

Employing Technology to Utilize Effective Teaching Strategies: Sharing Examples from the PEEL Project

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In this project, technology was used to breathe new life into the exemplary learning designs developed as part of the Project for Enhancing Effective Learning (PEEL). The major aim of the PEEL Project was to improve the quality of learning and teaching by increasing students' knowledge of what learning is and how it works; enhancing students' awareness of learning progress and outcome; and improving students' control of learning through more purposeful decision-making (Baird & Mitchell, 1986). By reproducing a number of effective PEEL learning designs in a Learning Management System, these designs can be readily shared and this innovative approach to teaching can be introduced to a new, wider audience.

Keywords: pre-service teachers, sharing, learning design, reuse, templates, modeling; LAMS

Introduction

Novice teachers are often looking for good learning designs on which to model their own teaching and learning environments. Additionally, they need the opportunity to discuss and reflect on their original designs and the designs of others to gain confidence and skills in teaching (Cameron, 2006; Kearney & Young, 2007). By encouraging these students to exploit generic learning designs, the tutors aimed to facilitate the students' evaluation of the efficiencies, value and limitations in sharing and reuse. It was then hoped that students would take these insights with them into their professional lives.

Background: Capturing Learning Design

Preparation and sequencing of activities, organization of content and consideration of the roles adopted by students and teacher are central elements of planning for learning. The concept of creating a learning design is familiar to all teachers (Britain, 2004): it is what teachers do each time they prepare for a class. They design the learning that will take place in a given time frame. Lesson plans or learning designs are patterns for action: a sequence of activities, incorporating resources and tasks. Learning design patterns should embody "educational values and vision" (Goodyear, 2005, p.82). These patterns provide a reproducible and sharable template that can be represented in a variety of ways: graphically, textually, or in codable, machine-readable form.

A number of research teams have produced work in this area. For example, the learning design exemplars developed by Oliver, Harper, Hedberg, Wills and Agostinho (2002) for the Australian Universities Teaching Committee (AUTC) project (<http://www.learningdesigns.uow.edu.au/>) are temporal representations defined by three key elements: tasks, resources and supports. Bennet et. Al. (2007), have built on the AUTC work, aiming to progress towards an integration of the pedagogical design process and international e-learning standards. The Pedagogical Patterns Project in the United Kingdom also offers a range of learning design examples (see <http://www.pedagogicalpatterns.org/>). In the UK project methodologies for capturing best practice have been investigated which can be migrated from one domain to another.

According to Laurillard and McAndrew (2002), to be really useful, sharing of good pedagogy should be undertaken in a holistic way: there should be full transference of the learning design with detailed information about intended outcomes, modeling of the learning experience and the context of implementation. That is, a learning design is more transferable when it is not de-contextualised, and the conditions of learning are specified the importance of adapting and contextualizing design to meet particular student needs, curriculum frameworks, local

socio-cultural influences, and institutional and professional requirements, is well known to educators and key to effective learning outcomes (Benson & Samarawickrema, 2007; Ramsden, 2005).

Good Practice in Teaching and Learning

A number of teaching strategies have been highlighted in the literature as representing good practice in teaching and learning. It is suggested that lecturers adopt a variety of pedagogical approaches and they should be able to explicitly acknowledge any discipline specific skills; encourage higher order thinking; practice reflection (both students and staff) and adopt student-centred teaching methods.

Expert teaching now requires mastering a variety of teaching techniques and being able to encourage most students to use the higher cognitive level processes that the more academic students use spontaneously (Biggs, 2003). Therefore, to be effective, teachers need to draw upon different research, strategies, approaches and theories - not just traditional ones. Hence, new teachers need to be able to accommodate a variety of approaches to learning, different modes of delivery and a range of key principles of effective teaching and learning.

Finally, the use of new technologies is growing rapidly with many claims for its increasing impact on the processes and outcomes of teaching and learning. Therefore, any learning design being promoted for widespread usage will need to accommodate all the different facets of teaching and be able to embrace technological integration.

Methodology

This case study is a documentation and analysis of teaching practice, based on an investigation of the issues surrounding the benefits of reuse and sharing of learning designs in the classroom context. Taking an action research approach to support ongoing reflection, the following discussion draws on data gathered using three online surveys were administered to 190 pre-service education students (91% of the various cohorts).

Survey Results	n =190	
	Agree	Disagree
I can see benefits in sharing and /or reusing learning designs	59(98%)	1(2%)
I am willing to share my own learning designs	56(93%)	4(7%)

Table 1: Survey Results

Innovative Teaching Strategies

The PEEL project categorised four types of lesson with respect to the role students played in it. These categories are:

1. **Passive receptivity:** Responsibility and control of the lesson is wholly the teacher's. Student work is limited to passive, undemanding roles such as giving superficial response, transcription of work, etc. Students do not fully comprehend lesson nature, purpose of progress.
2. **Relatively uniformed responding:** Students participate actively, but mainly when directed, by answering teacher questions or performing set tasks. Teacher controls the lesson. Students do not fully comprehend lesson nature, purpose or progress – there may be insufficient time, encouragement, or student inclination to ask and gain answers to many evaluative questions. Some students' questions or answers are valued more than others by the teacher.
3. **Informed participation:** Students participate actively according to teacher directions. Teacher assumes responsibility and control for lesson nature and development. Students ask evaluative questions and are aware of, or actively engaged in finding out, answers. All contributions are valued by the teacher and, as far as possible, considered critically by the class.
4. **Informed collaboration:** Students collaborate actively with thee teachers and share responsibility and control for the nature, purpose, and progress of the lesson. Students ask evaluative questions, and reflect on and determine answers. All contributions are valued by the teacher and, as far as possible, considered critically by the class (Baird & Mitchell, 1986).

An example of a PEEL Learning Design

The screenshot shows the LAMS Pedagogical Planner interface in a Windows Internet Explorer browser. The page title is "LAMS :: Pedagogical Planner - Windows Internet Explorer". The URL is "http://planner.lamscommunity.org/lams/pedagogicalPlanner.do?method=openSequenceNode&edit=false&uid=234". The breadcrumb trail is "Planner > Teaching Strategies > Problem-based Learning".

Problem-based Learning

Problem-based learning (PBL) involves group discussion and research on a real world problem or scenario. Students attempt to solve the problem (or respond to the scenario) based on their initial ideas and discussion, followed by research and further discussion of how the research relates to the problem.

In PBL, the teacher often plans the role of a facilitator - helping to guide students without telling them the answer.

The typical structure of PBL involves:

- Introduction of Problem
- Initial student discussion of problem and planning for further research
- Students go away to research the problem further
- Students report back on research findings and together try to solve the problem.

A flowchart diagram illustrates the PBL process:

```

    graph LR
      A[PBL Welcome] --> B[Your Problem]
      B --> C[Initial Notebook]
      C --> D[Initial Ideas]
      D --> E[Initial Forum]
      E --> F[Research]
      F --> G[Followup Forum]
      G --> H[Answer to Problem]
      F --> C
      F --> D
  
```

PBL Example Sequence - "Why Is the Sky Blue?"
[Preview](#) [Editor](#)

This example uses a simple PBL structure to help students to investigate and answer the question "Why is the sky blue"?

Simple PBL Template
[Preview](#) [Editor](#)

This template follows the same structure as the *Why is the Sky Blue* example. To adapt it to your own topic, just edit the text for the second activity ("Your Problem") and then the template is ready to use. The text for all other tasks is generic, so it can be used as is, or adapted to suit your problem if you wish.

Buttons: [Open editor](#) [Close](#)

Figure 1: Introductory screen – Problem based learning

The screenshot shows the LAMS Pedagogical Planner interface in a Windows Internet Explorer browser. The page title is "LAMS :: Pedagogical Planner - Windows Internet Explorer". The URL is "http://planner.lamscommunity.org/lams/pedagogicalPlanner.do?method=openNewTemplate&uid=236". The page title is "Pedagogical Planner".

Title:

Content:

Welcome to this sequence of activities, in which you will working with a group of students to explore a problem (this approach is called "Problem Based Learning" or PBL). The activities are:

Step 1: This introduction page

Step 2: Overview of your problem

Step 3: You reflecting in a private notebook on your initial ideas about the problem

Step 4: Answering a general question about the problem, and sharing your ideas with your peers.

Step 5: Initial group discussion of the problem, and plans for further research

Step 6: Researching the problem and sharing useful resources discovered during research

Editing advice

NoticeboardX

PBL Welcome

↓

NoticeboardX

Your Problem

↓

Content:

[Describe the general problem here - delete this text]

Close

Where possible, choose problems that encourage research and sharing of different perspectives. Also try to choose real world "authentic" problems that would be of natural interest to the students. Avoid problems with simple answers like yes/no and agree/disagree.

Editing advice

Figure 2: Text entry screen – Problem based learning

Sharing Learning Designs

For some, the concept behind reusable learning designs is that “an activity once specified clearly enough is reusable in a different subject matter, merely by changing the resources” (McAndrew, Weller & Barrett-Baxendale, 2006). For example, an online debate in History could have the same underlying pedagogical structure as a debate in Psychology. By changing the learning objects or resources within the learning design, the debate becomes reusable in other contexts. While this argument is appealing, and the authors have observed instances where learning designs have been reused in this way, there is evidence that there may be a greater tendency for teachers to repurpose learning designs in an amended form for the new context, rather than taking the template and using it “as is”. Research findings in both Australia and the United Kingdom corroborate this. Learning are more likely to be used by teachers, not in their original form but as models for their own original designs (Philip, 2007; Walker & Masterman, 2006; Lucas, Masterman, Lee & Gulc, 2006). It is suggested that teachers are using the designs for inspiration and modeling, rather than direct transference.

Benefits of Sharing and Reusing Learning Designs

As Table 1 illustrates, a majority of our participants (both students and staff) agreed there are benefits for teachers having access to a sharable bank of learning designs from which they can download models to trial and modify for their own contexts. The most common advantage of access to such repositories identified in the focus groups was that they provided a searchable database of exemplary designs which can be easily adapted. However, additional benefits of repositories in this learning context are:

- Scaffolding and mentoring for teachers new to the profession;
- Inspiration for teachers wishing to redevelop or redesign the curriculum;
- Access to archived and catalogued learning designs;
- Greater exposure to models of best practice;
- Foundation for more sustainable practices in e-learning – conservation of time and effort;
- Development of resources which support and promote communities and professional and student networks; and
- Explicit copyright licensing agreements which support equitable sharing practices (Philip & Cameron, 2008).

Conclusion

In terms of our research questions, students saw benefits in sharing and reusing learning designs, and were willing to share the PEEL designs. The major aim of the PEEL Project was to improve the quality of learning and teaching by increasing students’ knowledge of what learning is and how it works; enhancing students’ awareness of learning progress and outcome; and improving students’ control of learning through more purposeful decision-making (Baird & Mitchell, 1986). By reproducing a number of effective PEEL learning designs in a Learning Management System, these designs can be readily shared and this innovative approach to teaching can be introduced to a new, wider audience. The benefits observed included process support (scaffolding, inspiration and mentoring); facilitated access to a variety of learning designs (exemplary and works in progress); contribution to sustainable practices (time, effort and resources); and engagement with an emerging community of practice.

References

- Baird, John, R. & Mitchell, Ian J. (1986). *Improving the quality of teaching and learning: An Australian Case Study – The PEEL Project*. Melbourne: Monash University Press.
- Bennett, S., Agostinho, S., Lockyer, L., Kosta, L., Jones, J., Koper, R. & Harper, B. (2007). Learning designs: Bridging the gap between theory and practice. In ICT: Providing choices for learners and learning. *Proceedings ascilite Singapore 2007*. Retrieved 19 April, 2008 from <http://www.ascilite.org.au/conferences/singapore07/procs/bennett.pdf>

- Benson, R. & Samarawickrema, G. (2007). Teaching in context: Some implications for e- learning design. In ICT: Providing choices for learners and learning. *Proceedings ascilite Singapore 2007*. <http://www.ascilite.org.au/conferences/singapore07/procs/filename>
- Biggs, J. (2003). *Teaching for quality learning at university: What the student does*. Buckingham: SRHE and Open University Press.
- Britain, S. (2004). *A review of learning design: Concept, specifications and tools: A report for the JISC E-learning Pedagogy Programme*. Retrieved 25 April 2007, from http://www.jisc.ac.uk/uploaded_documents/ACF1ABB.doc
- Cameron, L. (2006). Picture this: My lesson. How LAMS is being used with pre-service teachers to develop effective classroom activities. In R. Philip, A. Voerman & J. Dalziel (Eds), *Proceedings of the First International LAMS Conference 2006: Designing the future of learning* (pp 15-24). 6-8 December 2006, Sydney: LAMS Foundation. <http://lamsfoundation.org/lams2006/papers.htm>
- Goodyear, P. (2005). Educational design and networked learning: Patterns, pattern language as and design practice. *Australian Journal of Educational Technology*, 5(1), 82-101.
- Kearney, M. & Young, K. (2007). Pre-service teachers' perceptions of LAMS as a teaching tool. In *ICT: Providing choices for learners and learning. Proceedings ascilite Singapore 2007*. <http://www.ascilite.org.au/conferences/singapore07/procs/Kearney>.
- Laurillard, D. & McAndrew, P. (2002). Virtual teaching tools: Bringing academics closer to the design of e-learning. Keynote address in *Proceedings of the Networked Learning Conference*, 24–26 March 2002, School of Education, University of Sheffield and Lancaster University, UK.
- Lucas, B., Masterman, L., Lee, S. and Gulc, E. (2006). Sharing and reuse of learning designs for English Studies: A UK Higher Education perspective In R. Philip, A. Voerman & J. Dalziel (Eds), *Proceedings of the First International LAMS Conference 2006: Designing the Future of Learning* (pp 55-64). 6-8 December 2006, Sydney: LAMS Foundation. <http://lamsfoundation.org/lams2006/papers.htm>
- McAndrew, P., Weller, M. & Barrett-Baxendale, M. (2006). Learning design and service-oriented architectures: A mutual dependency? *Journal of Learning Design*, 1(6), 51-60.
- Oliver, R. Harper, B., Hedberg, J. Wills, S. & Agostinho, S. (2002). Formalising the description of learning designs. In A. Goody, J. Herrington & M. Northcote (Eds.), *Quality conversations: Research and development in Higher Education*, vol. 25, pp. 496–504. Jamison, ACT: HERDSA.
- Philip, R. & Cameron, L. (2008). Sharing and Reusing Learning Designs: Contextualising Enablers and Barriers. In *Ed-Media World Conference on Educational Media, Hypermedia and Telecommunications*, Vienna, Austria, 30 June – 4 July, 2008.
- Ramsden, P. (2005). The context of learning in academic departments. In F. Marton, D. Hounsell & N. Entwistle, N. (Eds.). *The experience of learning: Implications for teaching and studying in higher education* (pp.198-216) (3rd (Internet) ed.), Edinburgh: University of Edinburgh, Centre for Teaching, Learning and Assessment. <http://www.tla.ed.ac.uk/resources/EoL.html>
- Walker, S. & Masterman, L.(2006). Learning designs and the development of study skills: Reuse and community perspectives. In R. Philip, A Voerman & J. Dalziel (Eds), *Proceedings of the First International LAMS Conference 2006: Designing the Future of Learning* (pp 89-98). 6-8 December 2006, Sydney: LAMS Foundation. <http://lamsfoundation.org/lams2006/papers.htm>

Woo, K., Gosper, M., Gibbs, D., Hand, T., Kerr, S., & Rich, D. (2004). User perspectives on learning object systems. Paper presented at the *Tenth Australian World Wide Web Conference*. Gold Coast. Retrieved 11 December, 2007, from <http://ausweb.scu.edu.au/aw04/papers/refereed/woo/paper.html>.