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Bringing e-learning to life—student engagement and empowerment

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Digital technologies have the potential to support spontaneous, self-organizing learning activities when students are engaged, want to learn and empowered to drive their own learning. We have a learning design that integrates a problem-based learning philosophy and approach with appropriate e-learning platforms and communication tools, which interface with tutorial discussions and supporting learning materials and resources. This paper outlines the elements of our approach and some initial evaluation of its effectiveness.

Keywords: learner centred learning, digital ecosystem, ubiquitous learning environment

Introduction

The learning design we have developed for the suite of subjects in the Holmesglen Building and Property Degree program will be used to showcase issues, ideas and solutions relevant to the effective support of student engagement and empowerment in what can be described as a ubiquitous learning environment.

The challenge has been to integrate problem based learning, on-line and off-line interaction and learning materials as a seamless connection of physical and virtual.

Our world, our digital ecosystem

Our world has become one saturated with information and communications technologies, one where spatial and temporal boundaries are blurring. We find ourselves living in what has been described as a ‘digital ecosystem’ where

... the material (physical) and the virtual are fully intertwined and functioning through well-designed, well-integrated social architecture and technical architecture ... working together in a wireless mesh that is persistent, pervasive, and mobile. (Suter et al 2005)

Such an ecosystem can, and has, enhanced our abilities to connect with other people, share ideas, work collaboratively and form communities.

Social networking has evolved within this ecosystem and given rise to phenomena such as citizen journalism. Any crisis in the world can now act as a trigger for people to begin twittering, blogging, uploading images to Facebook and Flickr, and creating and sharing Wikipedia articles. Recent examples include Hurricane Katrina, the Mumbai terrorist attacks, the Hudson River plane crash, and the Victorian Bushfires.

Digital technologies provide us with tools for self-organized, self-directed sharing and, potentially, learning on a large scale. How can we leverage on them for Higher Education?

Designing to bring e-learning to life

The Holmesglen Building & Property Degree program, with its requirement for seamless integration of on-line and off-line learning, has provided an excellent opportunity for a design experiment to explore how we can design educational experiences leveraging on the strengths of our digital ecosystem.

A Design Experiment is a ‘... test-bed for innovation. The intent is to investigate the possibilities for educational improvement by bringing about new forms of learning in order to study them.’ It is based on an iterative design process with ‘cycles of invention and revision as a way of exploring a learning ecology - a complex, interacting system involving multiple elements’. (Cobb et al 2003)

Information and communication technologies are most powerful when learning is seen as a relationship between the learner and the world mediated by a facilitator (Laurillard 2002), when they are used with educational approaches that emphasise problem solving, inquiry and critical thinking, rather than simple acquisition of factual knowledge, and when a learner is an active constructor of knowledge. (Jonassen 1999, Garrison & Anderson 2003)

Learning environments are multi-dimensional and complex, and students are individually unique. The behaviour and experiences of individual students are somewhat unpredictable, but, applying some concepts from Complexity Science (Stroebe et al 2005), we can generalise patterns in a complex environment and identify principles that we can use to design these environments to “encourage” certain patterns of behaviour.

What then is required to bring e-learning to life? To energise the individual participants so that spontaneous, self-organised group activity, interaction and learning takes place?

Communities of learning are the result of the collective behaviour of a group with shared objectives. In formal educational settings, this involves sharing a common process, values, experiences and intellectual exchange. Communities are living entities. They need the flow of energy and activities to keep them alive. They are made up of individuals who have the choice whether to participate in the collective activities or not, and choose to do so. (Barab & Duffy 2000, Wenger 1999)

Learning experiences need to engage the participants, empower them to contribute and feel that they have something to contribute, and connect the individual and collective experiences.

In using a Problem Based Learning (PBL) approach the engagement is encouraged through the use of stimulating and challenging Learning Triggers; the empowerment is inherent in the student-centred philosophy and processes where “instructors” are facilitators, mentors, coaches and co-learners rather than authority figures; and active learning generates meaningful experiences individually and collectively.

PBL requires active learning, where the learner plays an authentic role carrying out complex tasks. Students are provided with the opportunity to grapple with realistic, ill-structured problems, which act as a catalyst for investigation and learning. In PBL the focus is on the process not on the content.

The learning design is underpinned by a number of elements:

1. Students are empowered

Learners are placed in the role of professionals solving challenging, real world, problems. Their learning is their responsibility and tutors are seen as a resource.

2. Learning Journey

Each Trimester’s activities are seen as Learning Journeys.

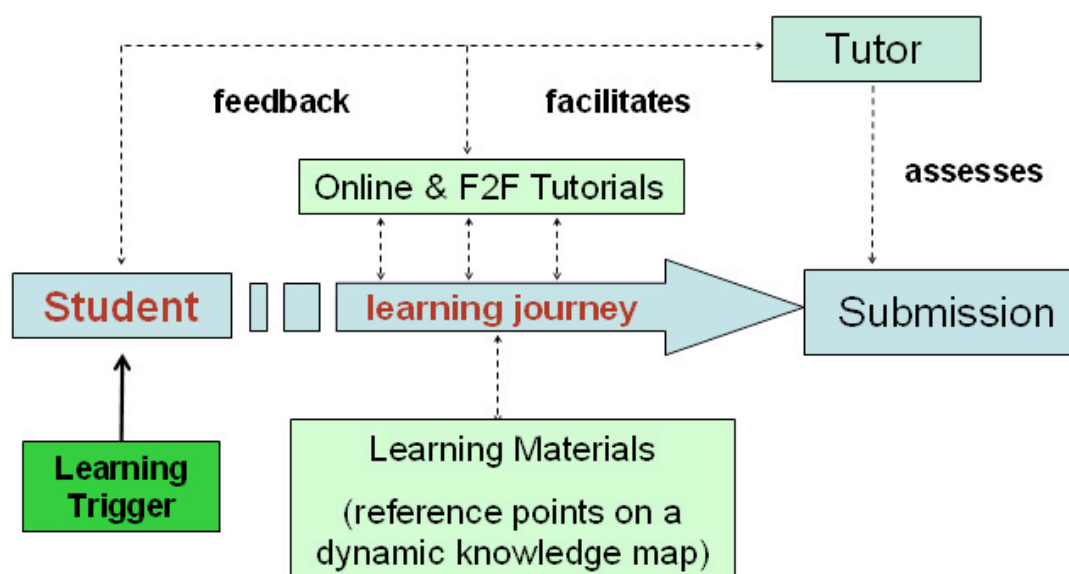


Figure 1: Learning Journey

3. Triggers

The core of a Problem Based Learning approach is the Learning Trigger, which can be described as an issue, disorientating dilemma, or problem. Such a trigger must be engaging, encompass all intended learning outcomes, and act as a catalyst for student inquiry.

To provide stimulating relevant triggers current construction and building industry projects are used.

4. Student Learning Process Maps

A Student Learning Process Map (SLPM) provides learners with an overview of the subject, guides them through their learning journey, and supports effective time management over the Trimester.

The SLPMs vary in structure from levels 1 - 3 across the degree program (Figure 2 & 5). More structure and guidance is provided to 1st year students to support them as they get used to the PBL process than 3rd year students who are expected to be ready to enter the workplace as professionals.

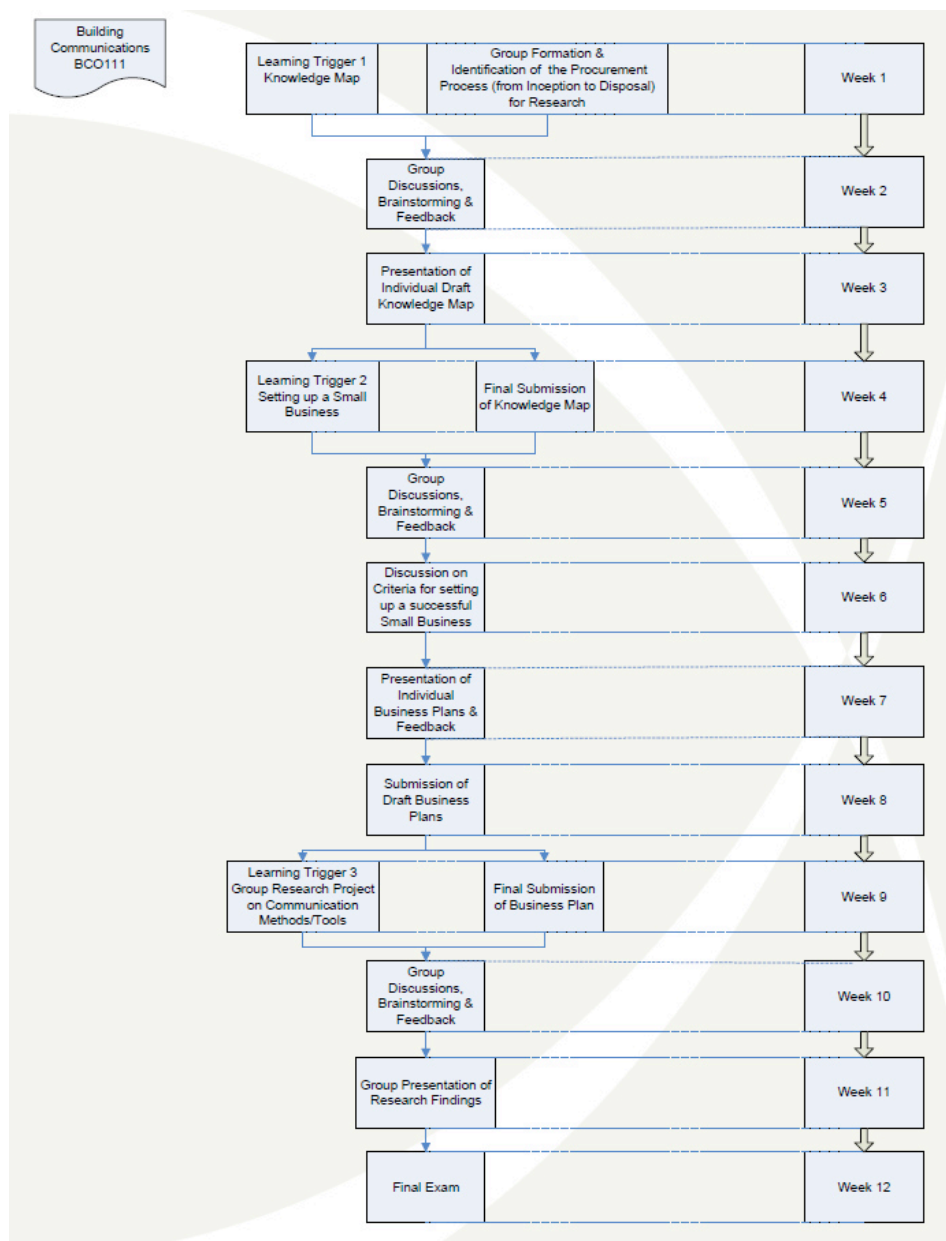


Figure 2: Building Communications SLPM

5. Discussion forums

Use of discussion forums is strongly encouraged with discussion threads created to reflect each aspect of the subject. They can range from mini case studies to highlight an important concept, to simple Q&A areas.

Discussions also take place in face to face sessions however the interaction between learners and learners, and tutors and learners, is not dependent on place. These communications are part of the energy flow and connections in the learning community.

6. Basecamp

Basecamp, <http://www.basecamp.com>, is a commercially developed web-based project management solution (Figure 3), which provides students with tools to effectively and transparently manage their work. They can create To-Do lists, allocate Tasks, set Milestones, share Files and communicate with their group members to keep work on track.

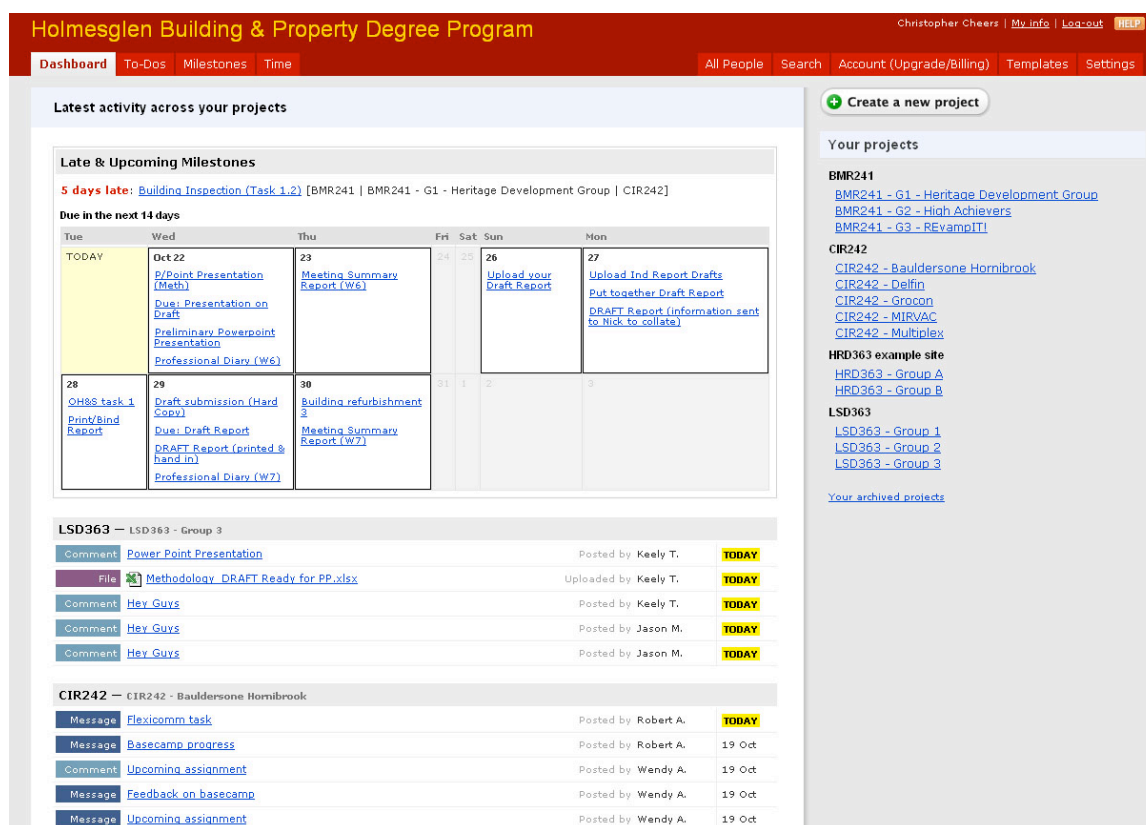


Figure 3: Basecamp Interface

7. Additional scaffolding for interaction

A range of other strategies have also been implemented to scaffold student interaction in the subject. These include:

- Learning Contracts
- Weekly Meeting Minutes
- Reflective Journals
- Peer Assessment

8. Assessment

All aspects of the learning journey are considered in assessment. Assessment practices:

- Align with curriculum objectives
- Based on real world contexts
- Encourage learners to reflect and learn continually
- Provide learners with the opportunity to demonstrate what they know and what they can do
- Encourage creativity and risk taking
- Pursue holistic assessment, including:
 - Teamwork
 - Research skills
 - Problem solving performance

Pilot

A pilot was run of a subject, *LSD363 – Large Scale Mixed Use Sustainable Development*, to test, gather feedback on, and refine the design.

In this subject a range of complex and interrelated issues are examined including macroeconomics, environmental economics and large-scale economic investment, social and cultural diversity issues, cost benefit analysis and large-scale economic investments, sustainability, risk analysis and project management as they relate to large-scale mixed-use sustainable development.

Learners are placed in the role of a Consultant who has been tasked to conduct a Feasibility Study of the Barangaroo Darling Harbour redevelopment in Sydney NSW.

Trigger—Darling Harbour Barangaroo Project

The NSW Government has developed and exhibited a Concept Plan for the redevelopment of the 22-hectare former container terminal at East Darling Harbour (EDH); now known as Barangaroo, located at the western edge of Sydney CBD with intention to renew the site as a new harbour precinct of Sydney, providing both an extension of the city's commercial centre and a significant new headland park for the people of Sydney.

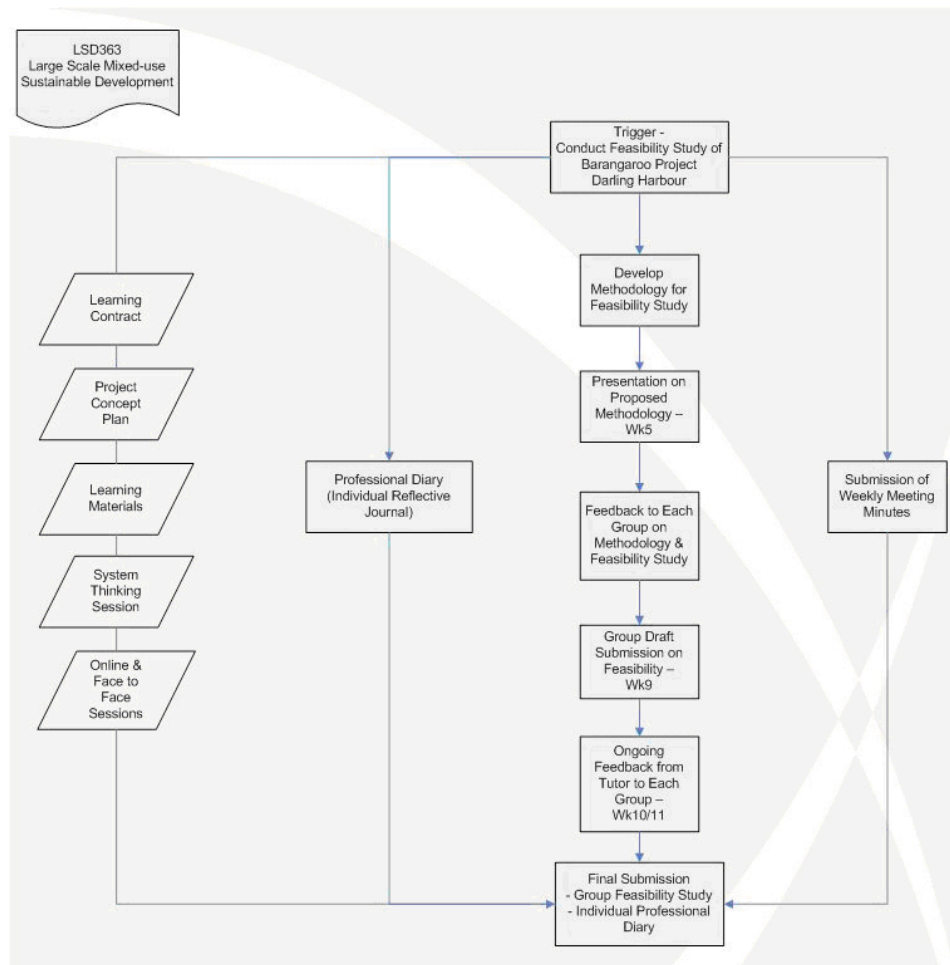


Figure 4: LSD363 Student Learning Process Map

LSD363—Evaluation Results

Evaluation surveys were conducted (using 5 point Likert Scale) on Students' degree of satisfaction with the subject on completion of each Trimester.

Table 1: LSD363 Subject Evaluation

Item	Score
The Subject	4.49
Teaching Approach & Support	4.47
The Tutor & Tutorials	4.70
Perceived Outcomes	4.31
Online Learning	4.32
General	4.48

Mean = 4.46 and SD = 0.14

Table 2: LSD363 Basecamp Evaluation

Item	Score
Impact on my performance	3.97
Functionality	4.25
Ease of Use	4.50

Mean = 4.24 and SD = 0.27

Tutor feedback on Basecamp was very positive: "From a tutor's point of view it is extremely beneficial as you can monitor the progress of the group and identify individual contributions."

Student comments included:

The best thing about Basecamp is the ability to check on the progress of an assignment '24-7'. This is great as it will fit in with everyone's schedule

High achievers do not have to hold back in their contributions, their efforts are now visible

Weaker team members can benefit from observing the work habits and processes of others

Slackers become very visible

Benefits of using Basecamp, as identified by students, include:

- Transparency of who communicates/contributes
- Easy sharing of files between team members
- Integration with personal email
- Ease of use
- Individual student strengths are visible

Basecamp has proven to be a valuable asset in the range of tools used to support the Building and Property Degree program.

Communication Tools

Students were also asked what communication tools they preferred and how often they used them.

Table 3: Student Usage of Communication Tools

Preferred	LSD363	Often	Sometimes	Never	Total
6	Basecamp Message	8	3		11
	Discussion Forum	1	9	1	11
4	Email	9	2		11
	Instant Messaging (MSN Messenger)	8	1	2	11

1	Mobile Voice	4	5		9
2	Mobile Text	5	1		6
	Other				0

Discussion

Students have responded well to the learning design. The subject, though complex and demanding, was embraced by the students.

The learning design, and the tools, empowered and enabled them to take control of their own learning. In fact, as seen in Table 3, communication tools that were student driven, self organised and self directed were preferred and used more often by the students.

This learning design is currently being implemented across all subjects in the Building and Property Degree programs.

More extensive data collection and analysis will be conducted over 2009. This additional data will provide a basis for assessment of impact on student learning outcomes.

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