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INTRODUCING LEARNING DESIGN AND LAMS TO PRE-SERVICE EDUCATION STUDENTS

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Abstract

Information and Communication Technologies (ICTs) for teaching and learning are continually changing and being replaced by the newest "must have" technologies, so how valuable are skills-based technology courses in the long-term to pre-service teachers? While pre-service teachers need to be competent and confident users of technology (Cowie & Jones 2005), the universities also need to provide them with knowledge about attitudes, values and pedagogical understanding in respect to ICTs (Cameron 2007). These pre-service teachers need to develop a fundamental understanding about the nature of technological change and their own abilities to confront this change (Phelps & Ellis 2003). It has also been determined that ICT-based courses will hold more long-term value for the pre-service teachers if they promote generic technology skills involving authentic, reflective activities that assist them in their continued learning throughout their careers (Herrington, Oliver & Herrington 1999). Therefore, rather than simply provide and deliver specific skills-based information, the lecturer's principal function has shifted to create a collaborative, challenging and supportive learning environment within which students were introduced to a broad range of philosophical and pedagogical issues that arise from the integration of a variety of technologies in today's classrooms (Herrington & Oliver 2002).

Introduction

At the University of Notre Dame Australia, Sydney Campus, pre-service teachers are required to learn how to use ICTs. In the course, ED4134 - Information Technology for Teaching and Learning, emphasis has been shifted so that ICT skills are being taught incidentally while lecturers introduce higher level theoretical concepts, for example, learning design and constructivism. The course now requires pre-service teachers to become familiar with the literature about the teaching and learning strategies that justify the use of ICTs, to work collaboratively, to critically evaluate their peers' work and to reflect on the success of

their own. The central aim of this course is for the pre-service teachers to be able to use ICTs but also to be able to integrate them effectively into their own teaching. This then develops teachers who are intelligent and adaptive users of technology.

Course lecturers ensure the course:

- Demonstrates a clear relationship between theory, research and practice;
- Provides opportunities for active student engagement;
- Contains both structured and unstructured time, with the pre-service teachers encouraged to reflect on the implications of their learning activities on their professional practice;
- Models exemplary practice;
- Balances curriculum, skills and pedagogical issues; and
- Utilises a variety of presentation styles (Downes, 2002).

Course activities are designed to ensure the pre-service teachers are confident and competent ICT users. On completion of the course, they are able to:

- Recognize their role in the introduction of ICTs to their own teaching and learning;
- Use a wide range of technologies and resources appropriately;
- Develop, where necessary, their own ICT skills;
- Reflect critically on their use of ICTs for teaching and learning; and
- Appreciate the necessity of life-long learning about the potential of ICTs to enhance student learning (Downes 2002).

The key principles on which the course is based (Alexander 2002) are discussed in more detail below:

- Good teaching practice was applied by introducing a constructivist approach, using authentic real world problem–oriented activities and examples. A just-in-time learning approach was employed toward ICT skills;
- The methods of assessment were revised to ensure that they reflected this. The emphasis is on the product of the "learner as designer" model (eg., produce lessons, webquests, interactive whiteboard activities), higher-order thinking about the literature (eg., in-class discussions) and reflection (eg., a blog);
- Activities have been introduced that encourage the pre-service teachers to reflect on their own learning in terms of content, process and approaches they may not have encountered before (eg., group discussions, peer assessment and pedagogical justification);

- A range of additional scaffolds have been established for the pre-service teachers, (eg., readily accessible content delivery via a LMS, collaborative problem-solving (group tasks and assignments, discussions), and improved communication with course lecturers (email and discussion forums); and
- Constant reference was made to the pre-service teachers' own experiences, whether this be their own school experience, or their professional practicum experience, in an attempt to remedy the perceived "disconnect" between university theory and the reality of the classroom (Loughran, 2007; Ebby, 2000; Ure, 2009).

Methodology

The data collected for this paper has been taken from four different student cohorts, two in Semester 2, 2009 and two in Semester 1, 2010. The studies provided a wealth of data collected by questionnaires, each focussing on different areas of the pre-service teacher course.

In Semester 2, 2009, a study was conducted with two small groups of 2nd (n=22) and 4th Year (n=14) pre-service teachers. This study concentrated on the exploration of the learning design process using LAMS (Learning Activity Management System – www.lamsfoundation.org) as a scaffold for lesson planning. The pre-service teachers in these were studying secondary education and they learnt to use LAMS and were then required to complete an assignment worth 30% of the course. The assignment was to create a lesson for secondary students to complete in one of their teaching areas that utilises LAMS.

In Semester 1, 2010 the study once again focused on two groups of 2nd (n=74) and 4th (n=20) year pre-service teachers. The pre-service teachers in this study were from different cohorts. This study focused on learning design and the pre-service teachers were introduced to LAMS in a 1.5 hour workshop class. Unlike the earlier groups, these pre-service teachers were not required to complete an assignment or to use LAMS further in their studies after this workshop.

Table 1: Student numbers in each cohort

Year Level	Course Code	2009 (n)	2010 (n)
2nd year	ED2203	22	
4th year	ED4710	14	
2nd year	ED4134		74
4th year	ED4134		20

All pre-service teachers in each group were introduced to LAMS by completing a sequence on the 'qualities of an effective teacher'. This sequence is shown below in Figure 1.

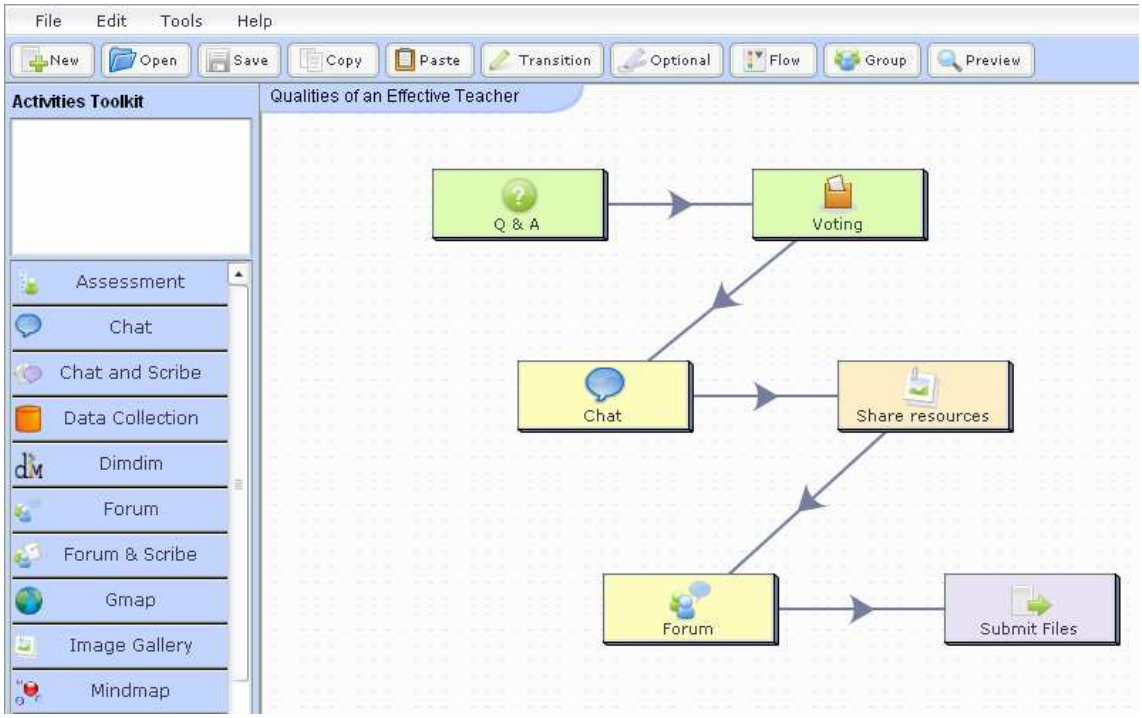

Figure 1: Qualities of an Effective Teacher Sequence in LAMS

Results

The results have been placed under four themes that emerged during analysis: The first being "Modelling Good Teaching Practice", which analysed pre-service teachers' comments about the influences on their own teaching; the second theme, "Activities and Assessment" evaluated the pre-service teachers' reaction to the move to more practical, authentic assessment; the third reviewed our pre-service teachers' views to the concept of "Learners as Designers", whereby they had to design their own learning sequences in a highly scoffolded way; and finally, the pre-service teachers reflected on the influence of their practicum experience and its influence on their teaching.

1. Modelling good teaching practice

A constructivist learning environment is modelled during the course. Observing expert performances and the modelling of processes allow pre-service teachers to observe and reflect on activities before they actually do the activities themselves (Richards 2002). The

importance of modelling good teaching practice cannot be under-estimated. When our pre-service teachers were asked, "What has been the strongest influence on how you teach?", 67% of those surveyed replied "watching what works with other teachers", or similar comment.

In this course there is now a focus on a wide range of approaches to learning and teaching, and on student-centred learning. No longer are the pre-service teachers simply page turning through text books but they are actively engaged (Phelps & Ellis 2003). Pre-service teachers are given choice about what they learn, and how they learn it to assist their learning independence and help them on their path to life-long learning. Most importantly, the lecturers deconstruct this approach with the pre-service teachers, and have them formally reflect on the teaching methods. This approach is grounded in the knowledge that life-long learning as a strategy can assist teachers to survive the technological changes that will continue to occur (Downes 2002).

2. Activities and assessment

An effort has been made to ensure that all activities and assessment tasks are authentic. Authentic activities are the kinds of activities "that people do in the real world that are completed over a sustained period of time, rather than a series of shorter disconnected examples" (Herrington & Kervin, 2007, p. 223). Authentic tasks have real world relevance as well as providing opportunities for the pre-service teachers to be able to examine the task from numerous perspectives while using a variety of resources. The Pre-service teachers were provided with the opportunity to collaborate and reflect (Herrington, Reeves & Oliver 2006). Authentic tasks involve the student being engaged with the technology, which provided cognitive tools for both information seeking and knowledge construction.

Activities are directly related to assessment and there has been a movement away from formal essay writing. The pre-service teachers are now expected to create interactive whiteboard activities, WebQuests, wikis and blogs. Interestingly, many pre-service teachers who say they perform poorly in formal written assignments often achieve excellent marks in these alternative, but equally intellectually demanding, assignments and reported high levels of engagement and satisfaction (Reynolds 2006). Features that have been adopted to facilitate this include open-ended assignments with a student-selected audience; readily accessible just-in-time instruction; collaboration and peer critiquing; and importantly, imagination, creativity and fun are encouraged. One student commented:

> I enjoyed the fact that assessments were not essays. I loved the fact that we could have a break from writing essay after essay and have the chance to do something a little different. I also felt the content was very well explained.

In-class discussions are also used frequently. Interactions between pre-service teachers through paired and group discussions and online forums can foster authentic learning opportunities that are more powerful than those conceived of within traditional interactive formats (Kearsley 2000). It is considered important for the pre-service teachers to be engaged in a meaningful dialogue about the information they find than to spend most of their time finding information (Schank 1995). The discussions held in this course led to a deeper understanding of the course readings and improved engagement with their content.

3. Learners as designers

The course used LAMS as a scaffold for lesson planning with the pre-service teachers and has produced extremely positive results (Campbell & Cameron 2009). The most compelling reason to include LAMS over other software is that, due to its highly intuitive nature, the pre-service teachers learn to use it very quickly. This allows lecturers to devote the bulk of their face-to-face time with their pre-service teachers to exploring effective learning design and the concept of good pedagogy. Throughout the process of authoring a LAMS sequence, these pre-service teachers are required to think about all aspects of their lessons in detail and LAMS enables them to experience the lesson themselves via a preview mode before using it in the classroom. The graphic interface allows pre-service teachers and their lecturers to visualise lessons providing an instant 'picture' of the lesson and its content with a clarity not available in traditional written lesson plans.

The combination of the pop-up windows asking for specific activity detail plus the coloured graphic interface enabled the pre-service teachers to preview and overview lessons in a way not possible with traditional lesson plans. Additionally, LAMS creates these lessons in a standardised template that can be easily modified for future re-use. The ability to readily re-use lessons presents new possibilities for increasing the quality and variety of teaching and learning within an e-learning context.

All the groups were introduced to LAMS in a workshop setting with the pre-service teachers working through a LAMS sequence prior to learning how to create their own. The LAMS sequence they experienced contained a range of activities and was on effective teaching as shown in Figure 1 and 2.

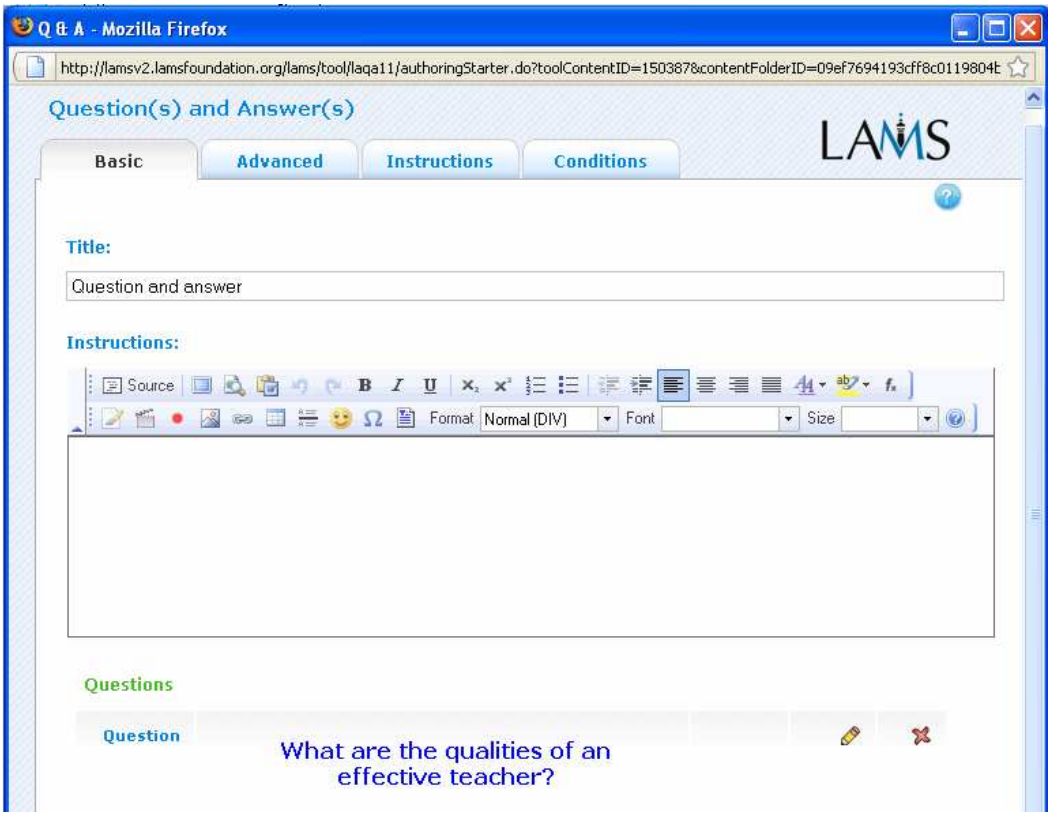

Figure 2: Question and Answer Tool

In the 4th Year group, 8 (89%) pre-service teachers felt they would use the LAMS as a lesson plan in the future. Student comments included:

- "it gives an overall view of the lesson"
- "it is fast, interesting and helps with my understanding of ICT", and
- "it seems a lot more practical".

In 2009, 2nd and 4th Year pre-service teachers were asked if they thought creating written lesson plans was an important aspect of learning to be a teacher. Interestingly, 21(95%) 2nd Year pre-service teachers said "Yes" while 1 pre-service teacher said "No". However, when the 4th Year pre-service teachers completed the same questionnaire, 9 (64%) said "Yes", 4 (28%) said "No" and 1 (7%) pre-service teacher said "Yes and No". After two additional years of practicum (20+ weeks), it would appear our pre-service teachers are coming to conclusion that writing formal lesson plans is no longer as important for them.

As one 4th Year pre-service teacher commented:

- "I wrote good lesson plans, but I ended up adding many great things that I didn't write down"

While another wrote:

- "sticking to lesson plans is important but impromptu learning always happens when students raise valid issues/questions".

These results suggest that pre-service teachers in 4th Year may have moved past creating traditional lesson plans and are ready to use another type of lesson plan creator when there is a need. LAMS may be able to fill a need here.

4. The Practicum experience

Finger Charleston & Baker (2004) reported 60% of pre-service teachers believe that it is essential to observe experienced classroom teachers integrating ICT during their undergraduate preparation program. The pre-service teachers in our survey would agree even more strongly (67%). Fortunately for them, at The University of Notre Dame Australia, pre-service teachers are required to complete a great deal of practice teaching throughout their course. They observe a classroom for one week in 1st Year and experience 10 weeks practice teaching in both 2nd and 3rd Years. The pre-service teachers then complete a ten week internship in their final year of the course. This amount of practicum gives the pre-service teachers a unique experience and it means that they are generally very comfortable in the classroom when they graduate.

The practicum has an acknowledged central place in teacher education programs (Ryan, 1996). Practicum provides an opportunity for pre-service teachers to:

- apply knowledge and skills in a practical setting;
- progressively develop competencies through participation in a range of practical experiences;
- test their commitment to a career;
- gain insight into professional practice; and
- evaluate their progress and identify areas where further personal and professional development is needed (Daresh, 1990).

The opportunity for pre-service teachers to reflect on their experiences in light of their current knowledge and understanding is crucial to an effective practicum experience (Boud, Keogh & Walker, 1985; Lyons, 2010) and without it a perceived "disconnect" can readily develop

between university theory and the reality of the classroom (Loughran, 2007; Ebby, 2000; Ure, 2009). Throughout the course, whenever ICTs are being utilised, constant reference is made to pre-service teachers' own experiences, whether this be their own school experience, or their professional practicum experience. Examples are drawn from the pre-service teachers' own experience to ensure the relevance and authenticity of the activity is explicit.

Conclusion

This approach aimed to optimise the learning process by supporting the pre-service teachers in developing their understanding of using technology in the classroom through reflection and adaptation in relation to authentic learning activities, with feedback from their peers and their lecturers. It involved an iterative cycle of design, just-in-time-learning, practising, articulation of their ideas, questioning, adapting, feedback and reflecting (Laurillard & McAndrew 2002). The outcomes of learning now extend beyond "content" and technical skill to include the development of a broader range of affective and cognitive skills and higher order thinking capabilities (Downes 2002). Of most value is not the technical skills we incidentally teach (ie. what buttons to press), but rather how we were teaching, and how we were training our pre-service teachers to think about the implementation of technology in their teaching.

Note

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