Executive Summary

Course management systems play an increasingly critical role in fulfilling strategic academic goals of higher education. In both pedagogical impact and institutional resource consumption, course management systems form the academic system equivalent of enterprise resource planning (ERP) systems. For most faculty members, course management systems have been the primary entry point into using technology for instruction. These systems are also the major vehicle for offering online courses to students in universities and colleges throughout North America and, increasingly, throughout the world. Yet higher education administrators know relatively little about how faculty members actually use course management systems and what their pedagogical effects might be. We undertook this study to investigate course management system (CMS) use, satisfaction, and adoption among faculty in the University of Wisconsin System (UWS).

For this study, we define a CMS as a software system specifically designed and marketed for faculty and students to use in teaching and learning. Most course management systems include course content organization and presentation, communication tools, student assessment tools, gradebook tools, and functions to manage class materials and activities. Today, common course management systems in the higher education environment include WebCT, Blackboard, LearningSpace, and eCollege. This study doesn’t include other technologies used in teaching and learning, such as PowerPoint and other content management systems and presentation software.

Methodology and Study Participants

This study consisted of three research components:
1. a quantitative survey of 730 UWS faculty and instructional staff who currently use course management systems,
2. qualitative interviews with 140 UWS faculty and instructional staff, and
3. manual counts and examination of CMS usage logs.

The faculty participants in the quantitative survey constitute approximately 11 percent of the 6,500 UWS faculty. The UWS also includes
- more than 150,000 registered students,
- approximately 27,000 total full-time-equivalent faculty and staff,
- 11 universities that award bachelor’s and master’s degrees,
- two doctoral/research institutions (UW–Madison and UW–Milwaukee),
- extended-degree programs,
◆ 13 freshman-sophomore campuses forming the UW–Colleges,
◆ UW–Extension outreach programs, and
◆ UW System Administration, which includes the Office of the President.

The faculty and instructional staff surveyed primarily use two course management systems: Blackboard (74 percent) and WebCT (22 percent). As of November 1, 2002, 43 percent of these current CMS users had previously used a different CMS. A total of 5,160 fall 2002 UWS courses included CMS use as a part of instruction.

Key Findings
This study has yielded some noteworthy findings. Some confirmed our initial hypotheses; others surprised us.

CMS Technology Challenge for Students
Faculty members believe that some students have difficulty in using a CMS. A prevailing myth is that technologically savvy students drive a faculty member to use a CMS. This might be true in some cases, but only 3.15 percent of faculty surveyed reported a push from students to use a CMS. Some faculty reported that their students actually discouraged them from using a CMS in their instruction because the students had difficulty gaining access to the CMS and were uncomfortable with technology in general. Faculty members are not confident that they can rely on the CMS’s being available whenever the students need access, nor can they rely on the students’ computers to have sufficient power to adequately utilize the CMS. We had difficulty determining the degree to which this assessment resulted from faculty’s projecting their own fears and inadequacies with instructional technology onto their students. Nonetheless, despite students’ prowess in chat and e-mail technology, many don’t have the skills necessary to use a CMS without additional training.

Faculty Control
Some faculty are reluctant to adopt course management systems because they believe the systems reduce their control of instruction and the instructional environment. Some faculty members also express concern about relying on CMS technology as part of their class curriculum. By their nature, course management systems are structured and have limited customization capabilities. Faculty worry that this structure excessively constrains their teaching and places additional bureaucracy between them and their course materials. This is especially true in fully online distance education classes, where multiple faculty and support staff are involved in the setup and maintenance of course materials. As Professor Ann Zarinia of UW–Whitewater observed, “[Course management systems] constrain you through idiocy. The inflexibility of the structure gets in the way of good pedagogy.”

Campus Leadership
Leadership is important in faculty adoption of a CMS. An important finding of this study is the important role that strong leadership by campus executives and department chairs plays in shaping and encouraging faculty to use course management systems. While only 7 percent of the faculty participating in the quantitative study stated that departmental and/or administrative pressure or persuasion caused them to begin using a CMS, in subsequent interviews numerous faculty members noted that campus leadership had a significant impact on their adoption of the technology. Mary Wierenga of UW–Milwaukee said, “The dean of the School of Nursing at UW–Milwaukee was among the first to use a course
management system in her teaching, and she constantly stressed to her faculty how easy it was to learn and use. This sent a strong message to the faculty, and it resulted in widespread adoption of the technology in the school."

Lack of Measurement Tools
Data from this study seem to indicate that today’s CMS products are weak in the area of measurement tools. While trying to measure actual CMS use for this study, we found the system’s standard tools and reports to be insufficient. We needed manual counts of courses and instances of tools used to get an accurate picture of functional use. The challenge in obtaining usage statistics made it extremely difficult to monitor usage over a period of time. If a better understanding of usage levels and patterns could be readily obtained, it would be easier for institutions to monitor system growth and identify needed training. CMS vendors should refine the measurement tools and reporting at both the course and tool levels. These improvements would let institutions better plan for hardware and software upgrades and routine maintenance resource requirements.

Primary CMS Usage
Course management systems are used primarily in face-to-face courses. Eighty percent of UWS faculty and staff use a CMS to augment face-to-face instruction, either to enhance regularly scheduled classes or to create hybrid courses where online activities and exercises replace part of the meeting time. This result comes as no surprise to those involved in supporting CMS use on campus, but, given the traditional association of course management systems with distance education, especially among campus administrators, we need to rethink how to support and implement course management systems. Fewer than 27 percent of faculty and instructional staff we surveyed used a CMS for fully online courses.

CMS as a Management Tool
While there is evidence that the CMS increases interactions between faculty and students and among students, faculty use the CMS primarily as an administrative tool to facilitate quiz administration and other classroom tasks rather than as a tool anchored in pedagogy or cognitive science models. This observation seems to suggest more about how new technologies are assimilated than it does about the nature of the tools themselves. The notion of using new tools to automate routine administrative tasks is neither new nor unique to this class of technologies, but it changes the dialogue from one focused on the CMS as a pedagogy transformation tool to one of “unburdening the faculty of administrative tasks.” Faculty members and instructional staff value the administrative capabilities because, among other things, the CMS framework, with its structured course-based architecture, handles routine and repetitive organizational tasks.

Managing Software Change
Change management is important to CMS success. Of the faculty and instructional staff surveyed, 11 percent expressed reluctance to use a CMS because of concerns about constant system changes. This might reflect the current UWS situation. At the time we conducted this study, a system-wide request for proposal was in progress to look at new course management systems for the entire UW System. Faculty uncertainty was understandably high, and this is reflected by respondents who said they were reluctant to further use a CMS because they feared a product change. Even faculty members who were increasing their CMS use expressed some concern about a potential product change. As Rebecca Stephens of UW–
Stevens Point explained, “If people could be assured that the technology would be kept around, then they would be far more enthusiastic about using it [and we] would get new adoption.”

As with all important technologies, the technical implementation of a CMS is easy compared with the socialization required. Change management of teaching and learning—one of the institution’s core and most highly personalized processes—is radical, painful, and likely problematic. As with other enterprise initiatives, such as enterprise resource planning, CMS implementation often reflects a conscious or unconscious move toward standardization. In this case, it is not about standardizing accounting transactions but one of the institution’s most durable, mission-critical, and idiosyncratic activities.

Educational institutions must plan for CMS changes in the same way they handle other ERP systems, with version and product updates in mind. It is important to identify who is responsible for migrating course data from one product to another, or from one product version to another. Change management is of increasing concern to administrators and will continue to be until the products have matured and technical standards gain wide use. Given the inevitability of change, institutions need to work continuously on managing change and assuaging faculty fears about it.

**Importance of Training**

Training of faculty and instructional staff plays a key role in successful CMS adoption and use. Twenty-nine percent of the faculty and instructional staff surveyed cited training in CMS use as an important factor in their initial adoption or expanded use of a CMS. The most successful training offered is that delivered as close to the faculty as possible, on a small scale and including real examples rather than abstract or dummy courses. Bill Cerbin of UW–La Crosse noted, “Faculty do not always see the need for the use of technology until they attend presentations or training and learn how to apply it.”

At UW–Colleges, an important element of faculty training on CMS is to have other faculty members demonstrate how they use a CMS in an actual class. According to Dick Cleek of UW–Colleges, “Faculty learn as much from their peers as they do from CMS trainers.” Getting faculty to participate in training can be a challenge. Sometimes, encouraging CMS adoption can be perceived as akin to “helping” faculty teach better. This has always been a slippery slope, because faculty learn the craft of teaching largely through the graduate student apprenticeship model and are skeptical of the merits of training. Institutions must overcome this skepticism and encourage faculty to attend training sessions. In the longer term, use of these new systems should be included within the traditional graduate apprenticeship process.

**Satisfaction with CMS Features**

Faculty use limited CMS functionality and are less than fully satisfied with some features. Although course management systems offer a wide range of tools, faculty primarily use the “static” tools for storing syllabi and class materials, making announcements, and handling administrative tasks. They also use the gradebook, assessment, and discussion group tools, but are less satisfied with the quality of these features.

More than 60 percent of the faculty and academic staff surveyed ranked announcement, syllabus, and course document functionality as very important in a CMS, and approximately 80 percent of respondents use these tools. Faculty and staff use interactive tools such as assessment, gradebook, and discussion groups less frequently, even though 50 percent of the survey respondents
ranked assessment tools as important or very important. Some faculty and instructional staff adopted a CMS because they needed an online quizzing or assessment tool, but only 36 percent of respondents are satisfied with how the tool works. Professor Tim Nissen of UW–River Falls said, “I started using the CMS so I could have online quizzing capability. I have been disappointed with its limited functionality and inflexibility.” Out of all the CMS tool usage traffic, measured in number of page requests, the assessment tool scored the highest, with 70 percent use by students and 4 percent by faculty. It is unclear whether this dissatisfaction reflects on the software’s features or its ease of use.

Seventy percent of the survey respondents considered gradebooks important or very important, but only 51 percent were satisfied with the CMS gradebook. While more than half of the faculty reported being satisfied with the gradebook, the qualitative interviews indicate that this satisfaction is soft: faculty members are frustrated with the gradebook functionality and features. The presence of an online gradebook for a course does provide a communication mechanism for faculty, however. As Lauren Fingerson of UW–Milwaukee stated, “Having student grades up there has improved my relationship with my students. There is no ‘secret gradebook.’ It has improved transparency.”

Seventy percent of respondents also ranked discussion groups as important or very important, and their use by faculty at UW–Whitewater over the past five semesters has ranged from 20 to 40 percent. Faculty satisfaction has also been high, measuring 63 percent. Traffic, as measured by page requests, has approached 18 percent, second only to the traffic associated with quizzing.

**CMS Effects on Pedagogy**

The pedagogical impact of using course management systems is perceived but difficult to measure. There is little empirical evidence that course management systems actually improve pedagogy. Study findings suggest, however, that using a CMS does invite faculty to rethink their course instruction and instructional environment, resulting in a sort of “accidental pedagogy.” This rethinking has the pedagogical side effect of enabling better course organization, providing greater transparency and accountability in the course, and potentially increasing student engagement with the materials. According to Sharon Giroux of UW–Stout, “The experience of having to organize courses in different ways and divide it up into new kinds of pieces was thought-provoking, and it had the effect of improving the class and my teaching.”

In addition, the presence of an online gradebook increases the transparency of the grading process. Students can view their own grades and know where they stand at all times. Also, student work can be made visible to other students, which appears to make students more accountable for their performance. Faculty members also believe a CMS increases interaction between students and faculty. In fact, 60 percent of respondents reported that using a CMS in instruction has increased their interaction with students, and 62 percent reported that CMS use has increased interaction among the students themselves. Through the use of CMS communication tools, students have increased the amount and quality of their discussions, according to faculty and academic staff interviewed. These discussions, they think, lead to better learning. Nancy Chick of UW–Colleges described the discussion tool thus: “It has enormous potential, for example, to encourage participation by shy students, or learning-disabled students. It gives [the latter group] the opportunity to archive and go through things more slowly or repeatedly.”