Faculty Uses of and Attitudes toward a Course Management System in Improving Instruction

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Abstract

The investigators in this study were interested in knowing how faculty uses of a course management system (CMS) helps improve content and instruction, and how faculty attitudes may help or hinder that effort. Seven faculty members were interviewed and the texts were coded and analyzed qualitatively. From the analysis, the investigators derived five main categories concerning the use of a CMS: faculty motivations; benefits; perspectives; differing class formats; and issues and needs. Results of this study show that communication and organization play key roles in course improvement, that a university's commitment and support is critical in securing faculty involvement, that discussion boards and student tracking may be the primary non-assessment methods for determining student learning, that bottom-up pressure from students desiring content online is more important than pressure from above, and that the 'extended class' (24/7 access) may be the most important feature of an online class component.

Introduction

Colleges and universities are placing greater emphasis on increasing online education offerings (Kraemer, 2003; Morris, Xu & Finnegan, 2006). Indeed, each year institutions of higher education have offered more courses that are fully online as well as more that are blended or hybrid in design format (Hoskins & van Hooff, 2005). Course management systems such as WebCT and Blackboard are enjoying wide use as delivery systems for online course material (Carnevale, 2005; Hutchinson, 2001; Roach, 2006). There is increased interest in the effectiveness of course management systems and the ubiquity of course management systems seems to suggest that more research on the effectiveness of such systems is needed. While many studies have been conducted on student impacts of course management systems, additional research focusing on the faculty side of the equation is in great need. Morgan's 2003 study of course management system use in the University of Wisconsin system for EDUCAUSE provides background for studies of faculty and course management systems. More recently, Santilli and Beck (2005) focused research on the use by graduate faculty of a course management system (CMS) to deliver content and communicate with students, and to reflect on the disparities between the realities of online education and the reward/evaluation methods that are still largely tied to the traditional classroom, which is diverging from distance models.

A review of the literature shows that research has been conducted regarding online course

management systems from three perspectives. First of all, online education touches three key groups in higher education. From the viewpoint of an institution's administration, online education is desirable (1) because the Internet reaches a wider and more diverse audience (Kraemer, 2003) and (2) helps meet increased demands for more efficient course delivery. According to Sneller (2004), online instruction helps institutions find ways to meet the demand for "measurable outcomes, dwindling resources, and changing demographics". From the faculty perspective, course management software is used to provide a way to teach basic skills so that class time can be used for more advanced instruction (Kraemer, 2003), to develop long-term mentoring (Merryfield, 2006), to provide constant feedback to students (Merryfield, 2006), and because the best systems follow pedagogically sound approaches (Osman, 2005). For the student, online access may provide the only way to take certain courses (Bickle & Carroll, 2003). Further, students appreciate the community-building aspects of the Web (Osman, 2005). If "suitably guided", students may relate online courses to their own needs (Suen, 2005).

Second, any time a new technology is introduced into an arena, there is a new dynamic that must be addressed. Morris, Xu and Finnegan (2005) demonstrated that faculty members assume widely various roles as managers, facilitators and evaluators in online teaching, with significant divergence between novice and experienced instructors. Bickle and Carroll (2003) illustrated how online technologies add to the complex relationships of teaching and learning, with technology adding new layers of interaction. Conrad (2004) revealed that first time online instructors tend to rely "heavily on their face-to-face experiences", especially visual cues, and displayed little understanding of online social networks and the potential of online collaborative learning. Additionally, Hoskins and van Hooff (2005) demonstrated that as web-based approaches in education increase, systematic evaluation of course management software becomes essential. Even in cases where institutional support is high, two separate studies, conducted by Hutchins (2001) and Johnson and Howell (2005) noted that faculty attitudes may be hard to change to meet the demands of the new dynamic, and seem to suggest that a study of faculty attitudes should be a required portion of any research on the effectiveness of course management systems.

Finally, there is the aspect of the effectiveness of online teaching and learning to consider. Sneller (2004) and Suen (2005) suggested that well-designed online courses tend to follow Chickering and Gamson's (1987) seven principles of good practice in undergraduate education: (1) good practice encourages student-faculty contact; (2) good practice encourages cooperation among students; (3) good practice encourages active learning; (4) good practice gives prompt feedback; (5) good practices emphasizes time on task; (6) good practice communicates high expectations and (7) good practice respects diverse talents and ways of learning. Additionally, Skylar, Higgins, Boone, Jones, Pierce and Gelfer (2005) suggested that online components are well suited pedagogically for any course format. Because of the flexibility of online design, there are a variety of ways in which an online component can enhance a course. Thus it is necessary to see if theory is matching reality in educational outcomes. From these facts, it is apparent that course management systems will become more important in the future, and hence research into the effectiveness of using them becomes quintessential.

At the institution where this study took place the faculty are provided with WebCT, a widely used course management system. WebCT merged with Blackboard in fall 2005 and use of the course management systems produced by the merged company is predicted to increase greatly. Carnevale (2005) provided statistics showing that at least 65% of all higher educational institutions using course management systems were using WebCT or Blackboard. Roach (2006)

found that over 3700 institutions in the US alone were using either WebCT or Blackboard. The number of advantages of using course management systems such as these makes them very popular. Some researchers claim that a CMS makes for a very flexible pace of study, provides great security and privacy, and allows rapid feedback in a number of formats (Hoskins & van Hooff, 2005). Also, CMS communication tools provide opportunity for the creation of social networks (Merryfield, 2006). Additionally, some course management systems require no HTML training for faculty (Sneller, 2004).

The investigators' interest in course management systems were influenced by a study conducted by Santelli and Beck in 2005, which sought to determine how graduate faculty used WebCT to deliver course content and communicate with students. For this study the investigators wished to learn how faculty members use CMS tools and modules to improve course content and instruction, and how their attitudes toward course management systems affect their efforts. Supporting this study, the literature shows a need for more evaluation of course management systems (Skylar, et al, 2005). Hutchins (2001) demonstrates that the "pressure on instructors to incorporate distance learning technologies further" (p. 87) causes greater "complexity of design and implementation" (p. 87). The investigators believed that course management systems might be used to alleviate some of these pressures, and were interested to see how faculty members engaged such systems. What specifically did the investigators of this study wish to answer? The researchers had formed several questions based on the literature:

(1) What motivated faculty members to use course management systems?
(2) What CMS tools did faculty members use, and how did they use them?
(3) What, in the minds of the faculty, constituted a 'successful' online course?
(4) How did faculty members assess learning online, beyond grades?
(5) What differences were demonstrated in CMS uses in varying delivery methods (traditional/in-class, hybrid/blended and pure online courses)?
(6) How did faculty members use the CMS to reflect on content and instructional practices?
(7) What factors did faculty want addressed to foster further acceptance and continued use of the CMS?

Method

Participants

Seven tenured and tenure-track professors at a major southeastern research university agreed to participate in this study. These faculty members came from educational research, educational leadership, nursing, communicative disorders, hospitality management and interior design. The course management system provided to faculty at this university was WebCT. Of the seven participants, five were female and two male. Among the seven, two designated themselves WebCT experts, two thought of themselves as intermediate-level users and three considered themselves novices. Two taught mostly introductory courses and the rest taught upper level undergraduate and graduate courses. The investigators worked with the participants and they represented a sample of convenience. Pseudonyms were used to protect the identities of those who participated.

Procedure

The study was conducted using 45-minute interviews consisting of 26 questions (Appendix A) related to faculty use of and attitudes toward the course management system. Potential participants were contacted by email, which explained the study and requested them to participate. Included in the emails were copies of the interview questions and the informed consent form. To provide adequate time to consider participation, each potential participant was given a week before being contacted again.

Appointments were made with the seven participants, and the interviews were conducted individually at their respective offices. Two tape recorders were used in each session to insure the responses could be heard and that all responses were captured.

Analysis of the resulting text was conducted using grounded theory methodology (Strauss & Corbin, 1998). First, the investigators developed a series of labels relating to concepts seen in the interview texts, a process referred to as open coding (Strauss & Corbin, 1998). These labels, or codes, were placed in the margins of the transcriptions, and a list of codes was developed. After the list had been completed, the process of axial coding (Strauss & Corbin, 1998) commenced. In this stage, codes were related to one another by context, forming categories that described what seemed to be stated in the text. A color-coding scheme was used to help organize the broader categories and form relationships. Then, using selective coding (Strauss & Corbin, 1998), a representative category from each color-coded set was chosen as the core category for each set. The five core categories form the basis that the investigators used to establish theory on how faculty uses of and attitudes toward the course management system affect course and instructional improvements.

Results

Out of the coding the investigators began to see some trends, and found five overarching categories that were believed to relate to the original questions posed. Of great interest were the surprising results on differing levels of experience. While there were some predictable response differences related to age and overall familiarity with technology, there were some very interesting similarities across the experience spectrum. The key categories related to motivations; benefits; perspectives; differences in course formats; and issues and needs. The following table summarizes the results:

Category	**Quotations from the Interviews**	**Summary of Results**
Motivation	"… anything I say in class, [students] expect something, some note on WebCT for it." "They don't get the feel of leaving the subject when we walk out of the door. Because of WebCT, the class is always ongoing." "There's a fullness of the subject that we just didn't see in	(1) Students want resources available through CMS. (2) CMS extends course information outside of class time. (3) CMS allows instructor to make more material available. (4) CMS contributes to greater student engagement

	traditional classes. We do more online, and now that we do, they're getting it." "… one of the things I've discovered since I moved online is that students engage the materials more." "I spend more time on advanced topics, because we cover the basics in the online stuff." "The students want my stuff online. But I don't know how to get stuff online, and if I can't get any help, it isn't happening… Thankfully, I get help when I need it."	with material. (5) More class time is available for advanced topics. (6) There is available technical support.
Benefits	"…[students] can use email or the discussion boards any time of day or night." "…[students] can talk to each other. There always seems to be one that can help the others." "In traditional classes, it was basically always quiz and test. With WebCT, I can assign projects and papers. It's easier to keep track of those there." "I can't believe how much more the students and I communicate since I've been using WebCT." "All the work happens the first time I make a course. After that, it's just a matter of touching things up."	(1) CMS makes material available 24/7. (2) CMS facilitates communication between class members. (3) CMS facilitates a variety of types of assessments. (4) CMS facilitates faculty-student communications. (5) CMS allows faculty to reuse materials from previous semesters.
Perspectives	"I think about the way I used WebCT as a student. That helps me use it better as a faculty member." "We need to keep things simple." "[I] think of new ways to think and do things."	(1) Use of CMS as a student helps faculty member with course design. (2) The desire to make use of CMS as easy as possible for student. (3) Faculty view the CMS as a tool for using innovative teaching techniques.

Differences in Course Formats	"You can't make [the formats] exactly alike. Just be consistent in each format." "You have to remember that an online class doesn't have the face-to-face contact… You have to get literal feedback."	(1) Even with a CMS, there are differences with comparing courses offered traditionally, in a hybrid format or fully online. (2) The more the course is moved online, the greater the need for literal feedback. There are no visual cues that one expects in the traditional class.
Issues and Needs	"… there may come a time when faculty may be required to [move courses online] with or without the technical support I'm getting now." "We need to be granted time to learn WebCT, time that we won't have to take from other required matters." "I had no idea how much work it would be [the first time I created a class online]." "We have to get permission to use online what we can use anytime in a traditional class." "… would it really hurt if they made it more accessible to those like me, who are not technology buffs?"	(1) Concern whether technical support for CMS will be available in the future. (2) It takes time and effort to begin using a CMS and to learn new features. (3) There are copyright issues to consider when using materials online. (4) A CMS needs to be easier to use for faculty without a high level of technology skills and knowledge.

Discussion

Drawing from the categories and comments that were used to support them, the investigators have a better idea about how faculty members use course management systems. The researchers have a clearer idea about how faculty members use them to improve the courses they teach and the content they use. Further, the investigators have a better understanding about how attitude may play a role in use and improvement.

(1) What motivated faculty members to use a CMS?

All of the interviewees stressed that the pressure they felt to use online components in their courses came from students. The students wanted materials online, and in each case, the faculty member complied. The University establishes a standard shell format in the CMS for every course created, and since the students had access to the system for any course they were taking, the faculty decided this was the easiest way to place items online. Once faculty members began using the CMS, they realized they could cover more material in a single term, which

proved beneficial to both faculty and students. Another motivation for using a course management system came from the desire to increase contact and communication with and among the students. These motivations were identified by Sneller (2004) and Suen (2005) as aspects of well designed online courses aligned with four of Chickering and Gamson's (1987) principles: student-faculty contact, cooperation between students, active learning and feedback.

(2) What CMS tools did faculty members use, and how did they use them?

The majority of the faculty members interviewed used the discussion boards and email to extend the class beyond the classroom. Several noted that in traditional formats, it always seemed that the students regarded the class as over as soon as they walked out the door. However, the online component meant that this perception changed. The class became an ongoing phenomenon, which engaged the students with the subject on a prolonged and deeper level than before. Also, many faculty members took advantage of the tracking tools, in order to determine how well and how extensively the material was being learned. Most were aware of the quiz analysis tools and were interested in learning more about them, but none had used them at the time of the interviews. All posted a syllabus online. All uploaded course content in the form of text. Some uploaded and used video. These tools help meet Chickering and Gamson's (1987) principles of high expectations and time on task as described for online instruction by Sneller (2004) and Suen (2005).

(3) What, in the minds of the faculty, constituted a 'successful' online course?

After the interviews were over, the investigators realized this was a question that should have been asked explicitly, rather than approached tangentially, but several notions seemed to emerge from the text that answers the question. For one thing, it was clear that student engagement with the materials, with the instructor and with each other was considered critical. In every case but one, this was stated as a primary benefit of using a course management system. The emphasis of this engagement was student learning. In almost every interview, all actions were taken to improve this aspect. The more student learning occurred, the more the activity was provided. Additionally, each faculty member cited the importance of organization in the course. Organization meant the online component was less likely to become "a maze." Good organization also meant that more material could be covered in less time. Further, at least two of the interviewees cited the direct importance of social networks in the discussion boards and via email. The "extended class" concept seems to be viewed by most as the primary factor in course success, and seems to be the main aspect that separates traditional classes from those with at least an online component. The participants tended to agree with the Sneller (2004) and Suen (2005) descriptions of well-designed online instruction aligned with Chickering and Gamson's (1987) principles regarding the encouragement of active learning and cooperation among students.

(4) How did faculty members assess learning online, beyond grades?

With the exception of the two novices, the interviewees tended to use email and discussion boards to foster communication between the students and the instructor, and between the students, themselves. Often, the discussions were used to steer conversation on various topics. Also, the student-tracking feature helped many of the interviewees form a good idea of how often and to what extent the students were engaging themselves with the material and with each other. This reflected information gleaned from the literature. Chickering and Gamson's (1987) respect of diverse talents, student-faculty contact and the encouragement of cooperation among students seemed to be covered by these actions.

(5) What differences were demonstrated in CMS uses in varying delivery methods (traditional/in-class, hybrid/blended and fully online courses)?

Those using the CMS for traditional classes tended to use it primarily as a repository for course materials and out-of-class communications. Those using it for blended and purely online courses used far more of the features. The primary reason for the differences was the need for feedback. Those who saw the students had the face-to-face contact traditional classes have always provided, but those who taught in blended and strictly online formats had far less personal contact. At least one interviewee stressed that she did not realize how much information she gained from non-verbal cues in class, and as a consequence felt that other forms of feedback were crucial. One interviewee, who viewed herself as an expert CMS user and who has taught in all three formats, stressed that while she felt her hybrid courses benefited her students most (which seems to be reflected in the literature), she also said that blended courses forced twice as much work from the faculty, who had to prepare for the face-to-face aspects of the course as one would in the traditional setting, while having to prepare all the online features as if the course were completely on the Internet. Here, Chickering and Gamson's (1987) interest in prompt feedback appear to be addressed.

(6) How did faculty members use the CMS to reflect on content and instructional practices?

All of the interviewees stated that they tended to reflect on course and instructional effectiveness constantly, some on a daily basis and the rest weekly. While none of the interviewees stated an explicit or deliberate use of the course management system in this reflective cycle, the investigators did learn that student feedback, via discussion boards and email, as well as student tracking, were used as part of the effectiveness consideration. Feedback, in fact, was considered the most important aspect of all in determining successful practice.

(7) What factors did faculty want addressed to foster further acceptance and continued use of the CMS?

Without a doubt, every interviewee considered institutional support of the CMS as absolutely critical in faculty use of the system. While several considered the necessity of learning and using the tool to be an imposition, all agreed that support and provided training were sufficient to get them and keep them involved in moving content online. Failure to support the CMS would likely be disastrous for the institution's long-term online goals, as, to a person, the interviewees claimed they would not make the effort otherwise.

Conclusions and Implications

The contribution of this paper is in the extension of knowledge on how faculty use course management systems to improve content and instruction, and how attitudes toward the systems can help or hinder its implementation. Four findings reveal the importance of this study. First of all, the interviewees reinforced the idea that online components help "extend the class beyond the classroom walls'. Students become more engaged with their instructors, with each other, and with the material, which seems to foster improved learning. Second, interviewees contended that interest in course management systems came more from bottom-up pressure, from students, than from top-down. While each made some reference to the university's increased interest in online education, none were as interested in that goal as they were in meeting student needs. For each one, the experience followed a similar pattern: the students requested materials placed online, first. This differs from Morgan's (2003) findings that few faculty were influenced by student pressure to use a CMS. Third, lack of the face-to-face, non-verbal interactions in class was a

prompted faculty to find other ways to gain feedback in online and hybrid classes. More communication tools are used in these formats than in traditional classes, and this seems to be the primary difference between traditional and alternative formats. Finally, the key issue for each interviewee for continued use of a course management system was institutional support and commitment. The interviewees stated that without the support, they would not have placed a single page online and would not be doing more online, now.

While hardly an exhaustive exploration, this study provided several pieces of noteworthy information, and shows that further research is definitely worthwhile. One limitation of the study was that only seven faculty members were interviewed, and while most were in agreement on almost all areas, it is possible that an aberrant group was chosen from the population. People who take time to volunteer for studies of this sort tend to have strong opinions, one way or the other, about the topic under investigation. The study could have benefited from a larger sample of participants. For instance, the study would have benefited from the insight of a greater number of males, especially those who are younger and those possessing more technical know-how. It is possible that gender differences may impact attitudes and uses, and it would be useful to make comparisons of males and females. It is further possible that the age of faculty members may affect the use of and attitudes toward online technologies. Also, while the issues of copyright and intellectual property were briefly addressed, the investigators believe there is no question that the issue must be covered in depth. Ownership and copyright of online course content may become a critical issue in the full acceptance of course management systems among faculty members.

Certainly, this particular study should be repeated and expanded. There are further areas to consider. Do faculty in different disciplines use CMS differently, and is attitude toward CMS different among varying disciplines? Do women use CMS differently or more than men in improving content or instruction? Are there significant attitude differences between the genders concerning CMS? How is the language barrier an issue for international faculty in the use of a CMS? How do various types and levels of training and support influence CMS use? Additional investigation is needed regarding how course management systems influence faculty reflection on teaching.

Course management systems are becoming widely used throughout all levels of education. This alone makes research on the impact of course management systems on effective instruction paramount. Research has shown remarkable insights on the student side of the online teaching-learning equation, but more must be done from the faculty perspective.

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Appendix A

Interview Questions

1. When and where did you first hear about WebCT?

2. Why did you decide to use WebCT to deliver course content?

3. Please describe how you learned to use WebCT.

4. How long have you used WebCT to deliver course content?

5. For which class formats (traditional; hybrid or blended; fully online) do you use WebCT?

6. If you teach in different formats, do you use WebCT differently in them?

7. How do you use the following in WebCT: syllabus; content; discussion boards; chat room; email; assignment module; quiz module; tracking?

8. How do you communicate with your students?

9. Have you changed your course content since you've began using WebCT?

10. If so, how have you changed your content?

11. How has WebCT influenced changes to your content?

12. Have you changed your instruction since you've been using WebCT?

13. If so, how have you changed your instruction?

14. How has WebCT influenced changes to your instruction?

15. How often do you reflect on instructional effectiveness?

16. Do you use WebCT tools or components to help reflect on instructional effectiveness?

17. If so, how do you use WebCT tools or components to help reflect on instructional effectiveness?

18. Other than grades, how do you determine if students are learning course materials?

19. Do you use WebCT tools or components to determine if students are learning course materials?

20. If so, which tools do you use and how do you use them?

21. Which WebCT tools have you found most useful, and why?

22. Which WebCT tools have you found least useful, and why?

23. What, if anything, has pleasantly surprised you about WebCT?

24. What, if anything, has unpleasantly surprised you about WebCT?

25. If you had time to discuss only one issue concerning WebCT with a new user, what issue would you desire to discuss, and why?

26. If you had time to discuss any issues concerning WebCT with a new user, what issues would you desire to discuss, and why?