries, etc.?