AC 2011-1266: A STUDY OF TRADITIONAL UNDERGRADUATE STUDENT ENGAGEMENT IN BLACKBOARD LEARNING MANAGEMENT SYSTEM

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A Study of Traditional Undergraduate Student Engagement in Blackboard Learning Management System

Abstract

What can we do as university administrators and educators to ensure our students are fully engaged in regards to course instruction provided by an online learning management system (LMS)? How do we enhance a student's academic experience and provide a sense of community to them via an LMS? What elements need to be present in an online learning management system to benefit students in a traditional campus setting?

To address these questions we conducted a study that examined student perceptions and attitudes toward and experiences with course instruction provided via Blackboard, an online learning management system. For the purposes of this study, we surveyed a diverse and representative group of undergraduate students from eight departments within the College of Technology at Purdue University.

Survey questions were concentrated in three primary areas of interest: instructor usage, student usage, and student perceptions and attitudes. Students were also given the opportunity to respond to four open-ended questions concerning what they liked most and least about the learning management system; how future learning experiences in using the online learning management system could be improved; and finally, what suggestions they may have for instructors to promote more effective and meaningful uses of Blackboard in online courses and as a supplement to traditional course instruction.

Results of this study provided ideas on how to design and facilitate an online learning management system that would best aid this particular student population in their academic pursuits. Specific tools were identified and evaluated by stakeholders, and researchers were able to distinguish essential elements that undergraduate students were especially receptive to and even required in an online learning environment and a learning management system. Of critical interest for instructors and proponents of online learning systems is the issue of how to encourage engagement and improve the overall learning experience of students using online learning management systems like Blackboard. This study provided some insights and recommendations on how engagement, attitudes and experiences may be improved vis-a-vis online learning systems. It also identified the minimum tools required to create a stimulating and beneficial learning environment for students.

Introduction

Learning management systems (LMS) are currently utilized in both online and traditional classrooms at a growing rate[1, 2]. These systems have capabilities beyond the initial use of simply a course management system (CMS) and can be evolved into a system that incorporates many aspects of the student's interaction with the institution beyond their courses. Student engagement has long been tied to actual student learning [3, 4] so universities must determine how to best design and facilitate their learning management systems in order to fully engage their students.

The purpose of this study was to understand student experiences with online learning management systems, in this case, Blackboard, and to identify ways in which administrators and faculty can construct and utilize a system that will benefit the traditional student in a university setting. Researchers concentrated on the traditional versus online setting due to an interest in how LMSs were being utilized to supplement in-class instruction. Online courses and programs have been known to make use of the LMS in a more profound way than the traditional counterparts, mostly due to the necessity of the delivery of the curriculum online. Meanwhile traditional classes, and even institutions, may be operating their LMS at a much lower performance level due to former practices that circumvent the system.

Method

This study was guided by three main questions:

1. What can we do as university administrators and educators to ensure our students are fully engaged in regards to course instruction within a learning management system?

2. How do we enhance a student's academic experience and provide a sense of community to them – online in a learning management system?

3. What elements need to be present in an online learning management system to benefit students within a traditional campus setting?

Students from every department and major at the undergraduate level in the College of Technology (COT) at Purdue University were invited to participate in the study. Programs included in this survey were Aviation Technology, Building Construction Management, Computer and Information Technology, Computer Graphics Technology, Electrical Engineering, Mechanical Engineering, Industrial Technology, and Organizational Leadership. A survey was sent to COT students containing 30 questions that concentrated on three crucial areas of interest to researchers including instructor usage, student usage, and student perceptions and attitudes toward the LMS. A few demographic questions were also present to give researchers an idea as to the degree of diversity in the responses. Students were given the opportunity to respond to four additional open-ended questions concerning what they liked most and least about the learning management system; how their learning experiences could be improved; and finally, what suggestions they may have for their instructors on how to use the learning management systems more effectively in their courses.

After receiving IRB approval, a survey was constructed using Qualtrics Survey methodology. Qualtrics is Web-based survey software available for use by all Purdue University Faculty, Students and Staff to support teaching and research at Purdue. The online survey was made available to students on a voluntary basis for a period of four weeks. A participation rate of 10% was recorded from all 3,544 potential respondents (which represented the undergraduate student population of the College of Technology for the spring semester 2010.) Since surveys typically generate low responses, a 10% response rate was considered adequate for the purposes of this study. The survey took students approximately five to ten minutes to complete and there were both multiple choice and fill-in-the-blank questions. Students were able to "skip" some of the questions, passing on to the next question, but there were required questions as well.

When asked about their experience with online learning management systems, 82% of respondents reported taking three or more technology courses from the College of Technology during the 2009-2010 school year, providing adequate background for student perceptions of the LMS.

Under the category pertaining to instructor usage, we asked students to tell us what features of Blackboard their instructors regularly used in course instruction. We wanted to understand how instructors were using Blackboard to assist with, supplement or enhance course instruction – from the students' perception. For example, we wanted to know if instructors post their syllabi on Blackboard. Do they use the Assignment or Assessment feature to post assignments and tests online? Do they report grades using the Gradebook feature? Do instructors use any communication tools within the LMS for regular course communication such as the Discussion tab or the Chat rooms?

Under the category of student usage, we were interested in which features of an online learning management system students most often used and why. For example, we wanted to know if they primarily use Blackboard to check on grades, take online quizzes, turn in assignments, or communicate with classmates. To what extent did students use Blackboard for messaging? Did they make use of the resources such as supplemental websites, reading materials, eBooks, and online presentations? We wanted to know what worked and what did not. In addition, students were asked if they had taken an exclusive online course and if so, what was their experience with the course and would they recommend it to others.

Student perception and attitudes were obtained though opinion-based questions. For example, we asked what students liked most and least about using Blackboard in course instruction. Do they think instructors use Blackboard effectively? Is it helpful? Is it easy to access materials in this manner or to keep in touch with others in the course? In addition, students were given the opportunity to submit comments concerning how best to improve course instruction and student experiences on Blackboard.

Findings

The survey was intended to glean information that would be valuable to three groups of stakeholders: students, instructors and administrative/technical personnel. The responses and findings are discussed in terms of these three groups.

Instructors

Students were asked a series of questions related to their instructor's usage of the Blackboard system in their technology courses. We wanted to determine to what extent Blackboard was being used in the courses which students had taken. Responses to this question varied: 40% of respondents indicated that three or more of their instructors had used Blackboard in the course; 30% of respondents indicated at least two of their instructors had used Blackboard; 10% cited one instructor as having used Blackboard in a course, and 11% indicated that none of their professors had used Blackboard in the courses in which they were enrolled.

Students were asked if their instructors posted the course syllabus on Blackboard. 39% of students responded that all of their instructors posted the syllabus on Blackboard, while 57% answered that only some of their instructors had posted the syllabus online. Only 5% of respondents indicated that none of their instructors posted the syllabus on Blackboard.

Students were asked if their instructors used the Messages or Mail tool in Blackboard as a primary means of communication. 7% replied that all their instructors used the messaging tool, while 50% reported that some of their instructors used the communication tool. 43% replied that none of their instructors used the messages tool at all. These results are summarized in Table 3.

The fourth question was more specific as to which tools of communication the instructors used in Blackboard and students were instructed to check all that applied, so multiple answers were possible. Results are shown in Table 1.

Table 1. Features and Tools Used in Blackboard

Feature	No. of Respondents	Percent
Mail	116	41%
Announcements	213	76%
Chat	7	2%
Discussions	53	19%
Calendar	113	40%
None	39	14%

The next question asked if instructors distributed course materials via Blackboard such as Power Points, lecture notes, videos, readings, etc. creating a centralized point for course materials. 31% reported that all of their instructors posted course materials on Blackboard, while 64% replied that some of their instructors loaded course materials onto Blackboard. 6% of students reported that none of their instructors loaded additional materials into the LMS.

Question six followed inquiring the specific methods or tools that the instructors used to distribute materials in Blackboard then. Answers were as follows in Table 2:

Table 2. Tools Used to Distribute Course Materials

Item	No. of Respondents	Percent
Course Content	236	88%
Messages	43	16%
Announcements	97	36%
Calendar	67	25%
Assignments	170	64%
Web Links	82	31%

The focus turned to the issue of grades. Students were asked if their instructors used Blackboard to report grades on assignments, projects and tests. 37% of students responded that all of their instructors used Blackboard to post grades on assignments or projects, 59% reported that some of

their instructors did so, and 4% reported that none of their instructors posted grades for assignments or projects on Blackboard. As for test grades, 36% reported that all of their instructors posted test grades on Blackboard, 58% reported that some instructors did so, and only 6% reported that none of their instructors posted test grades on Blackboard. See Table 3 below for a summary of findings.

Table 3. Instructor Usage in Technology Courses as Reported by Students (Percentages)

Question	Item/Activity	All	Some	3+	2	1	None
1.	Used BB in Instruction			40	30	10	11
2.	Posted Syllabus on BB	39	57				5
3.	Used Mail or Messages	7	50				43
4.	Posted Course Materials	31	64				6
5.	Assignment/Project Grades	37	59				4
6.	Posted Test Grades	36	58				6

Finally, students were asked how important they felt it was to have access to their grades on Blackboard Researchers used a Likert scale of "1" to "5" with "1" being extremely important and "5" being not important at all. The majority of students, 173 or 62%, responded overwhelmingly that having access to their grades in Blackboard was extremely important to them. This was followed by 25% that answered it was very important to them. 13% total responded to the two categories of important and somewhat important. It was noted by researchers that 0% of the students responded to the last category of not important.

Students

We asked the students if the instructors used the assorted features and tools on Blackboard effectively, how students would rank the item's usefulness. Students ranked each feature/tool using a Likert Scale from "1" to "5" with "1" being extremely useful to "5" being not useful. Features and tools included the syllabus, resources/web links, messages, My Grades and assignments.

The syllabus was reported by 36% or 102 students as extremely useful, followed by 32% that reported it very useful. 21% responded that the syllabus on Blackboard was useful and a combined 11% reported that it was somewhat to not useful at all.

Resources on Blackboard were stated by a combined 40% to be extremely to very useful. 32% of students felt that resources were useful and a joint 28% felt they were somewhat to not useful.

The messages tool received 13% and 29% for extremely useful and very useful, respectively. 23% of students ranked this tool as simply useful and a collective 35% found it to be somewhat to not useful the bottom two categories.

The My Grades feature in Blackboard received the largest response of 73% or 205 respondents that felt that this tool was extremely useful, followed by 19% that ranked it as very useful. A

small percentage or 5% felt that this tool was useful while 2% reported it as somewhat to not useful.

Regarding assignments, 51% of respondents rated assignments as extremely useful and 29% as very useful. 14% reported having assignments available in Blackboard as being useful and 6% reported this tool as not very useful.

Table 4. Student Rankings of Usefulness of Blackboard Features and Tools (Percentages)

Feature/Tool	Extremely useful	Very useful	Somewhat useful	Not at all
Syllabus	36	32	21	11
Resources	40	32	28	0
Mail/Messages	13	29	23	35
My Grades	73	19	5	2
Assignments	51	29	14	6

Administrators and IT Professionals

The survey included several questions applicable to both administrators and IT professionals for continued improvement of the LMS as well as addressing any user issues. Students were also provided the opportunity to personalize their responses to a number of the questions.

To get a sense of the students' overall perception of their instructors' use of the Blackboard LMS, students were first asked if they felt their technology instructors were using Blackboard effectively overall. Only 16% responded that all of their instructors were, while 75% reported that some of their instructors made effective use of Blackboard. 9% felt that none of their instructors were using Blackboard effectively in regards to their courses.

Students were asked several open-ended questions, eliciting comments on the issue of Blackboard in course instruction. The first question we asked dealt with suggestions or recommendations they might have for helping instructors improve their use of Blackboard for course instruction. Specifically, we asked how instructors could use Blackboard more effectively in Technology courses. A majority of respondents cited grades and assignment tools as the two key areas where improvements would be most beneficial. Students reported that having access to assignments and grades online would help them know what was expected of them, when assignments were due, and how they were doing in the course. It would help them monitor their progress. Recurrent themes among the responses are captured in these two comments: (1) "have all professors use Blackboard for grades and assignments" and (2) "By posting assignments and grades in a timely manner."

56% (153) of respondents wanted their instructors to use the communication tools and post the syllabus and any other relevant material they need for the course. Recurrent themes among the student responses were: (1) "If it were consistent (the usage), it would work well…." and (2) "If all the instructors used Blackboard, we would know where to go to get the information."

Many respondents commented that they would prefer all technology instructors to use Blackboard for course instruction rather than the current practice of developing their own websites or using publisher and other websites that may be "confusing" to students. Respondents also wanted more of the tools and features on Blackboard to be used, such as chat and discussion forum features. Respondents felt these would help them to complete group work and to discuss issues and topics with other students for clarification purposes.

Students were also asked what they liked most about using Blackboard. Overall, respondents cited "the convenience of having all course material in one place" as being what they liked most about Blackboard. They also felt that organization, navigation and access were important features and made it easy to use. Several commented on the fact that they could access all their course information in one location. A number of the comments were: (1) "I like that I can see my grades, and it is easy to communicate with my instructors;" (2) "Being able to see my grades online. I also enjoy being able to electronically submit assignments and see them online;" and (3) "It is a place where I can find everything at one location. Instead, a lot of people have their course over many different places."

Students were asked what they liked least about using Blackboard. Numerous responses cited the fact that Blackboard itself can be unpredictable, "slow and unresponsive." A number of respondents referred to the "downtime" or times when there was no access to Blackboard for technical or other reasons. Some commented that (1) "It is not user friendly, and will only run on select web browsers" and (2) "the interface makes little sense and is hard to navigate." Many respondents were unhappy with problems associated with (3) "pop-up blockers" that made downloading files or assignments difficult and time consuming. Some referred to this as (4) "annoying" and "cumbersome" to use. And others cited the lack of instructor usage as a problem causing some confusion among students as they moved from course to course.

When asked how their experience using Blackboard could be improved, respondents cited things such as mobility and portability. For example a number of respondents want Blackboard apps for iPhones and other mobile phones, citing that their experiences with Blackboard would be greatly improved (1) if "Blackboard could be made more mobile phone compatible"; (2) "make it more reliable and work better on multiple platforms more efficiently". Other respondents wanted more consistency in use by instructors, commenting that we should "standardize the use of Blackboard including what tools to use". Several respondents recommended improvements in the general organization of Blackboard and its components which would help them with their studies.

Finally, students were asked if they had ever taken an exclusive online course (distance education). 15% responded that they had taken a distance education course and 85% had not. Using a Likert scale, students were asked their level of satisfaction then with the distance education course. A combined 32% of responses indicated students were very to extremely satisfied, 32% were satisfied, 25% were somewhat satisfied and 10% reported not being satisfied with the online course experience. When asked if the students would recommend online courses, 72% responded yes and 28% no.

Conclusion and Recommendations

The results of this study suggest that traditional students believe a learning management system such as Blackboard will be useful in helping them in course instruction. Most felt that access to course materials, grades, assignments, and communication tools made it easier for them to track their progress and to communicate with group members. While problems with Blackboard were cited, most respondents believed it was a good addition to regular course instruction. Most respondents cited the inconsistent and infrequent usage of Blackboard by technology instructors as being problematic and seemed to become "confused" when instructors opted to use other websites, both commercial and self-developed sites, for course instruction. Respondents repeatedly commented that they would prefer to have a consistent policy whereby all instructors used Blackboard in their courses, to minimize confusion and to aid students in learning and monitoring their own progress.

Other key findings were that the LMS must contain the essential tools that students require to support their courses and study. Students were especially concerned with having access to their grades and assignments in Blackboard. The syllabus as well as other course materials was also cited as necessary for engagement in the LMS.

Administrators and IT professionals should take note that it was important to students to have a learning management system that was reliable and easy to navigate. Students suggested identifying browser compatibility so that login and download issues could be resolved. Students also requested that the LMS be set up in a more organized manner, possibly even standardizing it with a template for instructors to use. This would provide the "consistency" among courses that students so greatly desired in the study. This also enables students and instructors to learn a LMS system more rapidly so that it becomes easier to navigate for all involved. Standardization to one format of the LMS would also reduce costs due to the ease of training and support.

To build upon this research, it would be useful to have student and faculty focus groups, to conduct a survey of instructors, to benchmark the efficacy of learning management systems with other institutions, and perhaps, to conduct a second survey with students, broadening the scope of the questions as well as including students from other disciplines. Focus groups and follow up surveys could help determine more specific features students like and dislike, how students use LMS features, and what improvements need to be made to the LMS. This would enable instructors and policy makers to make changes to online learning management systems that would aid student learning and achievement and facilitate use in course instruction. A survey of instructors will reveal issues, practices, and attitudes toward online instruction, usage and access issues with Blackboard, consistency and frequency on online course supplements, and efficacy. Benchmarking Blackboard and other online learning management systems could provide administrators, policy makers and technical support staff with more detailed information on effective system design, standardization, access and deployment, cost savings, training and support, and monitoring of use and student progress.

Three key issues remain. The first issue concerns how to measure the extent to which Blackboard or another LMS may facilitate and/or promote student learning and progress when used in conjunction with classroom instruction. The second issue is how to use online learning management systems effectively when you have students with disabilities. This continues to pose a problem since so much of the online material may be inaccessible to students who are visually

impaired, hearing impaired, or who lack significant motor skills. And a third key issue concerns how to "tamper-proof" online learning management systems to avoid problems with cheating and plagiarizing that have become so rampant in the technological age.

Being able to identify critical elements, technological and educational, required by students in an LMS is essential in developing a better student experience with the system. But it is also important from a standpoint of academic integrity. Added to this is the need to ensure consistency and high standards in instruction, to manage costs, time, access and training, and to facilitate student academic success. Proponents of learning management systems believe "institutions need to identify how to maximize the return on their investments by using LMSs to manage the quality of university education"[5]. Others question whether LMSs help or hinder the education process, whether they encourage students to take "short cuts" in their academic work, and whether all courses can indeed be taught using online resources. These questions suggest further research in the area and are beyond the scope of this paper. This study focused specifically on reporting issues, concerns, current practices and perceptions which characterize how students are engaged in a learning management system.

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