Introduction

What are course management systems, and why should higher education leaders be interested in how faculty members use them? Course management systems play an increasingly critical role in higher education’s technology infrastructure. The course management system (CMS) is the academic equivalent of an enterprise resource planning (ERP) system, and the primary way that most faculty come to use technology specifically for teaching and learning. The CMS is also the major vehicle for offering online courses to students in universities and colleges throughout North America and increasingly the rest of the world. Yet higher education technology administrators know relatively little about how faculty members actually use course management systems and the impact these systems have on pedagogy.

Making course management systems available for use by faculty and students raises such challenges and questions as which products to adopt, how to provide them to faculty, and how to maximize their effectiveness. This research study seeks to answer some of these questions and address some of those gaps in our knowledge by exploring how University of Wisconsin (UWS) faculty members use course management systems. This chapter defines what a CMS is, describes the challenges in making decisions about course management systems in higher education, and discusses why it is important to understand how and under what conditions they are used. Chapter 3 describes the mix of quantitative and qualitative methodology we used to evaluate CMS use among UWS faculty. Chapter 4 provides background on UWS and describes its applicability for this study. Chapters 5–8 report the study results, including factors that drive faculty to adopt course management systems, what motivates them to increase or decrease their use of these tools, and how faculty members use the technology, both organizationally and pedagogically. Chapter 9 summarizes some of the major pedagogical themes shaping faculty CMS use. Chapter 10 envisions future directions for course management systems in the higher education landscape.

Background and Definition

Most course management systems date from the mid- to late-1990s. They evolved from efforts to meet the increasing need among faculty, especially those with few technology skills, to manage their courses online. Many course management systems had their roots in colleges and universities. For example, Murray Goldberg and colleagues developed WebCT when Goldberg was an instructor at...
the University of British Columbia. Blackboard\textsuperscript{2} emerged from collaboration among students and faculty at Cornell University. Prometheus\textsuperscript{3} was developed at George Washington University, and CourseTools\textsuperscript{4} was developed at the University of Michigan. Other products, such as LearningSpace,\textsuperscript{5} have come out of major private sector technology companies. Although the CMS marketplace has consolidated somewhat, many competing products remain to choose from.

Course management systems are hard to define, in part because they are evolving so rapidly that it is difficult to pin down what they are. In essence, a CMS is a suite of software tools, usually organized around a class or unit of instruction. The suite includes most of the tools that faculty members need to teach a class, such as software to
\begin{itemize}
  \item organize and present content,
  \item communicate (synchronously and asynchronously),
  \item assess student performance,
  \item record and report grades, and
  \item manage class materials and activities.
\end{itemize}
A major goal of course management software is to integrate a suite of teaching technologies into a powerful set of tools that make it easy for faculty to use technology in instruction.

Increasingly, course management systems are focusing on content management and learner management functionality. In this way they are starting to resemble the learner management systems and learner content management systems used in the corporate and training sectors.\textsuperscript{6} Some course management systems are also beginning to look and function more like operating systems\textsuperscript{7} by constituting the environment within which other technologies function. As course management systems have grown in size and complexity, the cost of licensing and supporting them has skyrocketed,\textsuperscript{8} resulting in major funding challenges for colleges and universities.

**Challenges for Higher Education**

Colleges and universities face several challenges in providing and supporting course management systems, including
\begin{itemize}
  \item increasing acquisition and support costs,
  \item concern for student readiness,
  \item marketplace volatility, and
  \item ongoing faculty training.
\end{itemize}

**Increasing Acquisition and Support Costs**

CMS licensing and associated costs\textsuperscript{9} have jumped significantly at a time when most of higher education is facing shrinking budgets\textsuperscript{10} and high demand for technology infrastructure and ERP system improvements. Reactions to the financial challenge usually focus on
\begin{itemize}
  \item finding a more cost-effective CMS to implement;
  \item aggregating with other users to get the best deal from vendors, thereby minimizing cost and maximizing service and support; or
  \item building rather than buying or licensing a system, as several schools (including the University of Michigan,\textsuperscript{11} Stanford University,\textsuperscript{12} and Foothill College\textsuperscript{13}) have done and are doing.
\end{itemize}

**Marketplace Volatility**

The CMS marketplace has seen rapid growth and turnover in the number of companies and products, as well as in product range and variation. Higher education must choose among a large number of products with widely ranging feature sets, architectures, and business models. It sometimes appears that a degree of consolidation and standardization is occurring within the marketplace, but then new products and companies appear, and the dizzying array of choices increases again.

Choosing the best and most appropriate CMS is already difficult for technology
administrators, but the volatile marketplace also leads to frequent reevaluation of CMS decisions. New product adoption leads to increased costs for training system administrators and faculty as well as migration of course content from the old system to the new.

As the CMS industry matures, the demand for standardization becomes ever more pressing. A variety of standards organizations are at work, and momentum for vendor compliance with standards is growing. Until CMS software is fully standards based, migration of courses from one system to another will remain difficult and time consuming. Even dealing with product upgrades has involved much time and frustration among faculty.

Difficulty in moving between products raises the stakes for choosing the right product at the outset. Many colleges and universities have found themselves in the difficult position of having chosen a product that has disappeared from the market or that had to be phased out because it had significant drawbacks or did not keep pace with technical and functional improvements. These situations have caused a growing backlash among faculty who have invested a great deal of time in the CMS and see that time as being lost when the product is upgraded or changed. This has the potential of slowing down faculty adoption and use of the technology.

Ongoing Faculty Training

Persuading faculty to adopt course management systems and training them in their use constitutes a third challenge facing technology administrators. Despite some CMS vendors’ advertising slogans, these programs do not run themselves. They often require a lot of back-end support and extensive training in the mechanics of their use for pedagogical effectiveness.

Solutions to These Challenges

To find the best answers to the challenges described above, we need more information about how faculty members use course management systems. Studying CMS use among UWS faculty helps us answer the following questions:

◆ What factors drive faculty to start using course management systems?
◆ What factors influence increased or decreased use?
◆ To what functional uses do faculty and staff apply course management systems on campuses of higher education institutions?
◆ For what pedagogical purposes are faculty members using course management systems?
◆ What are faculty members’ major concerns about CMS use?

By describing these aspects of CMS use, this report provides some of the information required to answer a range of more general questions, including

◆ What concerns must be addressed to persuade faculty to use course management systems?
◆ What goals are achievable through CMS use?
◆ Where is the best place to situate CMS training?
◆ What do course management systems add to teaching?
◆ What do faculty members value in a CMS, and what do they find less useful?
◆ What features should prospective buyers look for in a CMS?
Endnotes

3. Originally developed at George Washington University, Prometheus is now owned by Blackboard. See <http://company.blackboard.com/prometheus/>.
9. Licensing fees are, of course, only one cost factor. In addition, there are hardware and database costs, and, in some cases, infrastructure upgrade costs. Associated support personnel and training costs are also part of the overall funding required for a successful CMS implementation.
11. See the University of Michigan CourseTools, <http://coursetools.ummu.umich.edu/about/>.
These standards and specifications will ultimately make it much easier to move content from one standards-compliant product to another. Because the content is tagged with metadata described within standard specifications, the software can render the content in the appropriate way. Thus, for example, course management systems that use the QTI standard will be able to import quiz items from another CMS or export them to another CMS without loss of context or detail. This is a tremendous advance over the current state, in which quizzes or assessments cannot easily be moved from one CMS to another. Instead, the data must be keyed in after each migration, a time-consuming process that discourages faculty from CMS adoption.