Information Technology Support and Learning Management Systems in Higher Education

In this report, the Hanover Research Council provides guidance on the management of and integration of technology in the post-secondary classroom. We begin with a summary of technology’s growing role in the higher education sector and its implications. We then provide a discussion of extended Information Technology (IT) support methods, followed by a thorough assessment of the current and projected LMS software market. We conclude with an overview of the IT support services and LMS systems in use at ten peer institutions.
Online Learning in Higher Education

Background

A growing number of institutions today are faced with the challenge of providing technical support that complements the schedules of both their students and their mobile campus community. According to a 2008 study conducted by the Sloan Consortium, an organization dedicated to the integration of technology in higher education, online enrollments in the U.S. have experienced unprecedented growth with an estimated 3.94 million students registered for at least one online course in 2007, a 12.9 percent increase from the 2006 total. In fact, the overall number of online students has more than doubled since the first Sloan survey in 2002, with over one-fifth of all higher education students now taking at least one online course.

Although all types of institutions (two-year or four-year, private or public, small or large) have adopted web-based learning methods, two-year associate’s degree-granting institutions have had a larger proportion of online students relative to overall student enrollments throughout the 2002-2007 time period. The Sloan Consortium proposes a strong positive correlation where institutions with the most course offerings tend to have the most online education experience. Interestingly, a comparison between large universities and community colleges provides an exception: nearly half (44%) of the very large institutions implemented their first online course offerings prior to 1999; yet, community colleges now account for the majority of online enrollments.

Although associate’s institutions had a relatively late start in the e-learning industry, their overall mission and student body composition seem more conducive to online education, allowing them to benefit from a quick increase in online course offerings and enrollments.

This general development in online education can be attributed to a range of factors, including:

- A distressed economy and job market
- More mainstream use of technology resources and advancements in technology
- Increased student demand for an affordable and convenient alternative to traditional instruction methods
- Growth in international student enrollments at U.S. colleges and universities

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1 “Staying the Course: Online Education in the United States, 2008.” The Sloan Consortium. November 2008. http://www.sloan-c.org/publications/survey/pdf/staying_the_course.pdf. Note that 4,491 institutions were invited to participate and a total of 2,577 (57.4%) of these institutions responded. These responses were merged with survey data from previous years (2002-2007) to note changes over time.
2 Ibid., p. 6.
3 Ibid., p. 8-10.
Implications

With online learning or e-learning methods, the degree of interactivity may vary greatly, ranging from traditional to full, online instruction. That is, even though online instruction is becoming more prominent in higher education, it is important to identify the method of online learning most accountable for this trend. The 2008 Sloan Consortium study provides a more detailed overview of the range in course types:

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<th>Percentage of Online Content</th>
<th>Course Type</th>
<th>Description</th>
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<tr>
<td>0%</td>
<td>Traditional</td>
<td>No technology used – content delivered either orally or on paper</td>
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<tr>
<td>1 to 29%</td>
<td>Web Facilitated</td>
<td>Uses web-based technologies to enhance traditional instruction. May use a CMS or webpage for administrative purposes.</td>
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<tr>
<td>30% to 79%</td>
<td>Blended/Hybrid</td>
<td>Uses both online and traditional instruction. Higher degree of interactivity (e.g. online discussions)</td>
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<tr>
<td>80+%</td>
<td>Online</td>
<td>Most or all content is online. Generally no face-to-face interaction.</td>
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Source: The Sloan Consortium

According to a 2004 ECAR Research Study, an evaluation of student preferences for IT usage in the classroom produces a rough bell curve formation. The highest percentage of respondents (41.2%) prefer a moderate level of IT usage in the classroom, and 30.8 percent prefer courses with an extensive level of IT relative to roughly a quarter (22.7%) who favor limited IT usage, while only a select few, 2.7% and 2.2%, prefer the extremes of no technology and online courses, respectively.

This implies that although there are different degrees of interactivity, as outlined above, the majority of online instruction is expected to be classified either under the “web facilitated” or “blended/hybrid” course type so as to balance student preference. Blended instruction generally goes beyond traditional learning methods, combining aspects from both to create a multidimensional learning experience.

According to the Center for Applied Research in Educational Technology (CARET), technology improves students’ performance when its application:

- Directly supports curriculum objectives

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❖ Offers avenues for student collaboration
❖ Adjusts for students’ skill ability and provides responsive feedback to the student (and the instructor) about his or her progress
❖ Is integrated into everyday instruction
❖ Provides opportunities for students to design and carry out projects

In view of these guidelines, the benefits of moderate classroom technology integration are manifold. The Office of Educational Research and Improvement (OERI), an agency of the U.S. Department of Education, contends that the integration of technology in education supports teachers’ efforts in achieving learning objectives by:

❖ Enhancing student’s perception of their work
  o Students show greater concern about the quality of their work when it is available to “external audiences.”
❖ Allowing students to successfully comprehend more complex material
  o Due to certain features of technology support (e.g. the ability to present and visualize abstract concepts), students are able to further enhance their understanding of a subject area.
❖ Developing student motivation and self-esteem
  o Case studies show that “using technology increased the amount of time students spent on a task, their willingness to critically review and revise their work, and their pride in the finished product.”
❖ Creating a more collaborative learning environment
  o Classroom dialogue is enhanced through online discussion forums and greater clarity in communication.

As expected, most institutions have incorporated technology as a supplemental aspect to classroom based teaching, using e-learning methods specifically to increase course flexibility and content rather than adopting a highly interactive, web-dependent approach. Given these trends in online instruction, many post-secondary institutions have had to restructure their information technology support and help desk services in order to better serve the needs of their campus populations. Such measures will be discussed in the remainder of this report.

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<th>At a Glance: Online Learning in Higher Education</th>
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<td>☐ Online learning is now integrated across the</td>
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<td>board in higher education.</td>
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<td>☐ The growing popularity of online learning</td>
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After Hour Information Technology Support

With more and more students demanding after hour IT support, many institutions have been compelled to extend their help desk hours to include “late-night, weekends, or even around-the-clock” support. This is true for distance learners, in particular, because:

- The majority of online students also hold full-time jobs, making their internet usage most active at times when traditional college offices are typically closed.
- The growth in international student online enrollments means administrators must become increasingly aware of time zone differences and ways in which to accommodate them.

According to a 2007 EDUCAUSE survey of approximately 450 institutions, well over half of the respondents (63.4%) reported offering extended IT help desk hours and a select few (4.9%) provided 24-hour technical support. Although institutions are facing greater pressure to extend IT support to the general campus community, some simply cannot support such an endeavor. Many institutions have either a limited number of available technicians or a tight IT budget. A report commissioned by the Lumina Foundation for Education states: “Most colleges pay for information technology with year-end savings and other forms of ‘budget dust’ that do not produce sufficient financing to meet technology needs.” Moreover, the recent economic downturn has placed IT financial needs even further down on the list of priorities for institutions of higher education. A 2008 Campus Computing Survey shows that over 45 percent of public universities alone reported cuts in technology funding for the fall semester, relative to 16.5 percent in 2007.

Many institutions end up outsourcing IT services to Education Services Management (ESM) companies like Presidium, which have the capability of serving hundreds of institutions from one technical support center. Although other companies (e.g., PerceptIS, Learning House, and Connected Learning Network) provide around-the-clock IT support, “none are as big as Presidium which dominates the [ESM]

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7 Ibid.
Tulane University became a Presidium member shortly after Hurricane Katrina hit New Orleans. Tulane’s director of end-user support, Adam Krob, states:

The demand has always been there for us to have longer hours. Students do their work at all times of the day and night...They’re used to that model from their credit card companies or from Amazon. They just live in a 24/7 world.

According to the co-founder and managing director of Presidium, IT services are most needed in September and January, with a reported 3,500 to 4,000 calls per day mainly coming in between 7:00 a.m. and 12:00 a.m. Typically, help desk calls taper off by midnight; yet, the few late night calls that do come in tend to be the most urgent of all. ESM companies “try to keep the process as seamless as possible.” Most of the time, callers do not even realize they have reached a remote location because call takers are trained to use inclusive words and phrases (e.g., “we” and “our server”) when referring to the campus technology system. Moreover, ESM companies are able to adapt to any learning management system, while also providing a “complete solution” to any technology inquiries. Overall, outsourcing to ESM companies is a way of guaranteeing high-quality 24-hour support for all IT questions, making the promise of “anytime, anywhere” learning a reality.

Outsourcing, however, is not always the most cost-effective option. Some ESM companies charge per-minute fees, anywhere between 60 to 90 cents a minute, for each service call or email that they receive. This means that over the course of a year, an institution with substantial online student representation could pay hundreds of thousands of dollars. Presidium’s contracts “range from less than $15,000 per year to just over $1-million, depending on the size of the institution or university system and the services sold” (e.g., the availability and depth of support).

Other institutions have avoided outside vendors altogether when addressing the growing need for after hour IT support. Instead of hiring private companies or additional staff members, many colleges and universities are implementing one or both of the following:

- Self-service solutions
- Student help desk staff

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12 Ibid.
13 Carnevale, D. Op. cit. Note that Tulane University has few distance education students; this demand for 24/7 support is shared by all students, on campus or online.
14 Ibid.
15 Ibid.
16 Ibid.
19 Ibid.
Self-Service Solutions

Some institutions are finding success with a more “hands-off” approach to IT support. According to the director of technical services at Alloy Software (a ticket and asset management software provider), online knowledge databases, that allow users to troubleshoot before opening a ticket, and self-service portals, that allow people to open and track tickets online, are providing campuses with better 24-hour service before the help desk is even contacted.20

Self-service solutions such as these can greatly reduce IT costs and produce a more efficient outcome. Developments such as a knowledge base, FAQ and “How-To” links, and online tutorials/manuals allow for IT staff to focus on more complex labor-intensive requests while still serving all IT needs on campus. There are also software and support service systems specifically designed for internal company support. RightAnswers, for example, has provided “over 250 major universities and corporations” access to a knowledge base that “improve[s] the end-user support experience, increase[s] support capacity, and reduce[s] support costs.”

Regardless of the type of self-service solution implemented, it is important to keep knowledge databases relevant and to provide new or additional content as deemed appropriate based on user input.21 Otherwise, resources will be wasted and few will benefit from the initiative.

Student Help Desk Staff

Many institutions, particularly ones without an extensive distance education program, are employing student help desk staff to meet the demand for after hour IT support in a more cost-effective manner. For institutions like St. Norbert College (SNC), a private Catholic liberal arts college in DePere, Wisconsin, the demand for overnight IT support is too small (five calls/night on average) to justify the cost of providing 24-hour service.22 Instead, St. Norbert employs students to provide extended technology support between the hours of 4:30 p.m. and 1:00 a.m. SNC officials report that “students troubleshoot simple problems and record the more serious issues for the professional staff members to tackle the next morning. Staff members answer most of the held-over questions within a day.”23

For these institutions, around-the-clock support may be extreme. The director of computer services at SNC states that “fewer students need high-powered computing help at night than during regular office hours.”24 Longwood University, a public liberal-arts university located in Farmville, Virginia, also offers after hour student-

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21 Ibid.
23 Ibid.
24 Ibid.
dependent IT support, but in a more non-traditional manner. The University pays IT technicians to answer calls during regular operating hours, 7:45 a.m. to 5:00 p.m., and allows “student operators to field calls from their dormitories and from their cell phones.” Francis Moore, the chief information officer at Longwood, reports: “In exchange for room and board, the students stay available until at least midnight, but many of them stay awake and keep taking calls until two in the morning.”

At a Glance: IT Support Systems

- Over 60% of responding higher ed institutions report offering expanded IT support.
- Many institutions outsource IT services, although this can be expensive.
- Self-service practices can be more cost-effective but less comprehensive.
- Some institutions hire student technicians to field calls when the IT help desk is closed.

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25 Ibid.
Current Trends and Future Outlook for Learning Management Systems

Background

A learning management system (LMS) is a form of educational technology that can be used to accomplish a range of tasks, depending on the design of the system and upon the needs of the user. The terms “Course Management System” (CMS) or “Learning Content Management System” (LCMS) are sometimes used to indicate similar systems, adding to the variety of functions covered by this general field of technology.\(^\text{26}\) In higher education, where online instruction is becoming increasingly mainstream, LMS is used as the platform to support e-learning and hybrid courses.\(^\text{27}\) In other words, it can either supplement traditional face-to-face courses or be used to teach fully online courses.\(^\text{28}\) However, even with recent growth in distance learning, the former function of an LMS remains more common in the higher education realm.

The role an LMS can and should play in the context of education is dictated by a district or institution’s attitude towards the nature of teaching and learning. The prior learning model, where students are expected to passively receive knowledge at the same rate as one another, is undergoing a major transformation. Researchers argue that technology is the driving force in this shift, allowing students to move at their own pace in order to achieve mastery of concepts:

In an Information Age model of education, an LMS will assess learners’ current knowledge and skill level, work with teachers and learners to identify appropriate learning goals, identify and sequence instruction appropriate for the individual learner, assess learner performance products, store evidence of attainments, support collaboration, and generate reports to provide information to maximize the effectiveness of the entire learning organization.\(^\text{29}\)

Learning Management Systems can provide instructional support by way of presenting information, facilitating course material management, and serving as a means of collecting and evaluating student work. Additionally, more “technically sophisticated” systems may provide functions such as holding virtual office hours, reminding students about deadlines, and dividing students into groups for online projects. A number of programs can separately archive content for use in multiple courses or allow teachers to create e-portfolios to collect and store student’s journals, projects, and tests.\(^\text{30}\)

\(^{27}\) Ibid.
\(^{29}\) Ibid., p. 10.
In general, however, “all CMSs [or LMSs] offer the same basic tool set: a way to present content in a folder structure, assessment tools, survey tools, discussion groups, announcement boards, and grade books.” Points of distinction between different systems include: “user interface, features, licensing and pricing, services for course building and training, and integration with other on-campus systems such as e-mail and registration.”

LMS Software Providers

Learning management systems typically fall under two categories: commercial systems such as Blackboard, eCollege, and Desire2Learn and open-source products such as Moodle, Sakai, and Coursework. Bedford, Freeman & Worth, a publisher of LMS-compatible course content (which is distinct from the platform itself) has characterized the LMS market by noting that “Blackboard and WebCT are the most widely used, followed by Desire2Learn and ANGEL,” but that “Sakai and Moodle are popular open-source, free CMSs most commonly used in K-12 and at research institutions.” Some of these relationships have changed (e.g., WebCT and ANGEL have both been subsequently acquired by Blackboard), but the general characterization is accurate. The vendor landscape is discussed in more detail below.

Blackboard and Proprietary Software

Despite rapid transformations in the learning management market, there currently appear to be two prominent trends, alluded to in the preceding section, which will likely determine the long-term future of the industry: the growing dominance of Blackboard among the proprietary commercial systems, and the corresponding rise in open-source providers, namely Moodle and Sakai, as alternatives to the traditional commercial suppliers.

ANGEL and WebCT constituted Blackboard’s chief competitors in the e-learning industry before both companies were bought by Blackboard: WebCT in 2006 and ANGEL in May of this year with a $95 million deal. In addition to its direct rivals, Blackboard has acquired peripheral companies in recent years, such as the NTI Group, which makes emergency-notification software, and Xythos Software, which makes content-management programs.

When Blackboard acquired ANGEL, the company’s portfolio included 400 educational organizations. Blackboard now claims ownership of between 70 and 80 percent of the commercial learning management market in US higher education.

33 For the purposes of this report, “open-source” refers to free software applications whose source codes are openly licensed to grant users customization, modification, and design improvement capabilities.
including 1,915 colleges and universities, as well as 388 K-12 districts. Many ANGEL customers were displeased by the Blackboard acquisition, noting that ANGEL’s customer service and client accessibility were far superior to Blackboard’s. However, Blackboard argues that the merger will ultimately benefit both customer bases as the deal will pair Blackboard’s technical functionality with ANGEL’s customer service expertise.

Blackboard, often called the Microsoft of higher education technology, thus represents virtually the sole provider of education e-learning solutions following the acquisition of its primary competitors. Although other smaller companies (e.g. eCollege and Desire2Learn, a Canadian learning management provider that has been embroiled in a patent infringement lawsuit with Blackboard over the past year) do exist, Blackboard’s current competition comes largely in the form of non-commercial entities.

Reasons for this rise in open-source LMS deployment include:

- Greater technical proficiency and computer literacy amongst school staff
- Appeal of open-source solutions’ customizability
- Discontent with Blackboard’s cost and customer service track record

**Blackboard Features**

Blackboard’s LMS currently offers a wide variety of features including discussion boards, email, course content areas, a gradebook and digital drop box, an announcements section, online tests and surveys, among other options. Blackboard also provides two synchronous communication tools: Chat and Virtual Classroom. The Chat tool shows text posted by individual participants, while the Virtual Classroom displays text as well as a shared whiteboard, course map, and group browser window. Moreover, the content of these real-time sessions may be recorded and made available for further review by the instructor and students.

Blackboard Learn, formerly known as the Blackboard Academic Suite, is the company’s flagship product. The newest release of the LMS features new social learning and so-called “Web 2.0” tools, in addition to capabilities designed for integration with open-source software systems like Moodle and Sakai. The social learning and Web 2.0 tools include blogs, group tools, journals, and notifications. Notifications for pending assignments are visible to students as dashboards on the

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Blackboard site (e.g. “your paper is due in four hours”). Students may also choose to receive reminders through alternative means such as personal email and Facebook accounts.

Blackboard’s anti-plagiarism software, SafeAssign, is also included as a standard feature in the newest product release. The application allows an instructor to scan a student’s submission and receive a report on the similarity of the assignment to others in the program’s database. SafeAssign’s library includes a scan of the Internet, the ProQuest ABI/Inform database, and student and faculty submissions made by Blackboard’s network of users.37

With regard to its new feature that integrates the product with open-source software, it appears that Blackboard is trying to address the criticism that proprietary software systems are too inflexible. As the CEO of Blackboard, Michael L. Chasen, states, while institutions may want the advanced features and technical support offered by Blackboard, “there may be an individual professor or small department that is using a home-grown or open-source solution on the campus as well. Blackboard opened up the course API so that those institutions that have standardized on Blackboard could give their users a single URL and a single login where they could access all of their courses — both Blackboard and courses on other systems.”38

Open-Source Applications

Over the past several years, open-source learning management systems have experienced rapid growth. These systems are not produced by a single corporation; instead, they are maintained by a community of users. Many institutions have switched to open-source learning management systems thanks to their zero upfront costs and their ease of customization and adaptability. According to a 2008 campus computing survey conducted by The Campus Computing Project – “the largest continuing study of information technology in American higher education” – although Blackboard remains the dominant LMS provider (56.8%), this value is down from 2007 (66.3%); meanwhile, more institutions (13.8%) have identified using an open source system in 2008 relative to prior years, 10.3% in 2007 and 7.2% in 2006.39

The principal open-source learning management systems currently in use are Moodle and Sakai, founded in 2002 and 2004 respectively. While both systems are generally well-reviewed, Moodle is typically rated more highly by users, generates more user traffic, and is often considered the more capable option.40 In fact, Moodle is “rapidly

40 “Sakai vs. Moodle.” http://www.zacker.org/sakai-project-vs-moodle
gaining market share in the university learning management system market and is second only to Blackboard.”

As of fall 2008, nearly a quarter (23.7%) of private four-year institutions identified Moodle as the campus standard LMS relative to 17.2% in 2007.

It should be noted that while Moodle and several other open source learning management systems are free to procure; this does NOT necessarily mean that campuses will save money by switching to open source systems. Installation costs for “free” open source learning management systems may be higher than those for other systems, since the lack of customer support means that problems must be solved through more time-intensive means such as user forums and available documentation. Moreover, installation may require additional time and personnel due to the “steep learning curve” associated with fine-tuning the system. Despite these potential difficulties, open-source LMSs remain a viable option.

Open-source LMSs have seen an increase in popularity largely due to concerns about vendor “lock-in.” Today’s LMSs must be capable of scaling up to support increasing numbers of users and increasing amounts of content. Institutions can find themselves being cornered into staying with an LMS provider simply because of familiarity and the perception that the costs of switching are simply too high. Open-source platforms, on the other hand, are by nature highly adaptable and can be customized to meet current and future needs. Open source learning management systems also offer their users the ability to mitigate “vendor collapse or product discontinuation,” scenarios that occur with increasing frequency as the LMS market consolidates.

Open-source platforms such as Moodle and Sakai have grown to incorporate enough features to now compete with commercial offerings such as Blackboard. Colleges large and small, from Georgia Tech to UCLA to LSU- Shreveport have transitioned from Blackboard to open-source options. Specifics of the Moodle and Sakai systems are provided below.

Moodle (Modular Object-Oriented Dynamic Learning Environment)

Moodle is a free and open-source learning management system, designed to be installed on a web server on site or through the web hosting company. Moodle can be scaled for application, serving anything from small primary schools to large universities. Further, it can be used to host fully online courses or simply to

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44 Ibid.
45 “Moodle: What is Moodle?” http://moodle.org/about/
augment blended face-to-face learning. Just as with commercial platforms, Moodle users pay for hosting, support, training, and content of the system, though the tool itself and all system licensing are free. As with all open-source solutions, the system allows teachers to easily write online activities themselves. Moodle can be used in conjunction with the Wimba Live Classroom to facilitate faculty meetings or enhance the classroom experience. Between 2006 and 2007, the proportion of colleges using Moodle as standard equipment rose from 4.2 percent to 7.8 percent.

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<th>Moodle Statistics</th>
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<tr>
<td>Registered Validated Sites</td>
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<td>Number of Countries</td>
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<td>Users</td>
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<td>Teachers</td>
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Moodle currently supports over 75 language packs, whereas Blackboard currently has 13. The fact that Moodle supports considerably more languages than the largest commercial LMS might be attributable to the nature of the open source community. Developers often create language packs for their own use and extend those packs to the community as a whole, while commercial outfits often develop language packs based on perceived market needs or commercial viability.

Blackboard now provides a “Language Pack Editor,” which allows institutions to create Blackboard language packs and share them with other institutions. Time will tell if this move will result in a substantially larger language capacity for Blackboard, but it is an indication that the company is encouraging, at least at some level, a community of end-user developers.

Sakai

Sakai is a free and open-source learning management system featuring a set of software tools designed to help instructors, researchers, and students team up online in support of their course instruction and research, or for general project collaboration. Given initial funding by the Mellon Foundation, the Sakai Project began in 2004 when Stanford University, University of Michigan, Indiana University,
MIT, and Berkeley joined forces to build a common course management system instead of licensing software from a commercial vendor.\(^{53}\) Sakai has many of the features expected from an LMS including document distribution, a gradebook and discussion forum, live chat, assignment uploads, and online testing. A non-profit organization, called the Sakai Foundation, was established in order to promote wider adoption of community-source software solutions within higher education. Many institutions that are part of the Sakai network are also members of this foundation; however, it is not a requirement for Sakai users. To date, Sakai is in use at over 160 universities and schools throughout the world, although most are located within the United States.\(^{54}\) In 2007, about 3 percent of colleges nationwide were using Sakai as standard software.\(^{55}\)

### Trends in Current LMS Use

According to last year’s annual Educause Center for Applied Research (ECAR) survey of undergraduate students’ use of technology, the percentage of students who have used an LMS increased by 10 percentage points between 2005 and 2008, with approximately 72% of students having used an LMS in 2005 and 2006 and 82% reporting LMS use in 2007 and 2008. Respondents were generally positive (69.5%) about their LMS experience; only 5.3% expressed a negative view.\(^{56}\) Positive feedback focused on the convenience of an LMS in tracking grades and disseminating logistical information; negative comments centered on reliability issues and inconsistent use on the instructor’s behalf.\(^{57}\)

Earlier this year, *Learning Circuits* and *E-Learning News* jointly ran a brief poll of readers on their use of and satisfaction with their learning management systems, soliciting a total of 184 responses. The survey revealed that nearly 91% of respondents used an LMS at their institution and were typically satisfied with its performance (53.3%). While the pool of respondents was not limited to administrators at educational institutions, LMSs’ primary role is still revealed to be closely tied with educational pursuits: 66.7% of respondents indicated that their main reason for implementing an LMS was to centralize the management of learning activities. When asked to rank the most valuable features of an LMS, 59.3% said assessment and testing were of highest importance, followed by “content management” (48.4%).\(^{58}\) These functions are

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\(^{54}\) “Sakai: Case Studies.” http://sakaiproject.org/portal/site/sakai-home/page/5d541d38-1646-4d33-b46c-aba95084175e


\(^{57}\) Ibid.

central to the teaching and learning process, whether in a school, university, or business setting.

Most students and teachers use LMSs for the collection of assignments, posting and viewing of grades, and the distribution of course materials. These functions, while not glamorous, are of high importance to students’ positive perceptions of technology use in their academic careers—the ability to access the necessary materials from any location at any time has been found to be a “key attribute” to students’ satisfaction.59 Both students and teachers have rated the gradebook function of a learning management system as of the highest importance. For students, it encourages them to check for missing assignments and determine where they need to improve as grades are posted. For teachers, an online gradebook helps them see “immediate and significant results in classroom management and achievement,” whereas entering grades into traditional systems tended to feel overwhelming.60

The Future of LMS

As the Learning Circuits 2009 survey made evident, the future of LMS is stable. Nearly half of all responding organizations (44%) intend to keep their current LMS, while 24% plan on upgrading. Nearly a quarter (22%) of respondents plan to purchase or build a new LMS in 2009.61 Learning management systems, as platforms to facilitate classroom instruction, have demonstrated clear benefits. Regardless of the specifics—whether proprietary or open-source, packaged for installation or hosted—they are unquestionably going to continue to be part of the learning environment for the foreseeable future. The question becomes not whether LMSs will shape the educational landscape, but how.

The prospect of LMS technology as more than an administrative, course management aid is a current focus of theorists in the field of educational technology. In June of 2008, the Journal of Online Learning and Teaching (JOLT) dedicated an entire issue to “next generation learning/course management systems.”62 The first section of the issue offers three papers exploring the evolving design and potential uses for future LMS frameworks, but remains grounded in traditional expectations for the function of an LMS (e.g., the dissemination of course materials and the provision of a virtual gradebook). The second and third sections offer a more forward-looking vision of LMSs, suggesting that future systems may incorporate other up-and-coming educational technologies such as wikis, blogs, gaming, and virtual environments like Second Life.

60 Ibid.
One researcher envisions the potential role of LMSs to be more comprehensive, integrating “the operational processes of an institution directly related to learners, instructors, instructional designers and administrators performing their tasks in a seamless architecture” and proposes that the new framework would be more accurately described as an “education management system.”63 Within this context, the new LMS should move away from its current inflexibility, in which a “one-size-fits-all” instructional approach is adopted, in order to support a dynamic learning environment that can adjust to individual student needs, learning preferences, and prior knowledge.64 The current use of LMS is far from this vision, however. The degree to which faculty carry their use of an LMS beyond mere course management tasks (e.g., posting assignments and syllabi) towards more instructional tasks (e.g., moderating an online discussion) will be an important trend to watch as LMS technology becomes more adaptive and social in nature.

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At a Glance: Learning Management Systems

- LMS is the platform for supporting e-learning and hybrid courses.
- LMS systems are typically either “commercial systems” or “open source systems.”
- Blackboard dominates the field of commercial systems.
- Open source applications (esp. Moodle) are increasingly viable and popular alternatives to Blackboard.
- LMS has a stable future with prospects for greater flexibility and more customized applications.

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64 Ibid. p. 160.
Case Studies: IT Support and LMS Use at Peer Institutions

In this section, we provide brief summaries of the information technology support and learning management systems available at peer institutions.

Bloomsburg University

Bloomsburg University is a four-year public university located in Bloomsburg, Pennsylvania. A 12-page draft of Bloomsburg’s “Technology Plan” for the 2006 academic year is available for download from the institution’s website. The last technology plan, completed in 2002, focused on “budgeting, planning, organizational issues, and hardware,” whereas the 2006 plan is primarily centered on enhancing user interaction. The technology plan outlines eleven key goals, recommended by the University’s technology planning committee, complete with a number of objectives for each. Bloomsburg intends to “expand access to educational resources, materials and learning activities or opportunities” by “enhancing learning management system functionality to include content management system and outcomes assessment capabilities.”

The University’s Technology Plan is overseen by the Office of Technology. In addition to creating and implementing the plan, the office is generally accountable for “providing technology services, resources, training, and information to all members of the university community.” Bloomsburg’s Office of Technology recently purchased the “Numara FootPrints” help desk management solution in order to provide better service levels and customer problem resolution. The office strongly encourages all non-urgent requests to be entered into the Numara software. With this application:

- Tickets are automatically routed to appropriate technology personnel for assistance.
- Campus-wide computer issues are easily viewable.
- A “comprehensive knowledge base” is available for Frequently Asked Questions (FAQs).

For urgent requests, the help desk staff is available to answer calls Monday through Friday, 8:00 a.m. to 4:30 p.m. The office also provides after hours support with student technicians available for emergency calls only, Monday through Thursday,

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66 Ibid., p. 8.
67 Ibid., p. 11.
4:30 p.m. to 7:00 p.m. Campus-wide network and server problems may also be reported after hours and on weekends by calling the help desk.70

Bloomsburg University uses the Blackboard LMS release 7.3 to support traditional classroom-based courses. A comprehensive, 24/7 Blackboard support center complete with live chat, animated tutorials, a callback request option, a knowledge base, and a ticket system is available to all Bloomsburg students and faculty.71

At a Glance: Bloomsburg University

- The Office of Technology uses “Numara FootPrints” help desk management software
- Office hours are 8am-4:30pm, M-F
- Student technicians offer emergency support 4:30-7pm, M-Th
- Blackboard LMS 7.3 with 24/7 online support

California State University – Bakersfield

California State University, Bakersfield (CSUB) is a public university founded in 1965. A 23-page draft of CSUB’s “Information Technology Plan” for the 2005 academic year is available for download from the institution’s website.72 In the introduction section of the plan it states that university faculty “use the WebCT learning management system and other digital products to facilitate their instructional offerings,” while students “use email for communications, WebCT for online group discussion, the Library’s website to access appropriate literature, and Banner for enrollment and to manage their degree progress.”

It seems that although WebCT had a “rough start,” it has now proven its “reliability” and “worth” for both CSUB faculty and students.73 According to 2005 CSUB statistics, WebCT is accessed about 380,000 times a day with a total enrollment of 3,230 students. Of CSUB’s faculty, 170 have WebCT user accounts making up a total of 554 active courses on the server (58 of which are considered full, online courses).74

As previously mentioned, WebCT was acquired by Blackboard in February 2006,

70 Ibid.
71 “Blackboard Login.” Bloomsburg University. http://blackboard.bloomu.edu/
73 Ibid., p.16.
74 Ibid.
after this technology plan was drafted. CSUB currently provides Blackboard CE 4 (formerly WebCT) and Blackboard Learn version 9.0, although the intention is to transition to Blackboard Learn 9 in 2010. For now, the institution’s E-Learning Services (ELS) website maintains links to both LMSs.75

CSUB E-Learning Services employees maintain the campus website and distance learning programs, offering one-on-one scheduled training sessions for instructional technology, Blackboard/WebCT LMS systems, and website development. Regular operating hours for ELS are Monday through Friday, 8:00 a.m. to 5:00 p.m., with emergency after hours support available through email.76

In addition to E-Learning Services, CSUB has an Information Technology Services Support (ITSS) help desk where the campus community can report problems or request help either by phone, email, or a service request form. Help desk hours are Monday through Thursday, 7:30 a.m. to 6:30 p.m. and Friday 7:30 a.m. to 5:00 p.m. The help desk staff consists of seven IT consultants and nine student assistants.

At a Glance: CSUB

- Transitioning from WebCT to Blackboard Learn LMS
- ITSS help desk open 7:30am-6:30pm, M-Th and 7:30am-5pm, F
- ITSS help desk staffed by 7 consultants and 9 student assistants

Central Connecticut State University

Central Connecticut State University (CCSU) is a public university located in New Britain, Connecticut. CCSU’s Information Technology Department has an “IT Mission and Strategic Plan” for June 2008 available directly from the institution’s website.77 This plan outlines the department’s main goals and objectives, one of which includes increasing the number of courses that incorporate “educational technologies.” CCSU plans to institute small grants that promote LMS classroom integration and to “manage and/or improve network infrastructure to provide

75 “LMS Jump.” CSUB. http://www.csub.edu/els/item1188.html
76 “E-Learning Services.” CSUB. http://www.csub.edu/els/index.html
uninterrupted, world-wide access to the BB Vista CMS system” in order to achieve this objective.78

With Blackboard Vista, CCSU faculty members have the option of either teaching full, online courses or augmenting traditional classroom instruction.79 The IT department provides a comprehensive list of self-help resources for Blackboard Vista help including online tutorials and manuals that cover the fundamental software functions.80 The CCSU IT help desk serves as the main point of contact for all technology issues, offering a number of options for assistance such as on-site support, face-to-face support, ResNet support, and training opportunities. The IT help desk is available Monday through Thursday from 8:00 a.m. to 8:00 p.m. and Friday from 8:00 a.m. to 5:00 p.m. Four CCSU technicians in the Instructional Design and Technology Resource Center (IDTRC), an academic technology IT division, are available during these hours for specific, LMS-oriented questions.81

At a Glance: CCSU

- Blackboard Vista CMS
- IT help desk open 8am-8pm, M-Th, 8am-5pm, F
- The Instructional Design and Technology Resource Center staffs four experts on LMS training

Kean University

Kean University is a large public teaching university located in Union, New Jersey. Kean’s latest LMS facilitating distance learning education is Blackboard CE8. Kean previously used WebCT 4.1, however this has now been deactivated and the university community is “strongly urged” to switch to the new Blackboard CE8 system as soon as possible.82 Currently, faculty members may still log in to WebCT in order to complete certain tasks (e.g., exporting course materials and viewing old documents) until the system is completely shut down at the end of the 2009 academic year. LMS video tutorials for Kean faculty and students are available through the distance education site as well.83

78 Ibid.
80 Ibid.
82 “Distance Education.” Kean University. http://www.kean.edu/~de/Welcome.html
83 Ibid.
The Office of Computer and Information Services Help Desk “provides support for all university computer equipment, both administrative and academic.” Office hours are Monday through Friday from 8:30 a.m. to 6:00 p.m., with seven IT staff members available for systems and operations support.84

At a Glance: Kean University

- Blackboard CE8 LMS
- IT office open 8:30am-6pm, M-F and employs 7 staff members

Kutztown University

Kutztown University is a public university located in rural Kutztown, Pennsylvania. The Kutztown IT team, comprised of 24 staff members, was previously recognized as a recipient of the CIO-100 award and is dedicated to providing “the best possible infrastructure and services to the entire University community.” The IT department provides services in a number of areas including classroom technology, mainframe, and academic and administrative network support. The IT Help Center is available Monday through Friday from 8:00 a.m. to 4:30 p.m.; whereas the Classroom Technology Help Center has more flexible hours, Monday through Thursday 7:00 a.m. to 10 p.m. and Friday from 7:00 a.m. to 5:00 p.m.86

In addition to Kutztown’s general support services, a Blackboard online support center is available 24/7 to cater to distance learners as well. The center provides a general knowledge base that includes a number of self-help resources and uses a ticket system to address specific technical support issues.

At a Glance: Kutztown University

- Award-winning IT team
- IT Help Center open 8am-4:30pm, M-F
- Classroom Technology Help Center open 7am-10pm, M-Th; 7am-5pm, F
- Blackboard LMS with 24/7 online support

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86 “About IT.” Kutztown University. http://it.office.kutztown.edu/about/
87 “Information Technology.” Kutztown University. http://it.office.kutztown.edu/
Radford University

Radford University is a medium-sized, public university located in Radford, Virginia. Radford University’s Division of Information Technology has a detailed “Information Technology Strategic Plan” for the 2008-2013 time span available directly on the institution’s website.\(^88\) The plan includes a mission statement, guiding principles, and future goals and objectives. According to the IT plan, Radford is committed to “fostering the creative and innovative use of technology to achieve the University’s directives.”\(^89\) Of the seven goals outlined, Radford is dedicated to providing the tools and services necessary to support “innovative teaching” methods, adopting e-learning technologies as a means to achieving this outcome.\(^90\)

Radford University currently uses Blackboard CE 6 as the campus-wide LMS. The Academic Technologies Department of the Technology Support Services IT Division is responsible for resolving all Blackboard issues. Of the general Radford IT staff, 21 members are technical professionals under the technology support services team. Student workers with the necessary expertise are also available as a supplement to the support staff. The Technology Assistance Center has extended hours, to include Monday through Friday 8:00 a.m. to 5:00 p.m., in order to better serve the technical needs of the university faculty and students.

At a Glance: Radford University

- Blackboard CE 6 LMS
- Academic Technologies Department manages Blackboard-specific queries and training
- Technology Assistance Center open 8am-5pm, M-F

Rhode Island College

Rhode Island College (RIC) is a public institution located in the Mount Pleasant section of Providence, Rhode Island. RIC has a user support services division, made up of 13 technical staff, that serves as the “primary point of contact for end-user support.”\(^91\) This information services division “offers a wide range of services..."
including helpdesk, audio visual distribution, management of computer labs and classrooms, and technology training.”

After careful consideration of three LMS products (Blackboard, Angel, and Sakai), the RIC selection committee put forth a unanimous recommendation to transition from the outdated WebCT 4.1 release to Blackboard version 9.0. With the acquisition of Blackboard, RIC is able to use “leading-edge technology” in hybrid education while also maintaining the current WebCT license for the first year of the transition period. The BB system was chosen, in part, due to its “feature set” and “ease of migration” and the overall goal is to have all courses included in the system by Fall of 2010.

Student and instructor “FAQ links” are available on the institution’s website along with additional help methods including “LMS training,” “walk-in sessions,” and “chair side assistance” for faculty members. The University Help Center is the chief point of contact for technical assistance. Regular hours are Monday through Thursday from 7:30 a.m. to 8:00 p.m., Friday from 7:30 a.m. to 5:00 p.m., and Saturday from 8:00 a.m. to 2:00 p.m. In addition to these hours of operation, the Help Center hosts limited hours over the course of the summer. Moreover, walk-in labs are open daily, nights, and weekends with student staff available for computer assistance.

At a Glance: Rhode Island College

- Recently transitioned to Blackboard 9.0 LMS
- University Help Center open 7:30am-8pm, M-Th; 7:30am-5pm, F; 8am-2pm, Sa.; limited summer hours
- Students staff walk-in labs open daily, nights, and weekends

Shippensburg University

Shippensburg University (SU) is a public university located in Shippensburg, Pennsylvania. SU has an Office of Extended Studies that collaborates with SU’s three academic colleges to provide non-traditional avenues towards a university education for distance learners including off-campus working adults, students, and educators. The mission of the office is “to develop and offer quality credit

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92 Ibid.
93 Ibid.
programming through various methods and locations that meet the educational and professional needs of the region.”

SU “makes few distinctions between students enrolled in Extended Studies programs and traditional students.” Thus, SU provides 24/7 online technical support for the entire campus community. SU currently uses Blackboard release 7.3 as the learning management system of choice. The 24/7 support center provides assistance with “email, plug-in, and general technical issues related to the Blackboard platform.” A knowledge base is available that includes a number of self-help resources and a ticket system to address specific technical support issues.

SU also hosts an Instructional Design and Development Services (IDDS) Office, part of the University’s Instructional Technologies and Services Division. IDDS services range from individualized consultations and training sessions to customized departmental workshops. In addition to this support, an InfoTech Student Help Desk is available Monday through Thursday, 12:00 to 3:00 p.m. and 6:00 p.m. to 11:00 p.m., Friday 1:00 p.m. to 3:00 p.m., Saturday 2:00 p.m. to 4:00 p.m., and Sunday 2:00 p.m. to 11:00 p.m. for extended support in instructional design and development services.

At a Glance: Shippensburg University

- E-learners and traditional students receive the same attention
- 24/7 technical support for the entire campus community
- Blackboard 7.3 LMS
- Instructional Design and Development Service assists with LMS training and support
- InfoTech Student Help Desk open 12pm-3pm and 6pm-11pm, M-Th; 1pm-3pm, F; 2pm-4pm Sa.; 2pm-11pm Su.

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SUNY College at Cortland

The State University of New York (SUNY) College at Cortland is a four-year institution founded in 1868 as the Cortland Normal School. SUNY Cortland’s Information Resources team is “dedicated to creating a technology-rich environment for students to experience firsthand today’s fast-paced educational environment, both online and in-person.” Information Resources is composed of five departments, with the Technology Help Center of the Academic Computing Services Department responsible for Blackboard, Banner, email, and web page support. Of the sixteen Academic Computing Services staff, three are part of the Technology Help Center and one is an “Information Systems Assistant” providing “WebCT Technology Support.”

SUNY Cortland uses the Blackboard eLearning environment to provide faculty with synchronous, asynchronous, and hybrid/blended options in online course offerings. The Blackboard eLearning system also supports several of SUNY’s “online specialty programs that encourage continuing education credits, state certifications, and extended learning opportunities from experts in many fields.” A problem report may be submitted directly from the eLearning website for further assistance and instructional PDFs are also provided online as a resource tool for SUNY faculty members.

William Paterson University

William Paterson University (WPUNJ) is a public university located in Wayne, New Jersey. The Academic Technology division of William Paterson’s Instruction and Research Technology Department provides services for the campus community with instructional design, supports the student labs, assists with “academic webspace,” and

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oversees instructional software.\textsuperscript{104} Three experienced Instructional Technologists are available Monday through Friday, from 8:00 a.m. to 5:15 p.m., for assistance in classroom technology integration.\textsuperscript{105}

Instructors of both traditional courses and distance learning courses at WPUNJ use Blackboard Next Generation mainly “to post course content, engage online discussions and chat, and to implement assessments.”\textsuperscript{106} WPUNJ also hosts a Blackboard Institute where faculty can expect a “hands-on blackboard experience” complete with information exchange and foundational training.\textsuperscript{107} Self-help links, tutorials, and resources are also available through the institution’s Instruction and Research Technology website.

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\begin{tabular}{|c|}
\hline
\multicolumn{1}{|c|}{At a Glance: William Paterson University} \\
\hline
- Instruction and Research Technology Department staffs three technicians for LMS-specific needs \\
- Blackboard Next Generation LMS \\
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\textsuperscript{104} “Instruction and Research Technology.” William Paterson University. http://www.wpunj.edu/irt/academic_tech.htm
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