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Practitioner practices for designing and delivering online higher education courses within a learning management system

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Over the past few decades there has been a massive swing among educational theorists and practitioners towards a more constructivist approach to learning. However, it is still evident that many instructivist models are widely used in both classroom and online learning environments. This article looks at how online learning is currently being delivered within the higher education sector and identifies the elements of more constructivist approaches that are being employed and how technology is being used to support student learning. It discusses some of the challenges educators face for designing and delivering student-centred learning environments and proposes a framework for investigating more authentic and engaging learning environments.

Keywords: constructivism, online learning, higher education, technology

Introduction

Research indicates there is a significant gap between preferred constructivist online teaching practises and actual practises (Kim & Bonk, 2006; Maor, 2003; Oliver, 2005). A current trend within higher education is to deliver online courses via content management systems (CMS). However, many believe they are primarily used to manage learners rather than to provide quality learning experiences (Kim & Bonk, 2006; Oliver, 2005).

Online learning is not just technologies or content followed by a test. Rather, it is a complex mix of physical and social technologies, applications, activities, and presentations designed to teach, combined with a set of services that helps support the entire online learning experience. It is more than just delivery of information—it is about communication, collaboration, performance support and knowledge sharing (Knight, 2002; Maor, 2003; Woodill, 2007).

Lack of time, online pedagogical competency and technical skills has caused many teachers to simply dump large tracts of information into online courses. This information delivery model (Miller, 2000) has led to student boredom and isolation, resulting in high dropout rates and pleas for richer and more engaging learning experiences (Kim & Bonk, 2006; Maor & Volet, 2007; Reeves, Herrington, & Oliver, 2002). And yet, linking learner needs, pedagogy and technology has created the “perfect e-storm” for creating effective online learning environments (Kim & Bonk, 2006, p. 22).

This paper articulates how the first phase of a design research approach was applied to explore possible solutions for designing and implementing effective online higher education courses based on a social constructivist model of learning using a learning management system.

Research approach

Educational design research “embraces the complexity of learning and teaching and adopts interventionist and iterative posture towards it” (Kelly, 2004, p. 105). Like action research it is accomplished at the coal face however it involves an ongoing iterative process to monitor the effectiveness of a specifically designed artefact “to provide immediate (and accumulating) feedback on the viability of its ‘learning theory’ or ‘hypothetical learning trajectory’ ” (Kelly, 2004, p. 105).
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).

Design research is also commonly called design-based research, development research and design experiments (van den Akker, 2006). It is an iterative research process which Reeves (2006) described as four connected phases; illustrated below in Figure 1.

![Design-Based Research](image)

**Figure 1 - Four phases of design research (Reeves, 2006, p.59)**

**Phase One – Analyse the problem**

Phase 1 addresses three key areas; the problem, the literature review and practitioners experiences. During this phase the researcher clearly articulates the problem and investigates what work has already been done in the same or related fields. By the end of Phase 1, the researcher should be able to create preliminary research questions to guide the research (Herrington, Reeves, & Oliver, 2010).

1/ The problem

As an e-learning practitioner recently employed in the higher education sector to re-write an existing online unit, I was given a detailed contract prescribing a set amount of content to be developed for each module with a minimum of 10 modules to run over a standard 13 week semester.

The unit outline clearly articulated a constructivist learning approach and included assignment projects that required students to demonstrate their knowledge. However, the delivery approach was primarily a traditional teacher-centred information delivery model with weekly learning activities and little encouragement for student interaction and engagement.

Real-world tasks, workplace examples and synchronous web conference meetings were included in an attempt to make the online unit more student-focused, interactive and engaging. Anecdotal feedback from students at the end of the course indicated their overall learning experience was positive. However, from a practitioners’ point of view, I felt the unit contained too much teacher directed content and learning activities which required relatively high technical skills and time to create, but appeared to add little value to the overall learning.

After delivering this unit, I came across an article written by Herrington (2009) on authentic e-learning in higher education. In her article, she describes ten characteristics of authentic tasks that can be used to design real-world complex tasks that learners will encounter in their professional working life. She believes authentic learning tasks are “an appealing pedagogical approach” (p. 15), and calls for more rigorous research in this field in order to verify that the pedagogical approach can be consistently replicated across various fields of learning. She encourages future researchers to use a design-based research approach so that both “practical and scientific contributions” (p.16) can be made to the field of teaching.
Herrington’s article resonated with my own experience of online learning and, as a novice researcher, I am keen to explore how an authentic learning framework can be implemented within a learning management system (LMS) to provide effective and sustainable online learning for higher education students.

2/ Literature review

21st century learning
Over the past few decades the computerisation of work has resulted in many jobs becoming much more knowledge intensive and the rapid expansion of modern technologies are “changing the ways we produce, consume, communicate and think” (Collins & Halverson, 2009, p. 5). Just as the industrial revolution radically changed the education system in the 19th century the current knowledge revolution is starting to have a profound impact on the way we learn. People are wanting more control over where they learn, what they learn and how they learn and more opportunities to interact with their peers and other supports (Collins & Halverson, 2009).

Learner autonomy and control challenges traditional teaching approaches that have evolved over the past 200 years and many believe that online learning reduces the role of educators to that of a facilitator, raising concerns about the capacity for critical online engagement (Kop, 2008). Emerging research indicates other factors such as learner confidence and level of autonomy also play an important role in learner engagement and initial findings indicate that many students lack the required skills for independent learning (Lombardi, 2007). To thrive in our emerging global society, learners will need expert thinking and complex communication skills (NETS for students, 2007). The increasing availability of new technologies such as social networking websites, and other online tools that enable people to communicate and collaborate have the potential to improve student engagement and knowledge construction (Lombardi, 2007).

If universities wish to remain competitive in our rapidly changing world and meet the needs of 21st century learners they need to look at how society is using the Internet and other emerging technologies in their everyday life (Allen & Long, 2009).

New technologies
Contemporary society uses the Internet to perform all kinds of knowledge based activities in their everyday life, but higher education has failed to keep pace and systems that once facilitated online learning now constrain it (Allen, 2009). E-learning developers and researchers suggest Web 2.0 technologies have the potential to revolutionise the education sector moving it from a hierarchical teaching approach to a more networked approach (Allen & Long, 2009; Kop, 2008) but in order to take advantage of the affordances of the Internet, higher education needs to develop new systems that can act as portals to provide learners’ with easy access to the wealth of knowledge and sophisticated tools already available to society (Allen & Long, 2009).

Others suggest rich learning environments that foster deeper student learning and engagement can be created using a combination of CMS tools and learning principles such as: social, active, contextual, engaging and student-owned (Carmean & Haefner, 2002).

However, most agree that the design of the learning environment plays an important role in successful online learning and that “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”).

Constructivist learning theories
Many constructivist theories have been produced to explain how people learn (Maor, 2007; Shelley, Cashman, Gunter, & Gunter, 2008; Smith, 1998; Tovey & Lawlor, 2008). This review has focused on situated (Brown, Collins, & Duguid, 1989), and authentic (Herrington, 1997) learning theories as the aim of this study is to explore how authentic learning approaches supported by new technologies can
be implemented within a learning management system to provide effective and sustainable online learning for higher education students.

**Situated learning**
The first model of “situated cognition” was proposed by Brown, Collins and Duguid in 1989. They defined authentic activities as “the ordinary practices of the culture” (p. 34) and explained that learners needed to experience the activities and culture of the community in order to build an implicit understanding of how to act effectively within the community. However, this theoretical model appeared to have little impact on educational practices as “no comprehensive model of the approach for classroom practice had emerged” (Herrington, 2006, p. 1).

In 1997, Herrington (1997) identified nine critical elements of situated learning and developed a model of situated learning that could be applied to educational practice. Using this model, Herrington further explored authentic learning activities and identified ten elements of authentic tasks that could be used as a framework for designing and assessing authentic learning environments. Initially she used the model to design and evaluate multimedia and web-based learning environments. However since then she has refined and applied the model more generically to learning environments within higher education (Herrington, 2006).

**Authentic learning**
Authentic learning is a process involving the dynamic interactions between the learner, the task and the environment. Authentic tasks that encourage and support student engagement and immersion in a cognitive real environment can facilitate self-directed and independent learning (Herrington, 2006), encourage confidence, and cultivate “portable skills” such as judgement, patience, synthetic ability and flexibility that most learners have difficulty in grasping (Lombardi, 2007). Advocates of authentic learning argue the more students are exposed to authentic communities of learning the better prepared they will be to deal with “the messiness of real-life decision making” (Lombardi, 2007, p. 3) required in the workplace (Herrington, 2006; Herrington, Reeves, & Oliver, 2007; Lombardi, 2007).

Some educators suggest creating an authentic learning experience requires fostering community partnerships so that students are actually engaged in real-world activities outside the classroom (Grift, 2009). Others suggest it is more important to engage learners cognitively with a meaningful and realistic scenario rather than create an exact replica of a real-life workplace context or be immersed in a real-world environment (Herrington, 2006; Herrington, et al., 2007).

Spittler (2009) supports the view that authentic learning does not need to be connected to real work to immerse and engage students but suggests that authenticity is only achieved when the learning experience makes sense to the student. Bain (2003) argues that cognitive engagement and external connectedness does not guarantee students will grasp the underlying principles and concepts of the task and advocates a combination of instructivist and constructivist approaches.

Despite the variety of interpretations, it appears context, making connections and social interaction play an important role in helping learner’s assimilate new information. Emerging cognitive research indicates authentic learning principles align with “the way the human mind turns information into useful, transferable knowledge” (Lombardi, 2007, p. 7). Therefore designing online learning environments based on authentic learning pedagogies supported by new technologies has the potential to improve the quality of online learning within higher education.

**Designing authentic e-learning environments**
The central element in the design of an authentic learning environment is the task students are required to perform (Herrington, Reeves, Oliver, & Woo, 2004). Authentic learning environments are not content driven-they are process driven-and require students to complete complex real-world tasks over a period of time in collaboration with others as they would in a real workplace (Herrington, 2006). Designing, developing and delivering authentic activity-based courses requires more thought, effort and time than content-based courses and is often a labour of love by practitioners keen to
improve student learning outcomes based on recent research findings and the affordances of new
technologies (Herrington, et al., 2004; Reeves, et al., 2002). Environments that make effective use of
communication technologies to connect learners in meaningful ways and include relevant learning
activities are the most successful (Herrington, Reeves, & Oliver, 2006). The 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., 2007).

Other challenges for higher education are; the difficulty in determining how authentic learning
theories and characteristics can be implemented effectively within rigid learning management systems
(Agostinho, Meek, & Herrington, 2005; Herrington, 2006), and how to provide support to teachers to
assist them to use and implement new technologies (Oliver, 2005).

Professional development
Research suggests teachers need to experience new learning environments as learners themselves in
order to implement changes to their teaching approach (Maor 1999). “Like other learners, teachers
construct their knowledge through social interaction with peers, through applying information in
practice, and through reflecting on and modifying those ideas” (Maor, 1999, p. 309).

3/ Practitioner experiences

Design research emphasises the knowledge of practitioners and seeks to use their insights in the
design of the research and potential solutions to educational problems. Face to face informal
discussions conducted with peers supported much of the information identified in the literature
review and also revealed that professional development played an important role in encouraging
the use of constructivist e-learning approaches.

Unit design and delivery
Many online courses are still primarily designed around a traditional information delivery model,
however, in most courses some constructivist pedagogies have been included in an endeavour to
provide students with a better quality learning experience.

Constructivist pedagogies
Discussion forums were the most common method teachers used to create more interactive
environments and encourage communication and knowledge sharing. All teachers agreed that student
interaction and participation was essential to assist learning. However, all indicated they had to make
the discussions assessable otherwise students would not participate. Other methods used to encourage
interaction and participation were: online quizzes, role plays and case studies.

Access to content
To provide students with more flexible learning options, most courses provided access to the
entire course content from the start of the semester. Although all still provided a weekly schedule
of learning tasks and activities to guide student learning some courses enabled students to work at
their own pace and submit tasks within a time range rather than a specific date.

Quality online courses
In accordance with the literature teachers felt the quality of online learning needed to be improved and
that student demand would push some major changes in this area in the near future.

Most engaging aspect of the unit
From the lecturers’ perspective the most engaging part of delivering an online unit was the quality of
the online discussions. One lecturer commented that she thought the students really liked the
discussions that were more structured and scenario based as they appeared to really engage the
students in the learning. Another commented that the students liked the discussions because it enabled
them to communicate with her and their peers which made them feel less isolated. All agreed that the
quality of the online discussion was better than face-to-face in-class discussions and most thought this was because in an online environment students had more time to research and reflect on their responses and everyone had the opportunity to participate.

**Design and implementation issues**
LMS constrictions, interface design issues, working with unit coordinators with different ideas, students not reading instructions and difficulties with educating students to take more responsibility for their learning were some of the design and implementation issues teachers encountered with online learning.

**Technology**
Learning about new technologies was high on most lecturers’ agenda but time to explore and attend training was an inhibiting factor.

**Faculty support**
In regards to faculty support, lack of recognition and time for designing and delivering quality online teaching was very frustrating for some teachers.

**Professional development**
Most agreed professional development opportunities provided by their institutions was good for learning how to use the LMS and associated technologies but there were few opportunities to learn about online pedagogies, how new technologies could be used to achieve the desired learning outcomes or training on instructional design strategies.

**Peer support network**
One of the most valuable methods for teacher learning that emerged from the discussions was peer networking. Being able to discuss what worked and what didn’t and how others have overcome similar issues appears to be highly valued by practitioners but many feel they are given little encouragement for working with peers to improve the quality of their teaching.

**Conclusion**
The initial literature review together with informal peer discussions suggests an authentic learning framework that incorporates the affordances of new technologies has the potential to create a more student centred learning experience to improve the quality of online learning in higher education.

Oliver (2005) argues that bottom up approaches will drive the use of new technologies and that teachers will use new technologies when they see that they can solve a problem and have easy access to it. This idea was supported by peer conversations as most teachers indicated they were looking at ways to make their online courses more interactive and engaging and were slowly starting to integrate new technologies.

Practitioners indicated professional development opportunities that focused on; how to implement constructivist approaches within a learning management system, how new technologies could be used to achieve learning outcomes and the opportunity to share their ideas and thoughts with their peers would contribute greatly to improving the quality of online courses. Practitioner skills greatly impact the design and implementation of online courses therefore this area will be researched in more depth in phase 2 to gain an insight into what others have done in this area.

**Phase two – Design and develop potential solution**
Phase 2 of the design research approach focuses on designing and developing solutions to the problem. During this phase a second literature review will be conducted to find relevant theory to guide the research project and to identify existing design principles that will inform the design of a
course that will potentially provide a solution to the problem of designing and delivering quality online learning within higher education (Herrington, et al., 2010).

One possible solution for improving the quality of online learning in higher education is to create an online professional development course based on an authentic learning framework where practitioners can experience online learning via a learning management system from a student’s perspective, learn how to use an authentic learning framework for designing and implementing their own authentic learning courses and have the opportunity to network with their peers.

The following draft research questions have been created to guide the research project:
- What design principles exist that can be used to guide the design of an authentic online course for delivering a sustainable and effective professional development for higher educational practitioners?
- What are the essential components of effective online learning?
- What online pedagogies are appropriate to achieve the desired learning outcomes?
- What technologies are available to support online communication and collaboration?
- What technologies can be used as cognitive tools by students to demonstrate their learning?

The information and principles derived from the first phase investigation will guide the following phases of this study. Relevant theories, design principles and existing frameworks will be explored in depth to develop a framework for the course design. The initial and revised implementations of the learning unit (based on the framework and principles) will be studied and reported in future forums.

References


