Literature Review: Learning Management Systems in Higher Education

Jennifer Watson

The University of Alabama

Introduction

Use of the learning management system has become nearly ubiquitous in the modern college experience and essential elements of the modern college experience. Whether distance or traditional student, residential or commuter campus, undergraduate or graduate, these systems have rapidly been accepted throughout higher education. In the past ten years, online course management systems have replaced other alternative means to deliver class contents such as live satellite or closed circuit television (Falvo & Johnson, 2007). The introduction of learning management systems, along with increased computer use in the home and in business has brought an increasing number of students and teachers to the online learning environment (Falvo & Johnson, 2007).

Both technology as a whole and learning management systems specifically have had rapid transformations over the past 15 years. Initially introduced in the 1990s, course management systems have evolved over time into the current incarnation of learning management systems. Often times these words are still used interchangeably, but they have significant differences. Course management systems have a much more narrow focus of delivery and contents of courses. In contrast learning management systems allow for increased focus on the learning needs of the student and needs of the e-learning instructor regarding tasks (Iqual & Qureshi, 2011). Originally these were created as simple web pages and generic content libraries, which included early innovators such as Stanford Online Web Page in a Box, and Topclass in the 1990s. In 1997, Indiana University developed the Oncourse Project, developing the concept of the template-based course management system that would become the foundation for many later learning management systems including WebCT and Blackboard. Commercial software company Blackboard has come to dominate the learning management system market in the

United States, however as of 2009 there has been large amounts of growth in the usage of open source learning management systems in higher education institutions in the US, with the leading open source product being Moodle (Rooji, 2011). In contrast, the European market is not dominated by the few big players in the American market. Most of the learning management systems in Europe are sold by small commercial vendors or are developed by the institutions themselves (Falvo & Johnson, 2007). Learning management system implementation is varied throughout higher education, but the usage of this software has become standard at colleges and universities.

Significance of the Topic

Because learning management systems have become so commonplace within the higher education environment, this is an important research topic. The experiences and concerns of institutions, faculty, and students are one of the most important issues regarding this topic. First, the selection process and implementation of a course management system is a basis for consideration. Next, integrating the course management system into theoretical approaches commonly used in face to face courses presents challenges. Lastly, managing the sometimes conflicting needs and expectations regarding the experience in the learning management system is another element of this significant issue.

Discussion of the Topic

Implementing a learning management system is a large decision for a higher education institution. A large consideration of this decision is the financial cost. Most vendors offer a robust learning management system product, but require upfront costs and yearly site licenses. These costs may be especially cost prohibitive if it is a single department or even a small

university which is considering purchasing the learning management system. To overcome these issues, some schools have developed their own learning management open source system, such as OpenUSS (Grob, Bensberg & Dewanto, 2004). Institutions should consider exactly what objectives they wish to achieve through the LMS before acquiring a system. Iqbal and Qureshi (2011) suggest the following factors as the most important considerations when selecting a learning management system: organizational goals and objectives, technical specification and support, design specifications, clear and user friendly graphical interface, well designed course repository, course administration capability, capability of interaction among users, evaluation and feedback, student's profile, and pedagogy. Whether developing an in house system, opting for an open source solution or purchasing a large system, these issues shape the learning management system decision.

After deciding which learning management system to implement, an ongoing issue for many in higher education is how to utilize it in ways that expand on learning and also create an optimal experience for both students and faculty. There has been some research in regards to using learning management systems in a way which promotes learning. The setup for many learning management systems, such as the standard of WebCT and Blackboard, often contradicts these principles and emphasizes information delivery rather than true learning, (Herrington, Reeves, & Oliver 2005 cited in Herrington, 2006). Utilizing constructivist principles with a focus on authentic tasks, cognitive realism, and suspension of disbelief can help facilitate more opportunities for an authentic experience within a learning management system. Creating deeper learning within a learning management system presents challenges within the online environment (Herrington, 2006). Deeper learning principles can be utilized in a variety of ways in a learning management system, but often faculty must think outside the box to implement

these strategies. Virtual chat, discussion boards and announcement postings all allow for the social learning element, encouraging interaction between faculty and students. Interactive tests with immediate feedback facilitate active learning where practice and real world tasks are emphasized. Carefully chosen hyperlinks to websites let students explore additional information in a contextual way, integrating the knowledge into the student's world. Engaging learning, respecting multiple talents in a high challenge, low threat environment can be achieved through the use of audio/visual tools and multimedia. Utilizing the learning management system to enhance the ability of students to seek answers quickly can empower them autonomously and allow them to take control through student-owned learning, (Iqbal & Qureshi, 2011).

In addition to ensuring that students are achieving meaningful learning, it is also of utmost importance that they are having a positive experience in the learning management system environment. E-learning is only going to have a greater impact of the learning of students going forward and it is obvious that learning management systems as a resource to students are clear. Materials are available at any time and from any location on or off campus, lectures or difficult topics can be rewatched multiple times for optimal understanding, and the combination of audio/visual slides and notes serves students of differing learning styles (Raj, 2011). Students have voiced concern over issues within learning management systems. Raj (2011) found that students found the design to not be user friendly, have an unintuitive layout and had difficulty reading from the screen. The quality of content from instructors online also varied considerably. Students also appreciated the ability of learning management systems to provide a central repository for information and course announcements. This ease of access allowed them to meet deadlines and have more efficiency with their time.

Both distance and on-campus students found the collaborative tools such as wikis and discussion boards an especially valuable place to share learning during group tasks (Heirdsfield, Walker, Tambyah, & Beutel, 2011). However, differing types of students may present different needs from coursework and experiences in the learning management system. Residential campus students value more interactions with content in the learning management system, while commuter campus student value more learner to learner experiences in the learning management system (Lonn, Teasley & Krumm, 2011). In addition, the effect of learning management systems should be especially be considered with unique populations of learners such as those learning a language through a learning management system. How well the learning management system conforms to communicative language learning theories, the nature of distance learning and the capability and potential of the system should all be considered when considering this type of coursework in the learning management system (Wang & Chen, 2009). Ensuring that a learning management system is used and developed in a way to serve all learners and facilitate the college experience is of utmost importance.

While student concerns are important, faculty issues cannot be forgotten, as instructors are the key to guide the educational experience of students. Instructors may come to e-learning in a variety of different ways. Some courses are completely online, while others may be a mix of face to face and online elements. Instructors may be pressured by their intuitions to use a learning management system or they may wish to reach a broader audience of students. Some instructors have an interest in technology assisted learning (Wagner, Hassanein & Head, 2008).

Faculty presents a variety of concerns in utilizing a learning management system for teaching. Technical sophistication requirements, acceptance of the tools among students and the time it takes instructors to create and administer e-learning courses are all issues presented from

faculty (Wagner, Hassanein & Head, 2008). Time concerns have been brought up with regularity from instructors. Vord and Pogue's (2012) research suggests that while face to face instruction requires more time per student, certain aspects of online teaching take considerably more time per student than in a face to face classroom. Instructors do value tools within the learning management system and overall feel value from its interaction. They especially value the ability to transmit documents and efficient communication enabled through the system. Instructor perception of the value of learning management systems to teaching and learning was highly variable, similarly suggesting along with student's views, that there is a high variability in the content and experience provided on an instructor by instructor basis (Lonn & Teasley, 2007). Concerns and values presented by instructors should carefully be considered when acquiring or utilizing a learning management system.

Conclusions

In conclusion, learning management systems are a huge force in technology in higher education today, presenting both some of the largest challenges and opportunities facing institutions. This area of research has many opportunities for study as learning management systems continue to be adopted and used in new ways. Considerations for how to develop or purchase a learning management system that fully meets the needs of learning, students and teachers remains at the forefront of research questions surrounding these systems. Further research can be done in the area of authentic learning and how to use the technology within the learning management system to foster a quality educational experience. Instructor and student feedback can be further captured to develop higher quality experiences within learning management systems. New features can be adopted as they are shown to serve various needs of learners. Learning management systems are only going to become further entrenched in the

higher education experience, so optimizing the software to fully serve students, faculty and the institutions themselves remains a priority for future and present research.

References

Craig, E. M. (2007). Changing paradigms: Managed learning environments and web 2.0. *Campus-Wide Information Systems, 24*(3), 152-161.

Falvo, D. A., & Johnson, B. F. (2007). The use of learning management systems in the United States. *TechTrends, 51*(2), 40-45.

Grob, H. L., Bensberg, F., & Dewanto, B. L. (2004). Developing, deploying, using and evaluating an open source learning management system. *Journal of Computing and Information Technology, 12*(2), 127-134.

Grob, H. L., Bensberg, F., & Dewanto, B. L. (2004). Developing, deploying, using and evaluating an open source learning management system. *Journal of Computing & Information Technology, 12*(2), 127.

Heirdsfield, A., Walker, S., Tambyah, M., & Beutel, D. (2011). Blackboard as an online learning environment: What do teacher education students and staff think? *Australian Journal of Teacher Education, 36*(7), 1.

Herrington, J. (2006). Authentic e-learning in higher education: Design principles for authentic learning environments and tasks.

Lonn, S., Teasley, S. D., & Krumm, A. E.Who needs to do what where?: Using learning management systems on residential vs. commuter campuses. *Computers & Education, 56*, 642-649. doi: 10.1016/j.compedu.2010.10.006

Mafuna, M., & Wadesango, N. (2012). *Students' acceptance and experiences of the new learning management system (LMS)-wiseup* Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=edswss&AN=000306168300005&site=eds-live&scope=site

Raj, R. (2011). Evaluating the innovation of online learning systems in higher education. *International Journal of Management Cases, 13*(4), 12-23.

Vord, R., & Pogue, K. (2012). Teaching time investment: Does online really take more time than face-to-face? *International Review of Research in Open and Distance Learning*, (3) .

Shahron Williams, v. R. Higher education sub-cultures and open source adoption. *Computers & Education, 57*, 1171-1183. doi: 10.1016/j.compedu.2011.01.006

Wagner, N., Hassanein, K., & Head, M. (2008). Who is responsible for e-learning success in higher education? A stakeholders' analysis. *Educational Technology & Society, 11*(3), 26-36.

Wang, Y., & Chen, N. S. (2009). Criteria for evaluating synchronous learning management systems: Arguments from the distance language classroom. *Computer Assisted Language Learning, 22*(1), 1-18.

Weaver, D., Spratt, C., & Nair, C. S. (2008). Academic and student use of a learning management system: Implications for quality. *Australasian Journal of Educational Technology, 24*(1), 30-41.

Williams van Rooij, S. (2012). Open - source learning management systems: A predictive model for higher education. *Journal of Computer Assisted Learning*, 28, 114-125.