

Open-Source Online Course Management System
For Courses in Computer Communication
AMDS 8335: Principles of Knowledge Management
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For Courses in Computer Communication

The Department of Communication at the University of Louisville offers a required course in using computers as a means of communication. Comm 250 (the course designation) was originally designed to teach students how to use Microsoft Word, Microsoft PowerPoint, and Microsoft Excel to create documents they would ordinarily encounter in a work environment. When the Internet became popular, sections were added on how to use a web browser and how to search the Internet. In the last four years, instructors have added a section on how to create web pages using tools such as Microsoft Word and Microsoft FrontPage. Other than that, the course has changed relatively little since its inception over ten years ago.

It has become apparent over the last three semesters that Comm 250 must be completely redesigned to reflect what McNeely (2005) calls the "net generation." The net generation has grown up with computers all around them and they are used to the latest technologies and gadgets. They can be incredibly innovative but get bored quickly if not challenged. Telling them how to do something through lectures is the sure way to bore them because their preferred method of learning is through doing (p. 4.3)

Every semester, this instructor takes a survey on basic computer and Internet skills. Each semester since 2000, the number of students who know how to use Word, Excel, and PowerPoint has increased to a substantial majority of students while over half of the students have built a simple web page. Thus, the course content is no longer new to students because these are skills they have mastered. The knowledge management

initiative must teach new skills that are relevant to the students' technology environment today.

Another important aspect of the net generation is that prefer social interaction as a means of learning. "While they may use technology in their daily lives, relationships are a driving force in the learning process" (McNeely, 2005, p. 4.5). Therefore, the knowledge management initiative must also have opportunities for students to learn through virtual and face-to-face social interactions.

In designing the Course Management System (CMS) for Comm 250, these two goals must be addressed. First, the CMS must reflect the new technologies that students use and be flexible enough to incorporate future technologies as they develop. Second, the CMS must provide opportunities for social interactions by having students learn by doing in a group environment. Instead of being an online version of the traditional classroom, the Comm 250 CMS will be designed to reflect the Weigel (2005) four capabilities model. The next section will describe Weigel's model in more detail.

Weigel's Four Capabilities CMS Model

Weigel (2005) suggests that CMS systems be learner-centered in that they help the student to develop four capabilities: "critical-thinking", "self-confidence", "peer-learning", and "knowledge management" (p. 55). Critical thinking is supplied by the parts of the CMS in which students learn and apply problem-solving skills while self-confidence is grown through the student's successful accomplishment of increasingly challenging tasks.

Aiding the first two capabilities is the use of peer learning which commercial CMS do not currently supply in a substantial way. With a four capabilities CMS, instructors can build in more communication tools such as blogs and wikis to aid students in peer learning. Four capabilities CMS can also be useful as complements for face-to-face communications as when students interact as a group on an online simulation.

The final capability, knowledge management, represents a major shift from the commercial CMS in which students are still mere consumers of knowledge into being creators of knowledge through a four capabilities CMS. As Weigel (2005) observes, higher education is about the furtherance of wisdom which comes from tacit knowledge of doing along with the explicit knowledge usually given in lectures (p. 60). Thus, a four capabilities CMS model should allow students to share stories and peer observations. Essentially a four capabilities CMS provides a three-way flow of communication from instructor to students, students to instructor, and students to students. The commercial CMS provides a one-way flow from instructor to student.

The next section describes the Comm 250 CMS which incorporates Weigel's (2005) four capabilities.

Comm 250 Course Management System

Open Source

The University of Louisville does have a commercial CMS, Blackboard, which instructors currently use for all of the communication courses. This instructor finds Blackboard inadequate as it just reflects the traditional classroom setup of "lectures,

discussions, and exams" (Weigel, 2005, p. 55) and offers little in the way of customizing for the needs of the learners and the instructors. Malloy, Jensen, Regan, and Reddick (2002) echo this view when they describe how commercial CMS reflect the corporate model of education where each company attempts to dominate the education market by providing a cost-effective, one-size-fits-all online tool that "is at odds with the idea of teaching and learning in an independent campus environment" (p. 6).

Thus, the Comm 250 CMS will be open-source much like the model that is used at the University of Utah (n.d.). The University of Utah CMS uses Java and MySQL to build its components and is designed to nationally-recognized standards for educational software. The Comm 250 CMS will most likely be based on a Linux server and will use Python as the programming language and probably Plone as the content management system. The database will be MySQL and data will be transferred using XML so as to make the system as open to possible for developers. Using open source will also serve the dual role of educating students on how open source applications work by allowing them to look "under-the-hood" of the Comm 250 CMS.

Using open source technology also fulfills Weigel's (2005) four capabilities. By allowing students to design and create open source components to the Comm 250 CMS, they gain problem solving skills, develop their self-confidence, engage in peer learning, and become knowledge creators.

Wikki Component

Another model of a successful open source CMS is Connexions which is a set of free tools to allow instructors to author and present course content. Instructors can

contribute to a "Content Commons" small "knowledge chunks" that are modules which are then aggregated into courses (Baraniuk, n.d. "Home Page"). The modules can be anywhere from a paragraph to several pages of information on a topic while the courses consist of any number of the modules all tied together by a "Roadmap Utility" which serves as the table of contents for the course. This is essentially the wikki concept of knowledge sharing in which participants can contribute original knowledge to a wikki website or edit existing knowledge. The only difference seems to be the ability to recombine modules in several different topics at once.

In the Comm 250 CMS, students will be allowed to create modules that can be used by other students to create courses. This will fulfill the social interaction goal of the CMS while engaging the students in creating their own learning. By adding a wikki portion to the CMS, students will practice the concept of online collaboration and learn to be more discriminating about online information sources. And the wikki component will also fulfill the Weigel (2005) four capabilities requirements for the user-centered CMS.

Blogging

A important component to the Comm 250 CMS will be a blog system so that the instructor can make the traditional course announcements and observations but also allow students to comment on the instructor's comments and each other's comments.

Commercial CMS do have a discussion board component but this instructor has found that students are more likely to comment on blog announcements rather than engage in the Blackboard discussions. Reasons for this preference range from "I want to be anonymous" to "it's just easier to access the blog than to log into BlackBoard." Whatever

the reason, blogs will be a major component for the Comm 250 CMS. Along with the instructor's blog, individual students or teams of students will have the ability to create their own blogs. The instructor will also have an RSS feeder component so that students can view current discussions about computer communication topics.

Again, Weigel's (2005) four capabilities will be fulfilled through the blogging component especially the peer learning and knowledge management capabilities. By posting entries on their blog and commenting on other student's blogs, the learners will learn how to co-create knowledge in a group environment.

Conclusion

It would seem redundant to build an open source CMS for Comm 250 when a commercial CMS is available but, as argued by many educators, the commercial CMS is essentially an online version of the traditional classroom with all of its inherent weaknesses. As Weigel (2005) and Malloy, et al. (2002) have demonstrated in their open source CMS projects, the real capabilities for student-centered learning is not reflected in the commercial CMS. Thus, the rationale for the Comm 250 CMS is to provide the key goals of learning by doing and increasing peer interaction by having the CMS be a part of the learning environment and not just another way to deliver lectures, discussions, and exams.

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