Exploration Paper:

The Effective Use of Course Management Systems to Enhance Learning in the Secondary School Classroom

Author: Robert DeAbreu

Course: EDCP 585A

Professor: Dr. Marina Milner-Bolotin

Due Date: Friday July 20, 2012

Abstract

This paper asks what key elements need to be present in a course management system (CMS) to promote student engagement. It is true that CMSs allow for the effective administration of courses and, in this way, help to streamline this process for the teacher. But can a system that is designed for management have unintended negative consequences for learning? When considering the implementation of any technology in one's classroom, teachers need to carefully think of the ways they use this technology as a tool to achieve learning goals, and not to use the technology simply for its own sake. CMSs can have a positive effect on a classroom as they have the potential to help a teacher encourage student interaction in a safe environment, and to free up teacher time by automating administrative matters. This paper evaluates the characteristics of a CMS that one should seek to use in order to enhance learning in their classroom.

Definitions and Common Misconceptions

A Course Management System (CMS) is a system designed with software that utilizes Web 2.0 tools to help students and teachers manage course content and materials (Hamuy & Galaz, 2010; Ioannou & Hannafin, 2008; MacDuff, 2012; Perkins & Pfaffman, 2006; Romero, Ventura, & García, 2008; Sanprasert, 2010) . First designed to assist in distance learning and used for online courses, CMSs are now used by many institutions to supplement face-to-face classroom teaching (Nworie & Haughton, 2008; Romero, Ventura, & García, 2008) . These systems are also known by different names: Virtual Learning Environment (VLE), Learning Management System (LMS), Learning Content Management System (LCMS), Managed Learning Environment (MLE), Learning Support System (LSS), or Learning Platform (LP) but for the purposes of clarity I will

use the term "Course Management System" or "CMS" in this paper (Romero, Ventura, & García, 2008) . Common elements of CMSs include areas for presentation of content, discussion boards, chat rooms, folders for submission and return of tasks and assignments, collaborative space such as wikis, as well as optional quiz and survey functionality. Blackboard/WebCT/Vista, SharePoint, Moodle, Claroline, ANGEL, Ilias, TopClass, FirstClass, and U-Cursos are all examples of popular CMSs – some of which are commercially produced, and some, like Moodle, are free systems (Ioannou & Hannafin, 2008; Romero, Ventura, & García, 2008)   .

Research Question

Considering all the possible functions that a CMS provides, it may seem superfluous to question its value. Indeed, in my experience using a form of CMS – a portal system designed using Microsoft SharePoint – I found it useful in automating administrative tasks to help free up my time to be more effective at elements of teaching, such as giving feedback and structuring learning experiences, that cannot be automated and deserve dedication and focus. Many of my colleagues found this and other elements of this system useful and helpful. However, some teachers at my school found limitations in our SharePoint system and created their own "CMS" using open-source tools. Still more teachers offered complaints indicating one or more of the following concerns: fear of change, lack of IT support, or the large commitment of time necessary to remain current or learn new skills. Research shows that these and other concerns are quite common (Hoyles & Noss, 2008; Mishra & Koehler, 2007; Nworie & Haughton, 2008) which leads one to believe there is merit in some of these complaints.

More importantly, many of my students were frustrated using this system. While students' complaints may often indicate their reluctance to work, this is not always the case. I

often wondered how much of the frustration they expressed is grounded in inherent disadvantages that CMSs bring to learning that takes place inside and outside the classroom. In addition, there is the subject-specific awareness that Kaput raised about the problems that the outsourcing of elements of mathematics instruction to technology may have on learning (Hoyles & Noss, 2008). Moreover, there are general concerns about unintended consequences in the implementation of technology that one must consider (Nworie & Haughton, 2008). So, since students and learning are at the focus of what we do, it is very much worth examining elements of a CMS that are helpful to learning if many teachers are either choosing to implement a CMS in their classroom or are being asked to do so by their school administration.

Below is a list of the components that must be present in a CMS in order to enhance student interest and participation in any course. The more of these elements that a CMS has, the more likely it will have a positive impact on student learning. I have not included elements of CMSs that are common in solely online courses, such as test giving functionality and online grading properties. I do not see these as absolutely necessary to supplement face-to-face classroom teaching.

Communication

CMSs are set up primarily to encourage and enhance communication and sharing among members of a class. Discussion boards and chat rooms are great outlets for students processing the material they learn and can be used as sources of formative assessment for teachers. Some instructors use them to have the class take "group notes" on tasks so students each have a common source to work from when studying for tests as well as to have a place to process their thoughts while they do homework.

CMSs also come equipped with class announcement pages that allow teachers to post general announcements for the class members without filling their inbox with unnecessary e-mail. If an instructor is consistent about the use of the CMS for all class communications, then each student will know that they can simply go to the CMS for any information they need and they do not need to worry that they perhaps missed a message that was sent to their e-mail address or worry about keeping up with communications being sent to multiple accounts.

CMSs also help the teacher to make resources available to students and the functional element of storage is one that requires consideration. Teachers and students need to be able to store and share documents such as the course syllabus, course outline, course schedule, and links to specific lessons, readings, activities, videos, applets, simulations, resources and other course content. Separate folders should be set up to be populated by teachers and/or students.

The size of storage should be taken into consideration. Students enjoy interacting with and creating audio, visual, and video material, which can make this a valuable way to process and demonstrate their learning (Zhang, Zhou, Briggs, & Nunamaker, 2006) . However, the files generated by such endeavors take up a lot of hard disk space. There should be areas where content should be easily accessible – so the ability for students to embed videos in some of their discussion posts is valuable as a way to illustrate their ideas. Lack of sufficient storage space is often an obstacle for teachers who wish to offer media projects for students to do to express what they have learned. Some of the best CMSs are undermined due to a limited amount of storage space on the server.

Once files are stored, a CMS equipped with an adequate search function becomes a powerful tool. As time progresses, more and more files will be uploaded to the CMS, especially if

students are allowed to contribute. The ability to locate a particular file in and among the others stored there is important. Linked with this is the need for the teacher/administrator to enact a naming convention – a way that files will be named if saved to the server – so that it is still possible to find documents even if multiple people are contributing files to the system.

Many teachers outsource the storage of their documents to free or low-fee systems such as Google Drive (formerly called "Google Documents") and Dropbox.

To make files in any storage system easy to access, CMSs should undoubtedly have space, either in a blog or wiki format, to allow students a place to share links to videos, pictures, articles, or important sites that they discover. Blogs are better for longer reflective posts, and functionality for other students to respond to each post should be available to give the audience of these posts a chance to respond. Wikis have the advantage of being a shared collaborative space, which are better than blogs for storing and sharing links that are all connected to the same topic in one small space. In my mathematics classes, my class wiki was where my course content came to life and was made available and understandable to my students. This is where I organized my resources in an appropriate sequence. I also categorized resources for students so they understood the differences between assigned homework, and additional resources provided for practice, for revision, and for extension. This is where helpful videos, applets and simulations were linked to that would otherwise be difficult to administer to students.

Many teachers are simply using the communication applications that students are already using, such as Twitter, and Facebook, to enact intellectual discussions and promote learning. The strategy in this case is to meet students where they are already using technology, and help them to see a different use for these technologies other than to keep in touch with friends and fads

(Baird & Fisher, 2005) . For coursework, teachers used [Wordpress](#) or [Wikispaces](#) or [Blogger](#) or [Blogs](#) or [Wikispot](#) or [Wikia](#) to display their coursework, and invite students to collaborate on projects and homework.

Security

This is an often controversial characteristic of CMSs as some people argue the need to protect our children from content on the internet that they may not be ready for (Broad, Matthews, & Shephard, 2003) , while others argue that students need to use the internet without restrictions in order to be properly guided on how to use it (Maddux, 1999) . All CMSs offer password protection for users who can set up an account for themselves within the system to gain access to the content and facilities within and to make their identity known to other users. Most commercial systems make this mandatory and market the security of their system as one of the attractive features. Open-source providers give the option for the administrator to make content available to whomever they choose, so the administrator can choose to allow anyone to view and contribute, or restrict the access to simply those who have a password to access the site. This is especially true if using a wiki or a blog site to manage a course.

Teachers may choose to be more open with content as it is far more powerful for students to be able to post their ideas and work to a public page for many people to see than to send an idea or a link to one or more classmates via a security protected CMS (Lowenthal, 2009) . Many of my students became disinterested with the discussion boards within our portal system because only our class could see them, but became more enthusiastic and their output increased in quality when their outside audience grew larger – such as when posting a video to YouTube or making a blog post to a public site. Students wish to have an audience outside of their immediate group of

friends, which is why sites like YouTube and Facebook are so popular (Abendroth, Golzy, & O'Connor, 2011) . Still there are many security concerns that administrators, parents and school boards have that may prevent a teacher's consideration from even being allowed. Even if these stakeholders were not an obstacle, the issues of online bullying and other privacy considerations need to be taken into account – either regarding the need for security to help prevent problems, or with respect to routines in the class that are used to deal effectively with this and debrief these issues with students when they arise. Whether one chooses a CMS that allows freedom or security, the administrator of the site needs to ensure that postings made by members are of a certain quality and do not undermine the work students are doing on the site.

There needs to be security in storage as well. Some of the folders available on the site for file storage should offer read-only access to students, such as the folders that contain assignments or worksheets created by the teacher so they always maintain the same form and have the same content. Course "drop boxes" should be present for students to securely deposit their work so that they are not lost in and among e-mail messages received by the instructor. These drop boxes should allow students to deposit files, but not remove them once deposited and not be able to access and read work that other students have already placed inside the folder. Folders where teachers hand back work should be read only for students so that work handed back remains in its original state. In short, access rights of various members should be planned for the folders that will be available for use on the site.

Autonomy

Seemingly contrary to the elements of security necessary in managing a CMS is the potential of these systems to teach students lessons in self-regulation and metacognition by putting learning firmly in their hands (Vovides, Sanchez-Alonso, Mitropoulou, & Nickmans, 2007) . Structure is provided by the teacher, but it is up to the student to find the information online and to ensure that they are focused on their work rather than getting distracted by other applications or functions.

It is necessary for teachers to provide coaching for students as they manage their work in the course through the CMS. Most CMSs provide time stamps on the log in and log out times on the course site or other means for a teacher to track student use of the site. This data can be used to help the teacher begin a dialogue with a student about his/her work habits during the course and help the student to correct their behavior. Many teachers ask about the cat-and-mouse game that could ensue with a student who is not keen to learn these lessons and complete their work. It is true that students can find loopholes in this system and play them to their advantage. However, students have tried to do this for centuries, and the role of the teacher has always been to provide valuable guidance and firm boundaries in all these cases. The problems students can cause by attempting to avoid work should certainly not be an excuse for not implementing CMSs in a blended classroom. Students will need to navigate technology in a productive way in their future lives, and what better way to learn how than to use technological tools for schoolwork in their formative years under the care and guidance of their teachers and parents.

One of the great results of encouraging autonomy in these systems is imparting the value of life-long learning in our students and connecting this with their use of technology. Students now use many online facilities for various casual purposes. Students seek out challenges online, such as to master a new game or discover a new site or learn about the latest technological advancement. If

we can also guide them in this realm to see communication tools as ways to reach out to others for expertise as well as to share our own learning, then students have the potential to create a much wider learning community than was ever possible for generations before (Baird & Fisher, 2005) . Students simply can't learn the critical thinking skills needed to use technology safely unless they are using technology often and receiving feedback on how they use this technology.

Conclusions

To be effective in the enhancement of learning, teachers need to look for and take advantage of three qualities of any CMS: Communication, Security and Autonomy (Baird & Fisher, 2005; Hamuy & Galaz, 2010; Ioannou & Hannafin, 2008; Sanprasert, 2010; Vovides, Sanchez-Alonso, Mitropoulou, & Nickmans, 2007). If done with care and consideration, a CMS can help to enhance learning by engaging student participation at different levels, by providing systems to help protect students work from being compromised, and by enabling students to access and share resources and learning freely on their own terms (Hamuy & Galaz, 2010; Ioannou & Hannafin, 2008). However, the use of a CMS as part of one's classroom structure immensely changes classroom teaching. With learning happening in two environments rather than one, a teacher needs to be conscious that they must monitor the CMS with the same diligence as they monitor their classroom. In addition, with an increased amount of autonomy, use of a CMS puts the teacher in the role of a facilitator. Should a teacher be aware of the changes that will take place and should they be willing to be open and adaptable to them, they will achieve much greater learning outcomes than they could without these changes.

References

Abendroth, M., Golzy, J. B., & O'Connor, E. A. (2011). Self-created YouTube recordings of microteachings: Their effects upon candidates' readiness for teaching and instructors' assessment. *Journal of Educational Technology Systems, 40*(2), 141-159.

Baird, D. E., & Fisher, M. (2005). Neomillennial user experience design strategies: Utilizing social networking media to support" always on" learning styles. *Journal of Educational Technology Systems, 34*(1), 5-32.

Broad, M. J., Matthews, M., & Shephard, K. (2003). Audit and control of the use of the internet for learning and teaching: Issues for stakeholders in higher education. *Managerial Auditing Journal, 18*(3), 244-253.

Hamuy, E., & Galaz, M. (2010). Information versus communication in course management system participation. *Computers & Education, 54*(1), 169-177. doi:10.1016/j.compedu.2009.08.001

Hoyles, C., & Noss, R. (2008). Next steps in implementing kaput's research programme. *Educational Studies in Mathematics, 68*(2), 85-97. doi:10.1007/s10649-007-9102-4

Ioannou, A., & Hannafin, R. D. (2008). Course management systems: Time for users to get what they need. *TechTrends: Linking Research & Practice to Improve Learning, 52*(1), 46-50. doi:10.1007/s11528-008-0111-7

Lowenthal, P. (2009). Digital storytelling in education. *Story Circle, ,* 252-259.

MacDuff, G. C. (2012). *Enhancing mathematics learning with the moodle course management system.*

Maddux, C. D. (1999). Barriers to the successful use of information technology in education. *Computers in the Schools, 14*(3-4), 5-11.

Mishra, P., & Koehler, M. J. (2007). Technological pedagogical content knowledge (TPCK): Confronting the wicked problems of teaching with technology., 2214-2226.

Nworie, J., & Haughton, N. (2008). Good intentions and unanticipated effects: The unintended consequences of the application of technology in teaching and learning environments. *TechTrends: Linking Research & Practice to Improve Learning, 52*(5), 52-58. doi:10.1007/s11528-008-0197-y

Perkins, M., & Pfaffman, J. (2006). Using a course management system to improve classroom communication. *Science Teacher, 73*(7), 33-37.

Romero, C., Ventura, S., & García, E. (2008). Data mining in course management systems: Moodle case study and tutorial. *Computers & Education, 51*(1), 368-384. doi:10.1016/j.compedu.2007.05.016

Sanprasert, N. (2010). The application of a course management system to enhance autonomy in learning english as a foreign language. *System, 38*(1), 109-123. doi:10.1016/j.system.2009.12.010

Vovides, Y., Sanchez-Alonso, S., Mitropoulou, V., & Nickmans, G. (2007). The use of e-learning course management systems to support learning strategies and to improve self-

regulated learning. *Educational Research Review, 2*(1), 64-74.

doi:10.1016/j.edurev.2007.02.004

Zhang, D., Zhou, L., Briggs, R. O., & Nunamaker, J. F. (2006). Instructional video in e-learning:

Assessing the impact of interactive video on learning effectiveness. *Information &*

Management, 43(1), 15-27.