Under the hood: How an authentic online course was designed, delivered and evaluated

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A key challenge for university professionals is to identify how to construct more interactive, engaging and student-centred environments that promote 21st century skills and encourage self-directed learning. Existing research suggests the use of real-life tasks supported by new technologies, together with access to the vast array of open educational resources on the Internet, have the potential to improve the quality of online learning. This paper describes how an authentic online professional development course for higher education practitioners was designed and implemented using a learning management system (LMS) and an open companion website. It also briefly discusses how the initial iteration was evaluated and identifies recommendations for improving future iterations of the course.

Keywords: Authentic learning, higher education, professional development

Introduction

In the field of education we have known for a long time, that people learn better when they are actively involved in the learning process. Nevertheless, research indicates there is a significant gap between the preferred constructivist online teaching approaches and actual practice (Lambert & Cuper, 2008; Maor, 2003; Oliver, 2005; Rotherham & Willingham, 2010). The lack of engaging online learning is particularly evident within the higher education sector where learning management systems (LMS) are primarily used as instructivist information delivery vehicles rather than constructivist environments to facilitate learning (Hodges & Repman, 2011; Lane, 2008).

A qualitative design based research approach was employed to explore possible solutions for designing and implementing effective online higher education courses based on a social constructivist model of learning (cf. Parker, 2011). Design based research, like action research, is accomplished at the coal face, however, it involves an ongoing iterative process to monitor the effectiveness of a specifically designed artifact (Kelly, 2006). Key elements of this approach include: addressing complex problems in collaboration with practitioners, integrating design principles with new technologies to develop practical solutions to the problem and conducting effectiveness evaluations to refine the proposed solution and identify new design principles (Reeves, 2006).

A review of existing research and informal discussions with higher education practitioners suggested teachers needed to experience new learning environments as learners themselves in order to implement changes to their teaching approach (Maor, 1999). Therefore, one potential innovative solution for changing existing online teaching practices was to develop an online course based on authentic learning principles where university professionals were immersed in the pedagogical environment (cf. Parker, 2011).

In this paper we describe how an online professional development course for higher education practitioners based on authentic learning principles (Herrington, Reeves, & Oliver, 2010) was designed and developed to provide university professionals with the opportunity to: experience online learning from a student perspective, learn how to use authentic learning guidelines to design their own real-life learning courses, explore how new technologies could be used as pedagogical tools to support student learning, and use online social media tools to network with their peers. It discusses student and

facilitator reflections about the effectiveness of the first implementation of the course, and finally, presents recommendations for improving the effectiveness of the design approach for future iterations of the course.

Course design and implementation

The design of the learning environment plays an important role in successful online learning. "Pedagogy and software design are closely intertwined in online learning - the 'shape' of the software can help or hinder the teacher in what they are trying to do" (Pedagogy, 2010, p. 1).

Rich student-centered learning environments that engage learners in meaningful discourse with their peers (Darabi, Arrastia, Nelson, Cornille & Liang, 2010; Garrison, Anderson & Archer, 2000) and require them to solve real world issues using technologies as cognitive tools (Gravemeijer & Cobb, 2006; Herrington et al., 2010; Maor, 2007) can better prepare learners to deal with "the messiness of real-life decision making" (Lombardi, 2007, p. 3) required in the 21st century workplace. To help foster critical 21st century skills, educators should harness the affordances of open web-based delivery (Collins & Halverson, 2009; Lambert & Cuper, 2008) and encourage learners to become "cognizant and literate in Web 2.0 tools" (Levin-Goldberg, 2012, p. 3).

Herrington et al.'s authentic learning design framework (2010, p. 128) was extended to include learning objectives and identify components of the course that need to be situated within a protected environment (for reasons of confidentiality). This extended framework provided overall guidance for the design and implementation of the course (see Figure 1) and was also used as a support resource to assist participants to design their own online course. Herrington et al.'s elements of authentic learning (2010, p. 18) and elements of authentic tasks (2010, pp. 46-48) were used to ensure the course and task design adhered to authentic learning principles.
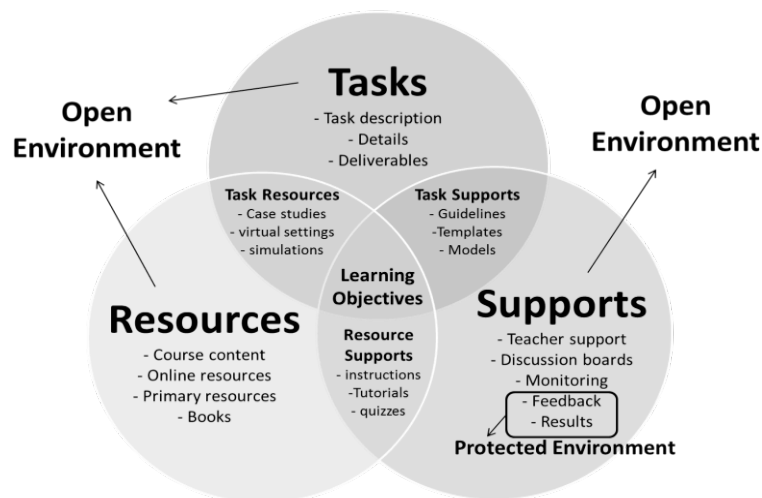
Figure 1: The extended Herrington et al authentic learning design framework

The course was designed to meet five learning objectives and an overall complex task was developed to enable participants to demonstrate the use of higher level cognitive skills to achieve the learning objectives. Figure 2 explains the relationship between the learning objectives and the course tasks. The overall task required participants to: plan an authentic online course for their area of teaching in higher education, create a detailed course outline and present a video overview of the course to their colleagues. Specific requirements were outlined in the course guide and example documents, readings and tutorials were used to guide the learning.
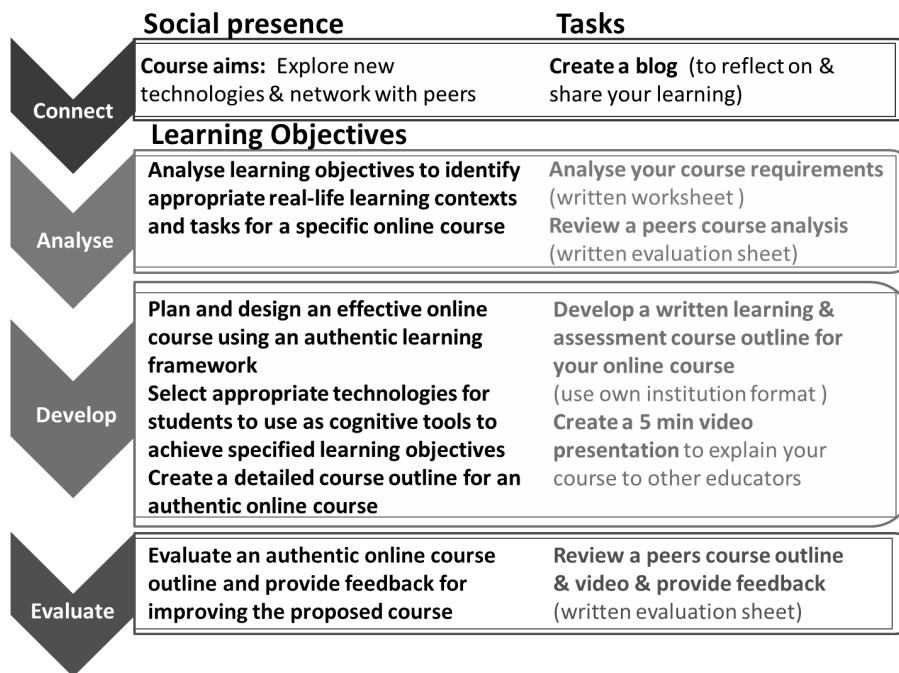
Social presence	Tasks
Course aims: Explore new technologies & network with peers	**Create a blog** (to reflect on & share your learning)

Learning Objectives

Analyse learning objectives to identify appropriate real-life learning contexts and tasks for a specific online course	**Analyse your course requirements** (written worksheet) **Review a peers course analysis** (written evaluation sheet)
Plan and design an effective online course using an authentic learning framework **Select appropriate technologies for students to use as cognitive tools to achieve specified learning objectives** **Create a detailed course outline for an authentic online course**	**Develop a written learning & assessment course outline for your online course** (use own institution format) **Create a 5 min video presentation** to explain your course to other educators
Evaluate an authentic online course outline and provide feedback for improving the proposed course	**Review a peers course outline & video & provide feedback** (written evaluation sheet)

The vertical arrows on the left are labelled: **Connect**, **Analyse**, **Develop**, **Evaluate**

Figure 2: Relationship between learning objectives and tasks

The course was implemented using a *Moodle* LMS and an open companion website created on *Google Sites* (see Figure 3). The LMS acted as the central hub for course announcements and provided a protected environment for the confidential components of the course. The companion website was the primary learning environment and contained detailed task instructions, course content, task and support resources.
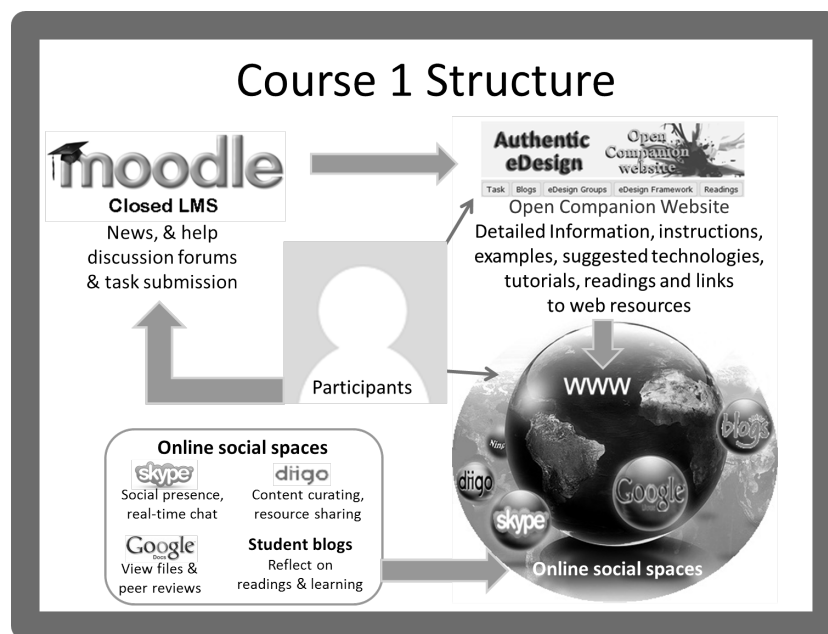
Course 1 Structure

moodle
Closed LMS
News, & help discussion forums & task submission

Authentic eDesign Open Companion website
Task | Blogs | eDesign Groups | eDesign Framework | Readings
Open Companion Website
Detailed Information, instructions, examples, suggested technologies, tutorials, readings and links to web resources

Participants

Online social spaces
skype — Social presence, real-time chat
diigo — Content curating, resource sharing
Google Docs — View files & peer reviews
Student blogs — Reflect on readings & learning

WWW
Online social spaces

Figure 3: Authentic eDesign course structure

A *Skype* chat group and a *Diigo* bookmarking library group were created to encourage participants to engage in social and cognitive discourses. *Google Docs* was used as a collaborative space for students to share their website URL to facilitate peer reviews. Links to web-based tools such as wikis, websites, blogs, videos and podcasts were included to assist students explore how new technologies could be

used as cognitive tools to support student learning. Students were also required to create a blog and reflect on their learning throughout the course.

Fourteen higher education practitioners within three Western Australian universities registered for the course. Several people withdrew from the course before completing the week one activities. All cited lack of time due to high workloads as the primary reason for withdrawing from the course: "we are a little under the pump at the moment, I am writing a whole new unit" (Participant AW, email). Six participants from two universities completed the course.

According to Maor and Volet (2007) high dropout rates in online professional development courses is common and attrition rates vary from as low as 13.5% to as high as 75%. Factors such as motivation, readiness to study, technical skills, and lack of time due to workloads, or family commitments are common barriers to completing online courses.

Despite their lack of time due to a variety of reasons such as; taking a new role (Participant MA, email), running an intensive week teaching an MBA unit (Participant GS, email) and teaching an Open University Australia unit that runs back to back with no breaks (Participant EC, email), it was obvious that practitioners that withdrew were keen to learn about authentic pedagogies and new technologies as many requested to be transferred to the second course scheduled to run in April 2012.

Course evaluation

The purpose of the evaluation was to decide on whether the authentic learning pedagogical strategies and technologies employed were effective in facilitating participant learning, and to identify improvements for future iterations of the course. Qualitative methods allowed detailed information to be collected from participants about their experience with the authentic learning environment and tasks. Bain's (2003) adaptation of Alexander and Hedberg's integrated evaluation framework provided overall guidance and suggested appropriate data collection methods for each phase. Data collection methods included: a participant background survey (before the course), a participant teacher perspective survey (after the course), participant artefacts and comments made during the normal progression of the course, facilitator reflections and an anonymous online course evaluation questionnaire completed by participants at the end of the course.

The focus of this paper is a preliminary analysis of the data collected from the anonymous online course evaluation conducted at the end of the first iteration of the course and the facilitator's reflections about the course to identify potential improvements for the second iteration of the course.

Five participants completed the online course evaluation questionnaire which included thirty-five closed questions (using a four point scale, see Table 1 below) and two open short answer questions. The initial data analysis indicates practitioners responded positively to this innovative learning approach as all participants agreed *the course was a useful professional development opportunity*.

It is interesting to note that a couple of the participants did not think the *tasks were ill-defined and open to multiple interpretations*. Each participant produced a course outline tailored to their specific area of teaching and identified appropriate learning and assessment methods and supporting technologies. No two course outlines were the same, and participants identified a wide variety of methods and technologies which indicated the task was open to multiple interpretations. Perhaps they were suggesting that the task was not *badly*-defined, which is a common misinterpretation of this element.

In response to the first short answer question: *What did you think were the strongest aspects of the course?* one person responded "I was able to redevelop my unit plan and activities in my online unit as part of the course … ready for semester one". Another commented on the flexibility of being able to control the pace of their learning "the online aspect of the unit allowed me to complete the tasks at my convenience". Access to new technologies was another positive aspect identified by a couple of

participants: "the opportunity to develop my units with more consideration of how technology can support learning" and "appropriate technology choices".

Table 1: Participant course evaluation questionnaire responses

Question	Strongly agree	Agree	Disagree	Strongly disagree
The course context represented the kind of setting where the skill or knowledge would be applied	60%	40%		
The course environment provided a flexible pathway, where I was able to move around at will	80%	20%		
The tasks mirrored the kind of activities performed in real-world applications	100%			
The task was presented as an overarching complex problem	60%	40%		
The activities required significant investment of my time and intellectual resources	80%	20%		
I was able to choose information from a variety of inputs, including relevant and irrelevant sources	40%	40%	20%	
The tasks were ill-defined and open to multiple interpretations		60%	40%	
The tasks afforded the opportunity to examine the problem from a variety of theoretical and practical	20%	80%		
I was required to take on diverse roles across different domains of knowledge in order to complete the tasks	20%	60%	20%	
Task assessment (evaluation) was seamlessly integrated with the major task in a manner that reflected real-world practices	40%	60%		
The tasks allowed a range and diversity of outcomes open to multiple solutions of an original nature	80%	20%		
The learning environment provided access to expert skill and opinion	100%			
The learning environment allowed access to other learners at various stages of expertise	100%			
I was able to hear and share stories about professional practice	40%	60%		
I was able to explore issues from different viewpoints	20%	60%	20%	
I was able to use the learning resources and materials for multiple purposes	100%			
I was provided with sufficient opportunities to collaborate (rather than simply cooperate) on tasks	20%	60%	20%	
I was provided with sufficient opportunities to reflect on the course content and my own learning	20%	80%		
I was required to make decisions about how to complete tasks	100%			
I was able to move freely in the environment and return to any element to act upon reflection	80%	20%		
I was able to compare my thoughts and ideas to experts, teachers, guides and/or peers	40%	60%		
I was able to work in collaborative groups that enabled discussion and social reflection	20%	60%	20%	
The tasks required me to discuss and articulate my beliefs and growing understanding		100%		
The environment provided collaborative group spaces and forums that enabled articulation of ideas	40%	60%		
The environment enabled more knowledgeable learners to assist with coaching	40%	60%		
The facilitator provided contextual support and guidance	100%			
The facilitator provided timely and helpful feedback	100%			
The activities culminated in the creation of a polished product that would be acceptable in the workplace	80%	20%		
The task enabled me to present my finished product (concepts and ideas) to a public audience	60%	40%		
The activities allowed for multiple assessment measures	60%	40%		
I felt comfortable learning in an open environment	20%	60%	20%	
The technologies I was required to use in the course aided my learning	60%	40%		
The recommended readings were useful for learning about the concepts covered in the course	60%	40%		
The technologies used in the course demonstrated some of the ways these tools could be used to assist student learning	80%	20%		
Overall I thought the course was a useful professional development opportunity	80%	20%		

Responses to the second short answer question: *What areas do you think could be improved?* identified a few areas for improvement. One person stated "the blogging was difficult as I struggled a bit with the purpose" and another advised "3 hours a week was nowhere near enough time to allocate". Participant workloads were also an issue "because I was so busy, I would have liked the course to have one less element to complete – I didn't complete the video (which I feel guilty about)". A constructive suggestion about the use of the *Diigo, Skype* and *Google Docs* technologies was offered by another participant "I wonder if these could have been introduced with a brief, specific activity that both familiarise us with the technology and demonstrated its usefulness to our learning".

The facilitator reflections confirmed that most learners struggled to complete the activities within the allocated time frame and that some participants had issues installing the necessary software on their work computers. They also thought a blog was not the best tool to use for participants to reflect on their learning and encourage discourse about the concepts covered in the readings as the time required to setup and learn about blogging left little time for student reflection due to the short duration of the course.

Recommendations for improvements

Participant responses and facilitator reflections from the initial course were mapped against the elements of authentic learning and recommendations were identified (Table 2) for improving future iterations of the course. No issues were identified for the following elements: authentic context, expert performances, multiple roles and perspectives, articulation, coaching and scaffolding or authentic assessment.

Table 2: Authentic learning elements, issues and recommendations for improvements

Elements	Issues	Recommendations
Authentic tasks	Time allocation insufficient.	Increase the time allocation and reduce content or simplify tasks (e.g. replace overview video with simple feedback screencast). Advise participants to install software prior to course commencement.
	Task technologies (*Skype, Diigo*).	*Skype* – include reading and forum question about social presence. *Diigo* – encourage participants to comment on readings and add a resource to the *Diigo* group.
Collaboration	No issues identified but limited collaboration required.	Include peer review of analysis worksheet.
Reflection	Pre and post course participant surveys.	Use a different tool so participants can refer back to their pre course survey.
	Blogging purpose not clear and time consuming.	Replace blog with an easy to use tool (e.g., a forum for weekly reflections).

Conclusion

A major challenge for instructional designers and practitioners for implementing authentic online learning is aligning the critical components of authentic tasks with effective learning principles (Herrington et al., 2010). An online course that provides practitioners with the opportunity to learn and use an authentic learning framework can assist practitioners address this challenge. Immersing practitioners in the theoretical environment they are learning about has the potential to change existing online teaching practices (Maor, 2003) using a bottom up approach (Oliver, 2005).

The preliminary data analysis, discussed in this paper, appears to support Maor and Oliver's conclusions. Most participants agreed this innovative online approach was an effective method of learning that provided them with new skills and ideas that they are keen to explore in their own courses. A full data analysis is yet to be completed; however, it appears that lack of time due to high workloads continues to be a barrier for educator participation in professional development opportunities. If universities wish to improve the quality of existing online courses, further research is

needed to identify ways of overcoming this barrier at an administrative level to encourage greater participation.

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