How Do Faculty Use Course Management Systems?

A Modular Approach

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Introduction and Background

Course management systems (CMS) have become both the panacea and the bane of distributed, Internet based learning just the past few years. It is the purpose of this presentation to outline three concurrent research projects we are undertaking related to course management systems, and provide an update on our current activities and proposed directions.

Distributed learning can be thought of as learning that can be enhanced or accomplished by the delivery of learning resources anytime and anywhere. In just a few years the educational community has made huge financial and pedagogical commitments into distributed learning. Moreover, there has been a sea change in attitudes in academia towards the acceptance of Web-based instruction and the use of distributed technologies in teaching and learning. The experiment in the use of the World Wide Web that began in higher education in the early 1990’s is now seen at every level of education as a potentially important pedagogical tool. It has become mission-critical to the educational enterprise.

Like many of our peers, we in the University of Wisconsin System (UWS) have made an extensive investment in time, expertise and resources in the enhancement of instruction using these distributed learning technologies. The most important among these is the course management system (CMS). Early on it became clear that the support and delivery of CMS’s was going to be a substantial commitment. Beginning in the fall of 1999 the UWS made a strategic decision, at the behest of its 15 institutional CIO’s, to support the hosting and delivery of course management systems as a “utility.” Central funding was identified, institutions with appropriate technical and support infrastructure agreed to act as “service providers” and the earliest version of our CMS “utility” ITS@Wisconsin.edu was born. Two short years later the UWS has over 100,000 of its 150,000 students using these resources each semester and something over 3000 active courses.

Given the rapid growth and critical nature of CMS’s, providing for them in a cost-effective and reliable way has become an increasing challenge for the UWS as it has for many other higher education institutions. An important part of this challenge lies in understanding the e-learning marketplace within which CMS’s are developed and provided. Within the UWS the initial strategy was to provide something of a research environment as well as to provide diversity and choice among tools. If we look back to the beginning of our utility just two and a half years ago, the names of our CMS tools were Web Course in a Box (WCB), Learning Space, and WebCT. Of these only WebCT remains. We had barely gotten the enterprise underway when Blackboard and purchased WCB. Our most recent attempt at diversification was to provide Prometheus, recently purchased by Bb. Clearly change is going to continue to be a constant in the marketplace for CMS tools and we need to develop further strategies to deal with it.

A further challenge lies in finding sufficient funding for course management systems. CMS’s are really “academic systems” and increasingly require technical, financial and other academic-specific support a scale previously reserved for large administrative systems like PeopleSoft and Oracle. The central funding mechanism is an important strategic choice allowing adoption of these tools independently of strapped and already allocated current departmental and college S&E budgets. However, with the CMS becoming much more costly we have been forced to rethink our model of how we as support them. We have, in fact, questioned whether or not CMS’s are the only way of providing the kinds of support and services that faculty and students require.

As a result, the UWS has undertaken these research projects relating to course management systems. The three research projects are as follows:
First, we undertook a Request for Information (RFI) process in an effort to identify the most robust e-Learning system.

Second we undertook an in-depth project researching just how we use our current CMS tools in the UWS.

Finally, we undertook a series of eight research projects examining modularity, interoperability and interchangeability of CMS functionality.

The RFI Process

The RFI document itself was issued as a result of the work of a UWS task force in May of 2002 with the stated purpose of gathering “information about software/services that will meet the Web-based learning needs of UWS. The information gathered from this RFI will inform the development of a Request for Proposal leading to the acquisition of software/services or set of interoperable software/services to support a range of learning needs from blended courses combining online with traditional learning styles to fully web-based asynchronous courses. … UWS encourages responses that address all or part of the e-Learning system.”

“The e-Learning system may be a “best of breed” approach addressing the various functions outlined in this RFI. The UWS encourages responses to the RFI from all sectors of the marketplace. Responders who cannot provide software/services for the entire spectrum should address the parts that they can provide. Responders may offer collaborative responses to address all or parts of the e-Learning system. The results reported on here were summarized by the task force and will be used to generate and RFP for the next generation UWS e-learning system.

Research on CMS Use

A second aspect to our research into course management systems consists of an in-depth study of how faculty actually use course management systems. Too often it seems that what we know about CMS’s is provided either by the vendor or takes the form of a comparison of functionalities of different course management systems. We wanted to gain insight into how faculty use course management systems in order to get a more nuanced understanding of the following sorts of issues:

- How extensive is faculty use of course management systems? Early findings suggest significant under-usage of the tools and our research project will explore in more detail the extent to which this is actually the case.
- What features of course management systems do faculty use the most and for what purposes. What factors are driving the use of these features?
- Are there differences (beyond a simple difference in degree) in the use of course management systems in completely online courses compared to their use in hybrid or blended courses? Is the same course management system appropriate for both kinds of courses?
- What are the primary advantages and disadvantages to using a course management system?
- How adept are faculty and how willing are they to use course management systems in conjunction with other tools?

The insights gained will provide us with the information we need to make decisions about how best to provide CMS’s in the future. In order to study the issue we designed a mix of quantitative and qualitative research methods. By means of a process of triangulation we were able to capture the multiple aspects of faculty use of course management systems. Most of the studies of technology use in teaching and learning have tended to be limited to perceptions of the technology or its impacts. In our research project we sought to go beyond this. Using a variety of methods we are able to explore not only perceptions of the technology and its uses, but also track actual usage within high-end, low and middle of the road users. The three parts of the triangulation process consisted of:

Interviews With Faculty

Using semi-structured interviews with individual faculty we explored faculty use of course management systems by asking
- i. How they came to use the technology,
- ii. How this usage changed over time,
- iii. What features of course management systems they initially use for what purpose and with what degrees of success,
iv. Faculty perceptions of the major advantages and disadvantages of course management systems and
v. what other kinds of programs faculty regularly use in conjunction with course management systems. These interviews
were supplemented with larger focus groups made up of faculty members.

To get an accurate picture of faculty use of course management systems across different platforms (such as WebCT,
Blackboard, Prometheus, Lotus learning Space) we interviewed faculty from a range of different disciplines and different
kinds of institutions (large research institutions, both large and small four year comprehensive institutions and two year
colleges).

Survey

We are carrying out an online survey of University of Wisconsin faculty who use course management systems. This
survey focused on what features of course management systems they use, for what purposes and with what degrees of
satisfaction. By means of the survey we hope will get a larger picture of the use of the technologies. Surveys will be
administered to all faculty currently using a course management system within the University of Wisconsin. The site
administrator at each institution will be asked to forward an online survey url to each faculty member with whom they are
currently working.

Longitudinal Analysis of Usage Logs

By exploring usage logs of course management system usage over time we are able to get a different perspective on their
usage by faculty and how this changes. On a number of campuses we have analyzed up to four semesters worth of usage
logs. By this means we can see how usage changes over time as well as getting a broad overview of levels and kinds of
usage. This part of the study has needed to be done with careful consideration being given to privacy, to ensure that
student and faculty privacy are not compromised and that data at the level of the individual is not released.
Exploring a Modular Approach to CMS Use

A final part of our research strategy consists of exploring a more modular approach to course management use. In this part of our project we are interested in exploring the feasibility of using a range of different products alongside and in conjunction with a CMS. From our research into faculty use of CMS’s we found that faculty are especially interested in particular functions that CMS’s provide, for example, assessment tools, discussion forums and gradebooks however at the same time they are frequently disappointed by the performance of these tools within the CMS that they currently use. Thus we have sought to explore how it might work for faculty to use third-party tools, such as an assessment tool, in conjunction with a CMS. We are especially interested in seeing what issues faculty face in using third-party tools and how well these will interact with the CMS. To this end we have undertaken a series of pilots to explore faculty use of tools. We have pilot studies underway in which we are exploring faculty use of third-party:

- Testing and assessment tools
- Discussion and collaboration tools
- Rapid content development tools.

In addition we hope to add pilots exploring the use of third-party grade books in the near future.

Conclusion

By means of these three research undertakings we hope to develop a comprehensive understanding of the course management system universe. They have clearly become mission critical tools yet the growth in their usage combined with frequent changes in the market and ever-increasing costs mean that steady-state is not an option for us. As those responsible within higher education for providing distributed learning infrastructure we need to be prepared to meet these challenges and the kind of knowledge that our research undertaking are producing is a critical aspect of such preparation.

Biographical Sketches

Glenda Morgan is the Learning Technology Analyst with the Office of Learning and Information Technology at the University of Wisconsin System Administration. Her areas of research include copyright and fair use in a digital environment and electronic privacy. She holds a Ph.D. in political science from the University of Minnesota.

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Hal Schlais is the Director for Learning Technology Development in the University of Wisconsin System. Hal is a former professor of mathematics at the University of Wisconsin Colleges. His currently oversees the development of strategies, resources, infrastructure and programs that support technologically related faculty development, curricular redesign and course content delivery for the UWS and coordinates the activities of ITS@Wisconsin. He holds a Ph.D. in mathematics from Arizona State University, has chaired the Wisconsin section of the Mathematical Association of America, has authored classroom software and, during his tenure as professor, has received a University of Wisconsin Regents' teaching award.

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