

# The Current Ecosystem of Learning Management Systems in Higher Education: Student, Faculty, and IT Perspectives



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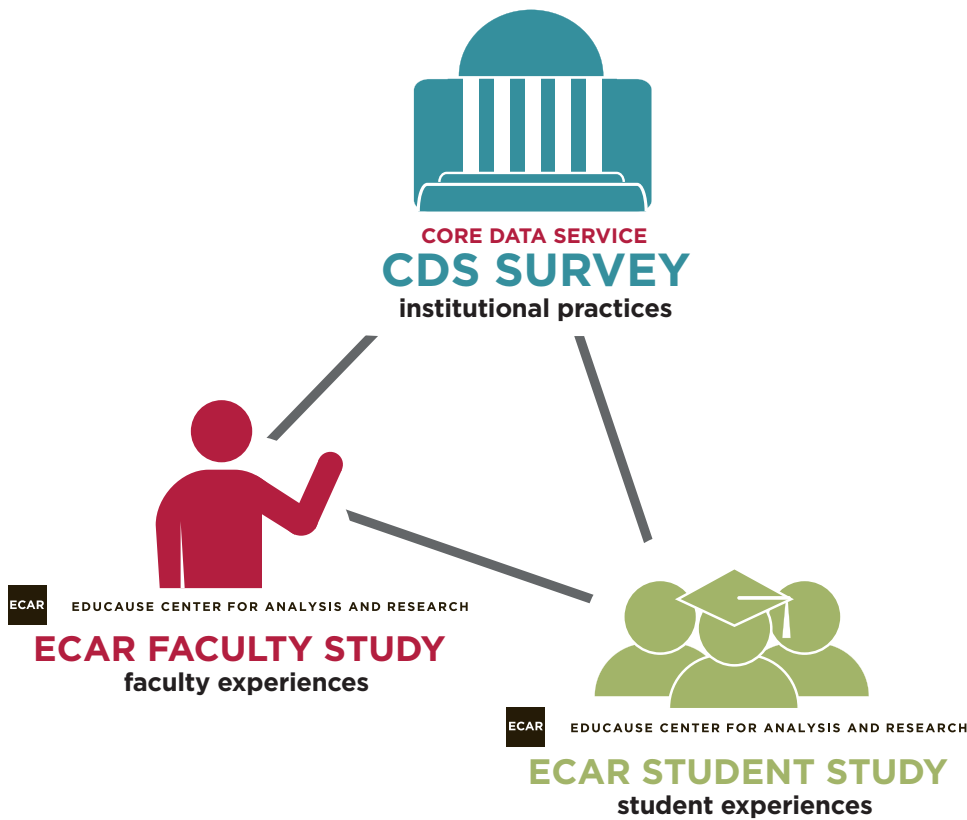
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## Executive Summary

This study explores faculty and student perspectives on learning management systems in the context of current institutional investments. In 2013, nearly 800 institutions participated in the EDUCAUSE Core Data Service (CDS) survey, sharing their current information technology practices and metrics across all IT service domains.<sup>1</sup> In 2014, more than 17,000 faculty from 151 institutions and more than 75,000 students from 213 institutions responded to ECAR surveys on higher education technology experiences and expectations.<sup>2</sup> Combining the findings from these sources provides a multidimensional perspective about the status and future of the LMS in higher education (figure 1).



**Figure 1. Triangulated data sources about LMS practices and experiences**

The key findings of this study triangulate the experiences of the LMS user populations (students and faculty) with data from the CDS about reported institutional practices:

- The average age of an LMS is eight years, and 15% of U.S. institutions are planning to replace their LMS within the next three years.

- Faculty and students value the LMS as an enhancement to their teaching and learning experiences, but relatively few use the advanced features and even fewer use these systems to their fullest capacity.
- User satisfaction is highest for basic LMS features and lowest for features designed to foster collaboration and engagement.
- Faculty say they could be more effective instructors—and students say they could be better students—if they were more skilled at using the LMS.
- Although students' general digital literacy may be solid, their skills and experiences do not necessarily transfer to institutionally specific technology services and applications such as the LMS.
- Mobile devices have become ubiquitous in the hands of students, and mobile access to student-facing enterprise systems like the LMS is becoming more common and increasingly important.
- Students and faculty want the LMS to have enhanced features and operational functions; be personalized; and use analytics to enhance learning outcomes.

To meet users' needs and expectations, the next-generation LMS should be mobile friendly, personalized, customizable, adaptive, intuitive, integrated, and designed to enhance student learning. These systems will function as digital learning environments for students, administrative systems for faculty to manage their courses, and interoperable systems that institutions can integrate into their administrative IT portfolio to leverage analytic applications. Faculty are willing to receive more training to learn how to better use the LMS and are motivated mainly by evidence that suggests that what they do with the LMS will enhance student outcomes. Students acknowledge that they are not necessarily prepared to use college and university systems like the LMS, so students should not be overlooked when institutions consider training opportunities or user support.

Nearly one in five institutions are preparing to replace their LMS system in the next three years, giving vendors just a few years to develop the LMS experience users want and institutions need. The findings from this report can help IT leaders make decisions about prioritizing the LMS features and operational functions that matter most to users when they are entertaining bids for replacement systems. IT, educational technology, libraries, and centers for teaching and learning can use these findings to design (or redesign) professional development opportunities that allow faculty to experiment with underused LMS features. For academic technology personnel, the findings suggest the importance of focusing faculty and student training and support on LMS features that support collaboration and student engagement. Many of the underused LMS features (e.g., those that involve collaboration) have the potential to enhance student learning and engagement.

**74%**

of faculty say the LMS is a very useful tool to enhance teaching

**71%**

of faculty say the LMS is a very useful tool to enhance student learning

**99%**

of institutions have an LMS in place

**85%**

of faculty use the LMS and

**56%**

of faculty use it daily

**83%**

of students use the LMS and

**56%**

say they use it in most or all courses

## Introduction

Global learning management system (LMS) revenue was estimated at \$1.9–2.6 billion in 2013, with projected growth to \$7.8 billion by 2018.<sup>3</sup> These estimates include the K–12 market, corporate training, and higher education segments and demonstrate clearly the considerable scope of the LMS market. LMSs have become integral to students' learning experiences, faculty teaching experiences, and institutional communication plans since they first emerged on higher education campuses in the 1990s. Their presence is ubiquitous in higher education, with 99% of colleges and universities currently reporting they have an LMS in place. Blackboard has dominated the higher education LMS market since these data were first collected by the EDUCAUSE Core Data Service (CDS) survey in 2002, and Blackboard continues to have a greater market share than any other LMS company in 2013, according to CDS and other market share tracking sources.<sup>4</sup> Despite Blackboard's acquisition of other LMS companies in the last decade, their overall market share is now declining, with increased competition from LMS vendors that are maturing their own products as well as new vendors emerging in the market. Vendors such as Desire2Learn and eCollege have introduced additional market pressure by finding success in specific market segments: large state systems and for-profit institutions, respectively. Figure 2 shows the maturation of the LMS market at a glance. It is based on data from several sources, including surveys of U.S. institutions, reports from vendors, and press releases on LMS adoptions for campus systems and for-profit schools. The figure shows Blackboard's acquisition and subsequent winnowing of product lines (a white x on the figure indicates product end of life) and market share, as well as the emergence and maturation of the open-source market.

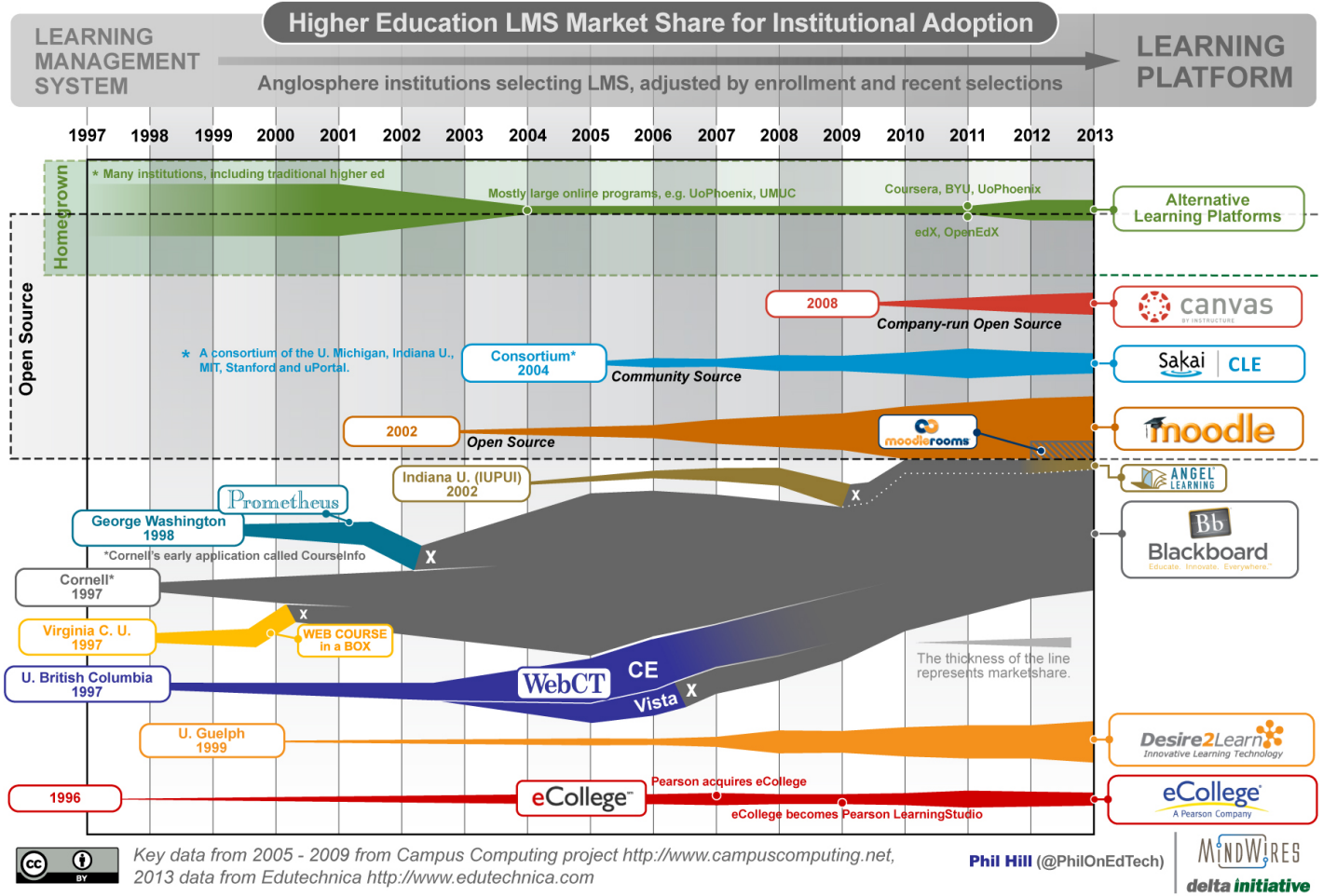


Figure 2. Higher education LMS market share 2013<sup>5</sup>

On average, LMSs have been in place for eight years, and 15% of U.S. higher education institutions are currently planning to replace their LMS within the next three years. The main motivations for updating these systems are to upgrade functions (71%), replace legacy systems (44%), and reduce costs (18%).<sup>6</sup> With the LMS market more competitive than ever and with increased consumer demand for enhanced features and operational functions, the industry is ripe for the next generation of digital learning environments to hit the market. George Kroner, enterprise solutions architect at the University of Maryland University College and former development manager at Blackboard, summarized the LMS evolution pointedly in his January 7, 2014, blog post “Does your LMS do this?”

While LMSs have evolved over time, they generally have the same capabilities that they had back in the late 1990s. They’re a good place to store content in such a way that only enrolled students have access. They offer convenient ways to deliver quizzes, facilitate assignments, and publish grades. Different

ways to facilitate classroom communication are built in. They help meet FERPA, copyright compliance, and archival needs.<sup>7</sup>

Kroner described the four generations of LMSs, moving from a basic class of “web presence” tools to customizable virtual learning environments that represent a level of LMS maturity institutions should expect and seek out.<sup>8</sup>

For those concerned with creating this customized world for LMS users, it is helpful to consider the current state of faculty and student LMS experiences, their interests, and how they interact with these systems. In this report, ECAR researchers use data from the annual EDUCAUSE CDS survey, the student technology study, and the faculty technology study to explore institutional LMS practices and the experiences of students and faculty. This analysis of the status and future of the LMS in higher education provides insight about the evolution of the LMS from past to present, as well as the projected needs of the features and operational functions of these systems in the near-term and long-term future.

## Findings

**Current Snapshot of the LMS Environment:** The average age of an LMS is eight years, and 15% of U.S. institutions are planning to replace their LMS within the next three years.

CDS provides a longitudinal perspective of the evolution of LMSs in higher education. Data are collected annually about system types, deployment history, replacement plans, customization, training and support practices, and other variables of interest. LMS systems are nearly universal in higher education today (99% of institutions report having at least one in place), and many have been in place for more than a decade. Because the market is nearly saturated, the prevalence of LMSs has increased by only 7 percentage points in 12 years (from about 92% in 2002 when CDS first collected data on “course management systems”).<sup>9</sup> The LMS market activity in higher education almost exclusively concerns system upgrades and replacements rather than new, first-time system deployments. CDS also started tracking system replacement plans in 2002, and replacement projections for LMSs have been consistent over this time period, with 13–15% of institutions planning to implement a new system within the next three years. For context, compare these replacement plans to student information systems replacement plans, which have gone down from about 28% in 2002 to about 9% in 2013. In 2013, LMSs are, on average, eight years old, and 15% of U.S. institutions plan to replace the system within the next three years.<sup>10</sup>

Compared to other core information systems in higher education, LMSs are frequently outsourced and customized (figure 3). Only student e-mail (65%), library systems (42%), and customer relationship management (41%) are outsourced at higher rates than the LMS. The most common outsourcing strategy is to have a vendor-hosted LMS (77% of institutions that outsource their LMS). With regard to customization,<sup>11</sup> “developments like the Learning Tool Interoperability (LTI) specification make it easier to customize an LMS by creating a standardized way to integrate additional tools. The longer-term trend points to customization at the individual level, where faculty and students augment core LMS features with homegrown and third-party tools...”<sup>12</sup>

“Online course management sites are great for communicating with students, obtaining assignments with time stamp, and promoting student interaction before class through forum posts.”

—Anonymous faculty member, ECAR faculty study 2014

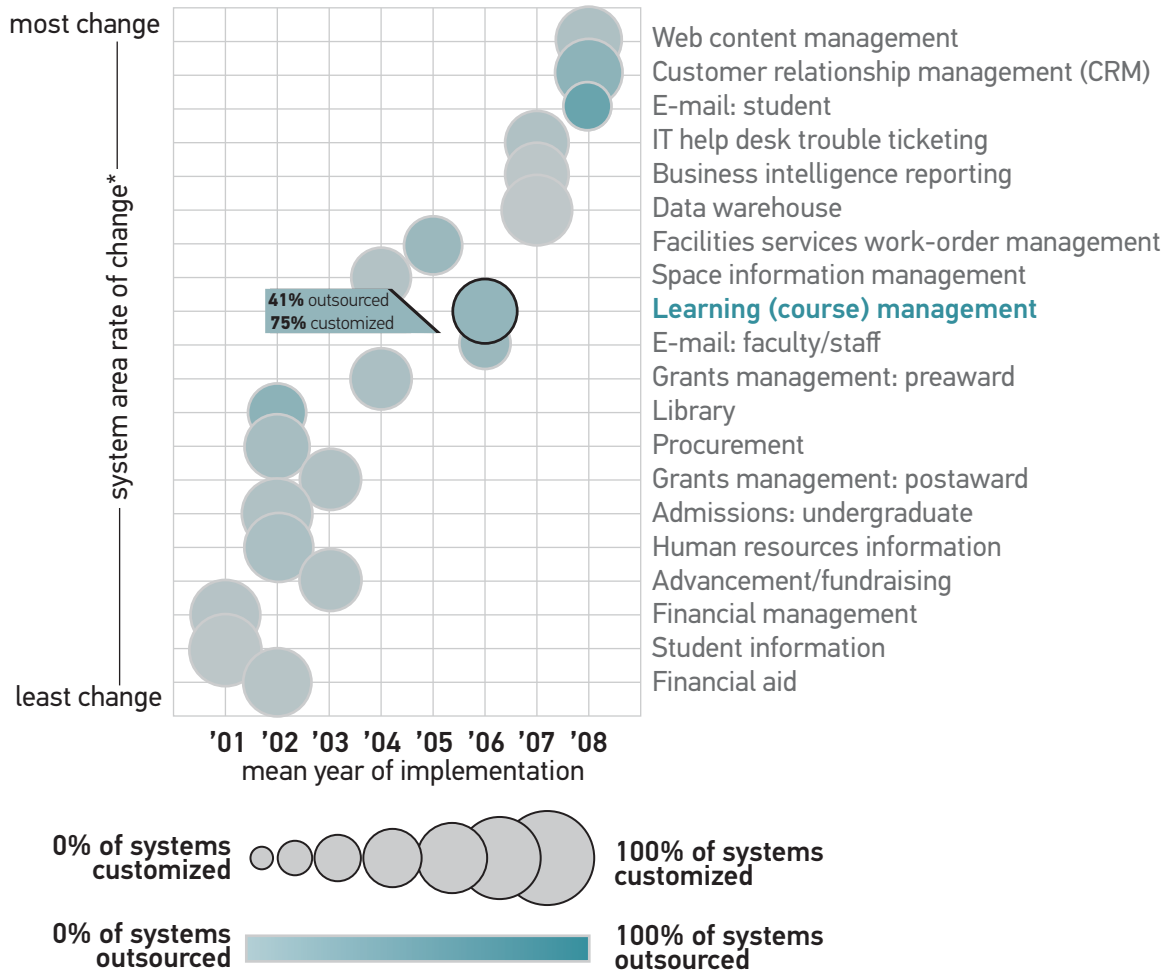
**74%**

of faculty say the LMS is a very useful tool for enhancing teaching

**47%**

of faculty make the LMS part of their daily digital routine





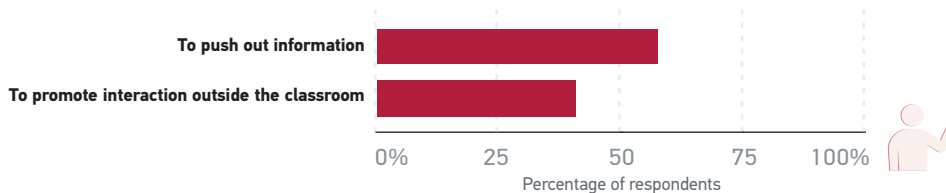
\*Rate of change is an indicator of how rapidly a system area is changing. It is a composite score based on year of current implementation and on plans to implement new systems or replace existing ones. Systems with the highest rate of change typically have been implemented recently or are expected to be implemented or replaced soon.



**Figure 3. Characteristics of learning management systems as a core information system**

**LMS Use and Underutilization:** Faculty and students value the LMS as an enhancement to their teaching and learning experiences, but relatively few use these systems to their full capacity.

Nearly three in four faculty say the LMS is a very useful tool for enhancing teaching (74%) and students’ learning (71%). Three in five say the LMS is critical to their teaching. Although the vast majority of faculty use the LMS to conduct or support their teaching activities (85%), the ways in which they typically use the LMS are less about interaction or engagement activities and more about sharing content with students (figure 4). About half of faculty make the LMS part of their daily digital routine (47% of all respondents and 56% of faculty who said they use the LMS at least a bit), with an additional third (31% of all respondents and 37% of faculty who said they use the LMS at least a bit) using the LMS at least on a weekly basis. Although nearly three-fifths of faculty (58%) use the LMS to push out information to students (e.g., syllabi, handouts, etc.), only 41% report using it to promote interaction outside the classroom. That is, the majority of faculty do not take advantage of advanced LMS capabilities that have the potential to improve student outcomes.



**Figure 4. Ways in which faculty typically use the learning management system**

From the student perspective, most (83%) say they use the LMS in one or more classes, and a small majority (56%) uses it in most or all of their classes. Given the pervasiveness of LMSs on campuses and the massive investment of human and financial resources it takes to implement and maintain an LMS,<sup>13</sup> these systems seem to be underused by both faculty and students. For the past four years, ECAR asked students whether they want their instructors to use the LMS less, about the same amount, or more. In 2014, 56% said they wish their instructors used it more. Although this is slightly down from 62% in 2013, it still represents a majority of the student population (figure 5).

**60%**

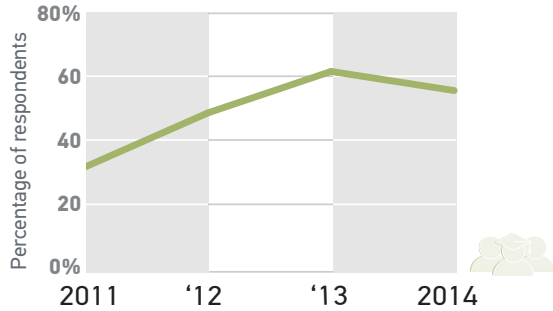
of faculty say the LMS is critical to their teaching

“What we have is bloated (= zillions of features we do not need), badly designed (features we need are not streamlined, easy to use, intuitive), and cumbersome.”

—Anonymous faculty member, ECAR faculty study 2014

“Better educate students and faculty on the [LMS] program. It is such a great tool, but half the faculty don’t even use it. We, as faculty, need to use this program university-wide so that students are familiar on day one with the program. Also they need support—aside from the help line, they need it to be a part of freshman orientation.”

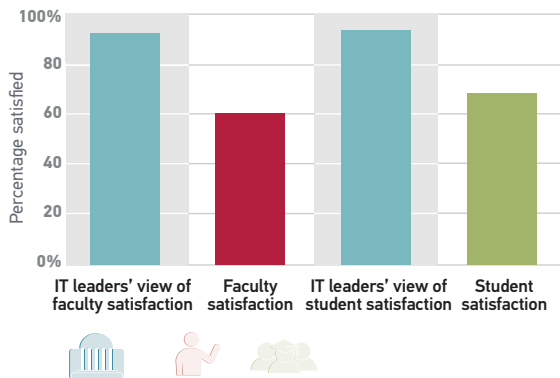
—Anonymous faculty member, ECAR faculty study 2014



**Figure 5. Percentage of students who say they want their instructors to use the LMS more**

**Satisfaction with LMS Features and Operational Functions:** User satisfaction is highest for basic LMS features and lowest for features designed to foster collaboration and engagement.

ECAR and CDS data provide insight about the LMS user experiences for this “underutilization phenomenon.” Most institutions (68%) measure LMS usage, but only 39% measure LMS satisfaction. For those that do measure satisfaction, IT leaders report that 92% of their faculty and 93% of their students are generally satisfied with the operational functions and features of the LMS. When asked directly about their satisfaction with the LMS, students and faculty self-report satisfaction rates that are much lower than the rates reported by IT leaders (figure 6).



**Figure 6. Overall LMS satisfaction**

Figure 6 illustrates that about two out of three faculty members and students who use the LMS are satisfied with their experience. When we examine faculty and student satisfaction with specific LMS features, a pattern emerges. In particular, LMS satisfaction ratings are highest for basic features such as curating content (faculty) and accessing content (students) and lowest for advanced features such as using the LMS in engaging and collaborative ways (see figure 7 for faculty and figure 8 for students).

“[The LMS should have a] better communication system between students and between students and instructors. Forums/ messaging systems in current management systems are clunky.”

—Anonymous student, ECAR student study 2014

Overall LMS satisfaction varies by academic discipline, with a low of

**48%** for engineering faculty to a high of

**97%** for computer science faculty

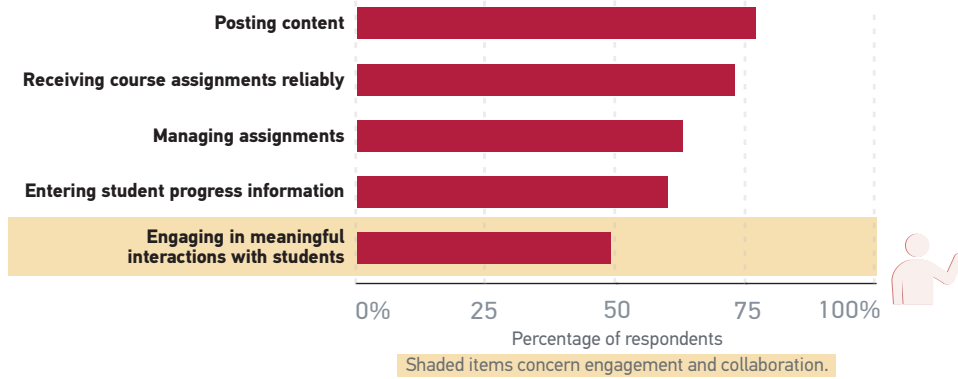


Figure 7. Overview of faculty satisfaction with LMS features

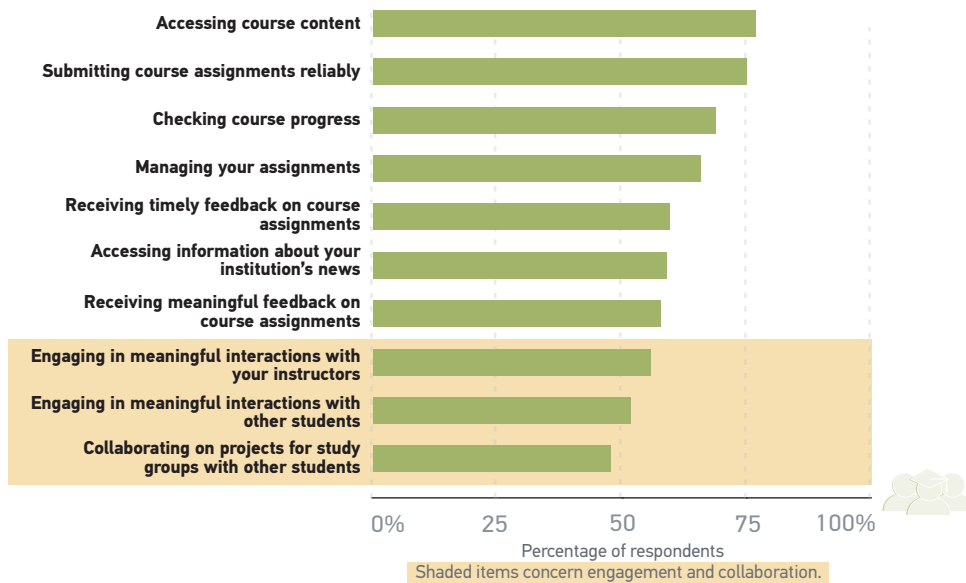


Figure 8. Overview of student satisfaction with LMS features

More than four times as many faculty are generally satisfied with the LMS than are generally dissatisfied with it (figure 9). There is little variation in satisfaction ratings for different LMS vendors, especially among the five vendors with the highest ratings. AA institutions have the highest satisfaction ratings among all types of institutions. Finding clear patterns for meaningful differences in satisfaction ratings of LMS features and operational functions proves challenging, but the data do suggest that faculty who use the LMS more and for more sophisticated activities tend to have higher satisfaction ratings than those who use it in less sophisticated ways.

“I would create a room chat [in the LMS] that connects students from each class together so that they can discuss their assignments and help each other.”

—Anonymous student, ECAR student study 2014

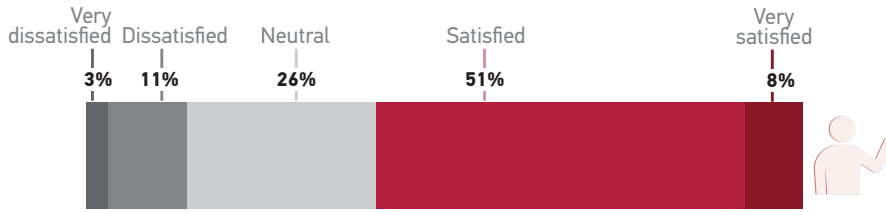


Figure 9. Overall faculty LMS satisfaction

Faculty and student satisfaction ratings for the LMS align with one another when compared side-by-side (see figures 10, 11, and 12), suggesting that student and faculty experiences with basic LMS features are, on average, quite similar.<sup>14</sup> This may also suggest that changes or enhancements made to the LMS will provide similar benefits to both faculty and students.

“The LMS grade book has the greatest benefit to my teaching. It makes grades more transparent and allows students to track their course grade whenever they want.”

—Anonymous faculty member, ECAR faculty study 2014

Proportion of faculty/students satisfied with the LMS for...

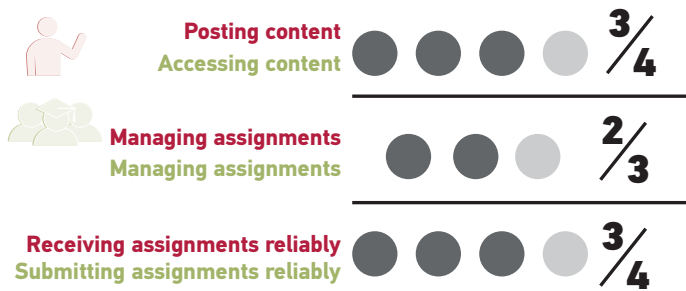


Figure 10. Comparison of faculty and student satisfaction with selected LMS features

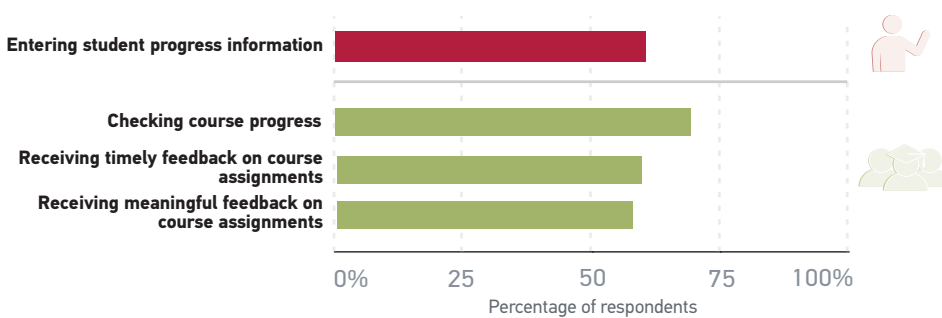
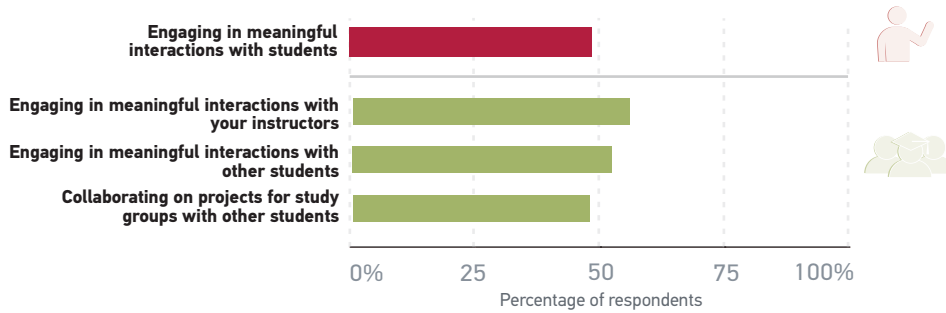
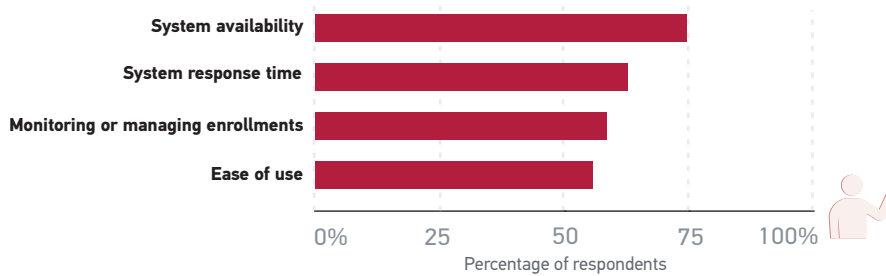


Figure 11. Comparison of faculty and student satisfaction with the LMS to give or receive feedback



**Figure 12. Comparison of students and faculty satisfaction with the LMS to collaborate, engage, or interact**

We also asked faculty about their satisfaction with the basic operational functionality of the LMS as an enterprise-level application. Availability of the system (75%) ranked highest among the items included in the survey (figure 13). System response time (63%) and enrollment management and monitoring issues (59%) were second and third, respectively. Ease of use yielded the lowest satisfaction ratings, with a little more than half of faculty (56%) saying they were satisfied.



**Figure 13. Faculty satisfaction with LMS operational functionality as an enterprise-level system**

**Training, Support, and the Intuitive LMS Interface:** Faculty say they could be more effective instructors—and students say they could be better students—if they were more skilled at using the LMS.

Opportunities for faculty LMS training are abundant in higher education. Practically all institutions offer training opportunities for faculty (99%) and ongoing faculty support services (99%) for the LMS. Nearly all institutions also provide help desk services to faculty for LMS support (96%). Even so, 57% of faculty say they could be more effective instructors if they were better skilled at using the LMS.

When we asked faculty about their LMS training experiences, one in four said they were dissatisfied with their initial training (26%). A similar percentage expressed dissatisfaction with their ongoing training support (25%; figure 14). ECAR found a relationship between the satisfaction rating of initial training and ongoing training. Two in three faculty (67%) reported the same level of satisfaction with their initial technology training as with their ongoing training experiences. Our data for this initial year of investigating faculty technology experiences do not tell us how to improve training to meet faculty expectations, but they do suggest that faculty prefer varied training opportunities. Offering a diversified portfolio of training opportunities from which faculty can choose what works best for them will allow for a customized experience and may increase the use of and satisfaction with the LMS. As LMS systems are upgraded or replaced, another consideration is to look for systems that have more intuitive features that would reduce the need for training and systems that have embedded or integrated on-demand training functions.

**57%**

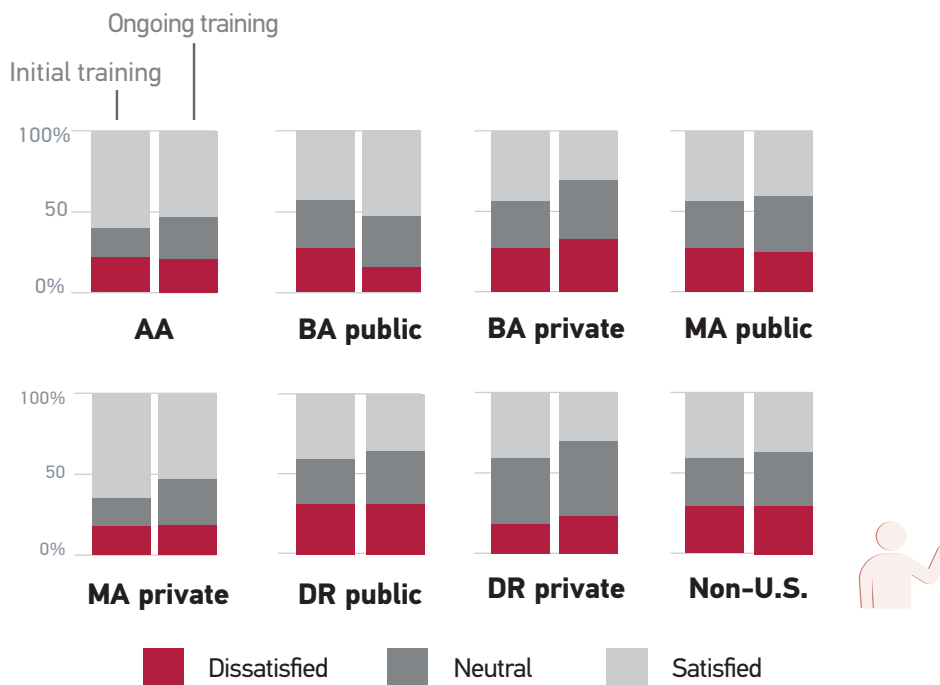
of faculty and

**51%**

of students agree that they'd be more effective if they were better skilled using LMS technology in their courses

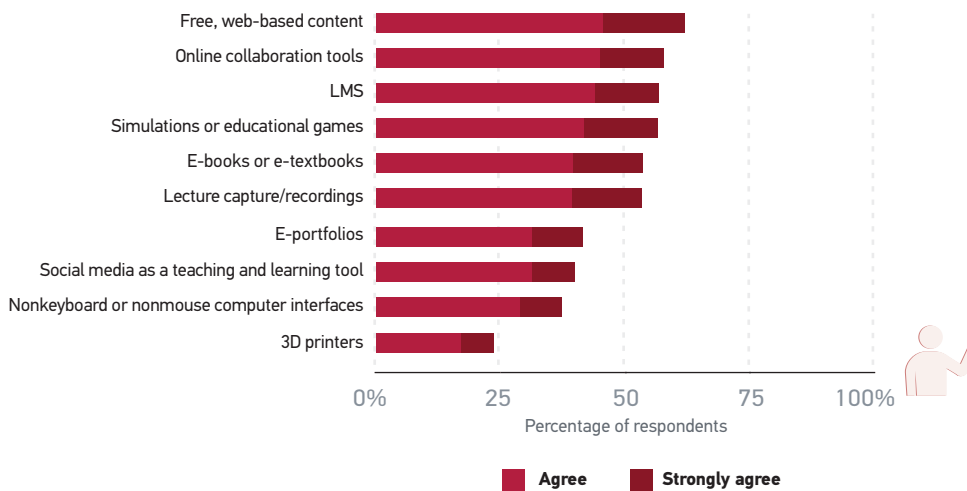
“[I] need to learn methods to speed up the building of all of my classes and design the content to incorporate the LMS.”

—Anonymous faculty member, ECAR faculty study 2014



**Figure 14. Faculty satisfaction with LMS training**

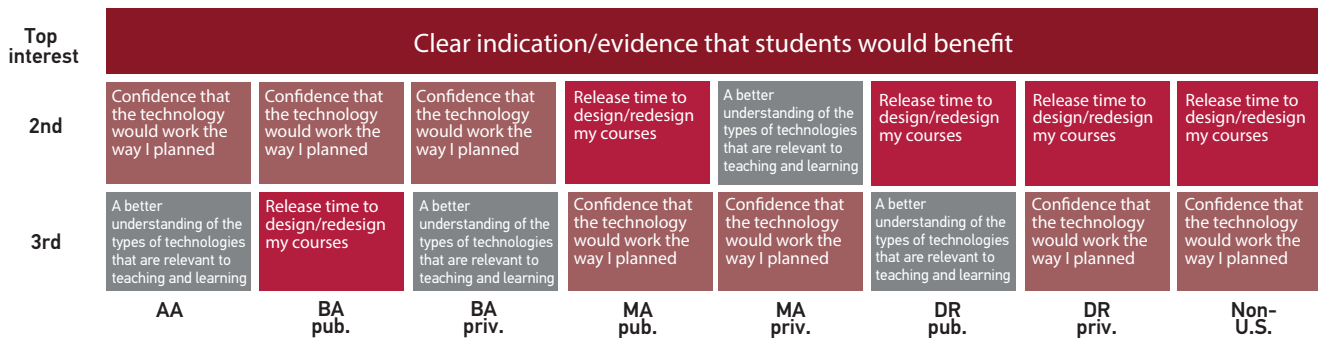
A confluence of perspectives indicates a favorable climate for providing better faculty support for integrating technology into curriculum and pedagogical practices. IT leaders recognize “assisting faculty with the instructional integration of information technology” as one of the top 10 IT issues in higher education, and faculty development ranked third on the list of ELI Content Anchors for 2014.<sup>15</sup> A 2013 ECAR survey about the state of e-learning in higher education found that 78% of respondents (primarily IT leaders) think faculty have a growing interest in incorporating technology into teaching and that four in five faculty (80%) have access to the appropriate IT resources to do this.<sup>16</sup> Figure 15 shows the percentage of faculty who agree that they could be more effective instructors if they were better skilled at integrating various types of technologies into their courses. Fifty-seven percent of faculty agree or strongly agree that they could be a more effective instructor if they were better skilled at integrating the LMS into their courses.



**Figure 15. Professional development interests for integrating technology into courses**

Another issue to consider is motivation. ECAR asked faculty what would motivate them to integrate technology into their classes, and the top response was having clear *evidence* that technology is having a positive impact on student learning (figure 16). Although this first priority was true across all types of institutions, we do see differentiation in the second priority. For faculty at AA and BA institutions, the second most important motivator is being confident that the technology they use will work as planned. Faculty at MA and DR institutions are primarily interested in release time to design or redesign their courses.





**Figure 16. Faculty motivation to integrate more or better technology into teaching and curriculum by institution type**

**The LMS Learning Curve:** Although students’ general digital literacy may be solid, their skills and experiences do not necessarily transfer to institutionally specific technology services and applications such as the LMS.

Half (51%) of the undergraduates surveyed by ECAR in 2014 say they could be more effective students in their classes if they were better skilled at using the LMS. Faculty see this potential, too, with 54% saying they wish their students were better prepared to use institutionally specific technology (including the LMS). Looking at longitudinal ECAR student study data, we haven’t seen any trend changes for the past three years in terms of students’ self-perceptions about preparedness to use technology on entering college. Two in three (67%) students say they were adequately prepared to use technology when they started college. However, students’ perceptions of their technology literacy may not necessarily align with their actual digital skills; although their general digital literacy for technology operations and concepts may be solid, specific applications of those skills may be lacking.<sup>17</sup>

With regard to technology training and developing skills to better use the technology that is available to them, 44% of students say they wish they had been better prepared to use institutionally specific technology (such as the LMS and the student registration system) when they first entered college. Compare this to the 34% who say they wish they had been better prepared to use basic software programs and applications such as MS Office and Google Apps. Although more students are familiar with basic software products and applications, there remains room for student training both in these areas and in LMSs. This is the first year ECAR has data to support the notion that students’ general digital literacy does not necessarily transfer, translate, or apply to institutional transactional and communication technologies put in place for students to use. As with faculty, this could mean that students need more user-specific training to fully use the technology resources (services, applications, and websites) institutions provide, or it could mean that the tools given to them need to be more intuitive in nature.

**67%**

of students say they were adequately prepared to use technology when they entered college

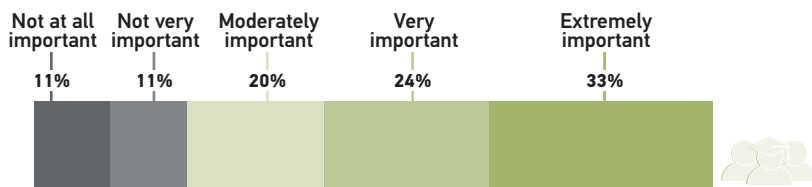
**54%**

of faculty say they wish their students were better prepared to use institutionally specific technology (including the LMS)

**Mobile Access Demand of the LMS:** Mobile devices have become ubiquitous in the hands of students, and mobile access to student-facing enterprise systems like the LMS is becoming more common and increasingly important.

The issue of accessing services, applications, and websites from a mobile device (i.e., smartphones and tablets) has been growing in importance with the proliferation of handheld mobile devices among the undergraduate student population. In the 2014 ECAR student study, 86% of students said they own a smartphone (up 10 percentage points from 2013), and 47% own a tablet (up 16 percentage points from 2013). Mobile device ownership is widespread among the student population, and as these devices become even more dependable and user friendly, students will rely on them for transactional and productivity-related activities. Students use these devices to shop, bank, look up information, and chat—and, on occasion, they even use them as telephones. These devices are their lifelines to their digital world, and their appetites for consuming and producing information on them is trending upward.

For the past two years ECAR specifically asked students to tell us about using the LMS from their mobile devices, and the responses for 2013 and 2014 are nearly identical. In 2014, four out of five students whose institutions offer mobile access said they access the LMS from a mobile device (80% in 2014 and 81% in 2013), with three out of five rating this experience as good or excellent (61% in 2014 and 59% in 2013).<sup>18</sup> We also asked students how important it is to access the LMS from their mobile devices; the majority (57%) say this is very or extremely important, whereas only 22% indicated this is relatively unimportant (figure 17). Having an LMS that is optimized for mobile will align with students’ expectations based on past student study findings and be more in line with their experiences with other mobile-friendly aspects of their lives (i.e., banking, shopping, accessing information, listening to music, etc.).



**Figure 17. Students’ importance ratings for accessing the LMS on a mobile device**

Students and their mobile devices:

**86%**

own a smartphone

**47%**

own a tablet

**80%**

access the LMS from a mobile device

**78%**

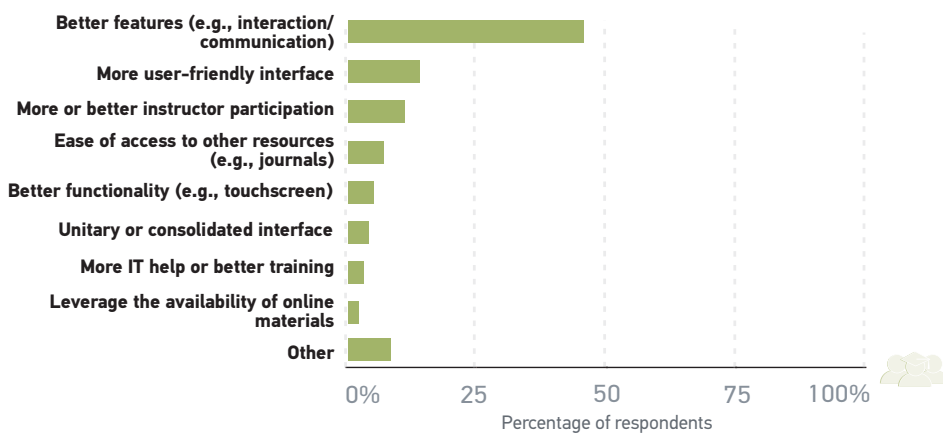
say it is at least moderately important to access the LMS from their mobile device

**61%**

say their experience with LMS access via their mobile devices is good or excellent

**Personalizing the LMS Experience:** Students and faculty want the LMS to have enhanced features and operational functions; be personalized; and use learning analytics to enhance student outcomes.

In 2014, in an open-ended question, ECAR asked students how they would redesign the institution’s LMS from scratch. Qualitative analysis of their responses revealed they are mostly interested in specific enhancements and additions to the LMS features (i.e., things the LMS can do) over improving aspects of LMS operational functionality (i.e., performance or functionality of the system). For example, based on a random sample of 400 student survey responses, almost half (46%) cited various LMS features that could benefit from improvements (see figure 18).



**Figure 18. Student recommendations for improving the LMS if building it from scratch**

Of the 46% of students who indicated that “better features” were needed in the LMS, the most frequently cited items students would improve were:

- Communication mechanisms (e.g., IM, video chat, online tutoring, social group discussions and forums, and access to other students’ contact information)
- Alerts and calendaring (e.g., posting grades, assignment due dates, exam reminders)
- Grading tools (e.g., calculating and projecting)
- Multimedia access (e.g., recorded lectures and podcasts)
- Mobile interface (e.g., access from smartphones and tablets)

“[The LMS] allows students to learn on their time, in their space (many are assigned off-campus rotations, which take them out of the traditional classroom). This allows all students access to on-campus and online presentations, dialogue, and interactions, as well as information delivery.”

—Anonymous faculty member, ECAR faculty study 2014

“I would add a tool through which students could interact with each other and with the instructor(s) much faster and easier since concerns, ideas, and questions do not all come at once during office hours or group meetings.”

—Anonymous student, ECAR student study 2014

If we look back to figure 8 about student satisfaction with the LMS features, we can see that their responses to this open-ended question correspond with the features with which they are least satisfied. The issues of communication, meaningful interactions, and engagement are recurring themes for the areas in which the LMS could be improved. The next-generation LMS will need to solve the technical, procedural, and process challenges in promoting meaningful interaction between faculty and students, students and faculty, and students and their classmates.

ECAR also asked students how interested they are in their institution providing them with various aspects of personalization to the LMS, with the majority (about three in five) showing enthusiasm for every suggested aspect except automated tracking of attendance (figure 19). The majority of students (69%) are very or extremely interested in the LMS providing personalized support and information about progress toward their degree goals.

Transitioning from operational functionality of administrative and enterprise IT systems to systems that are interoperable is a general trend in higher education.<sup>19</sup> With the maturation of learning analytics in higher education, LMS interoperability with other administrative systems (such as the student information system and planning and advising systems) is increasingly important. Although many LMS products have built-in analytics capabilities such as early alerts and progress tracking, many institutions are not yet taking full advantage of them, nor are they marshaling them in the service of student success initiatives. This gap is due, in part, to the complexities of the data and systems integration process.<sup>20</sup> Related to this is students' interest in real-time feedback about their course progress through personalized dashboards in the LMS. These are features that help students visualize how they are doing in individual courses (60% of students were very or extremely interested in this). A third area of interest is in adaptive learning functions of the LMS, where students are provided with personalized quizzes or practice questions oriented to their strengths or weaknesses so that they (or their instructors) know what help they need (62%).

“Capitalize on technologies that mimic the traditional classroom.... Students think they can succeed just by reading a few chapters and listening to a few lectures. The learning and mastery of material is minimal. They need someone to ‘teach’ them, not just facilitate their learning. How to translate hands-on learning that takes place in the traditional classroom into the online environment remains a huge challenge.”

—Anonymous faculty member, ECAR faculty study 2014

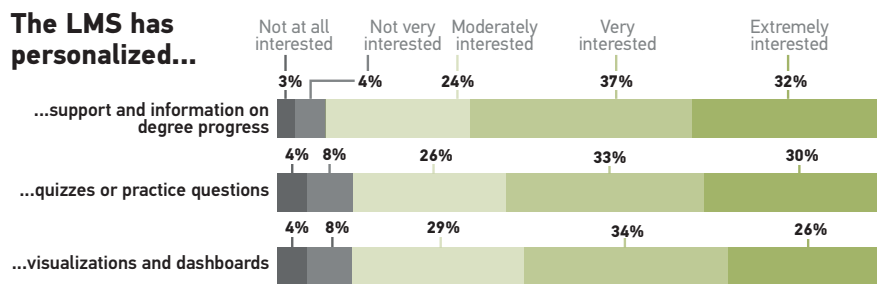


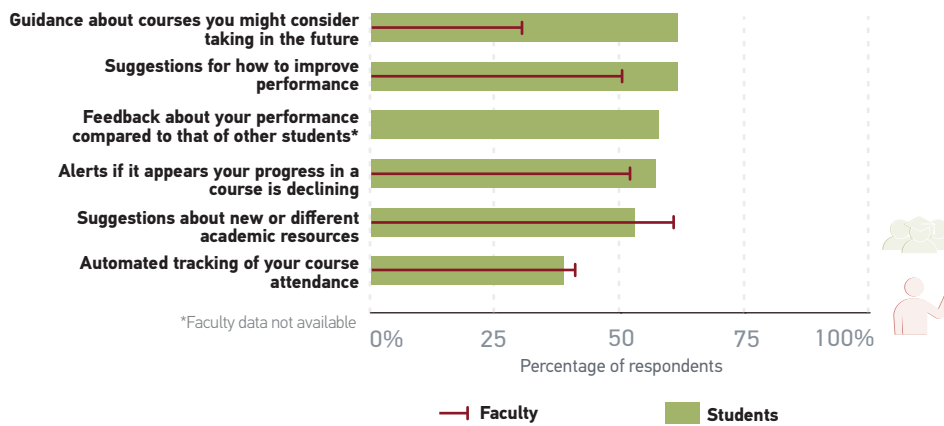
Figure 19. Student interest in personalized LMS features

In addition to LMS-specific personalization features, ECAR also asked about other analytics features that could be made available through the LMS or through an integrated planning and advising system (IPAS). Students' enthusiasm for IPAS analytics increased substantially over the past year, with interest in early alerts about additional resources or about substandard progress in a course increasing from 40% to 57% and interest in guidance about course recommendations increasing from 32% to 62%.<sup>21</sup> In most of the parallel questions ECAR asked of faculty and students about the learning analytics features in LMSs, we found the responses generally track with one another (figure 20). The outlier is "guidance about courses that [students] might consider taking in the future." Two out three students (62%) said they were interested in this, whereas only about one out of three faculty (30%) said this interested them. Faculty are more interested in analytics applications that apply to students' performance in a particular class, and they are less interested in analytics designed for students' progress through degree or certificate programs.

"[The LMS needs] something to enable you to check your progress within a course, which allows you to obtain feedback from your past exams/assignments, etc."

—Anonymous student, ECAR student study 2014

**Percentages of faculty and students interested in...**



**Figure 20. Student and faculty interest in automated learning analytics features**

## Conclusion

With the global LMS market expected to approach nearly \$8 billion in 2018, the competitive landscape for LMS improvements is favorable to buyers seeking to improve, change, or enhance their LMS. Higher education “customers” will be looking for efficient, effective, and strategically priced systems that meet their institutional standards (for highly agile, interoperable systems) and user expectations (to have mobile-friendly, personalized, customizable, intuitive, and integrated systems designed to enhance student learning). The findings in this report help create the image of the next generation of LMSs that considers the perspectives and experiences of both faculty and students, as well as what is currently in place in higher education. Though individual campus cultures and needs may vary, the information in this report can help calibrate those experiences to institutional priorities, peer benchmarks, and self-improvement metrics. These systems will need to be multifaceted so that they function as digital learning environments for students, administrative systems for faculty to manage their courses, and interoperable systems that institutions can integrate into their administrative IT portfolio to leverage analytic applications.

## Looking Ahead: Toward Next-Generation Learning Environments

- **LMS Use and Underutilization:** Faculty and students perceive today's LMS as augmenting their teaching and learning experiences. However, relatively few students or faculty use the more advanced features, and even fewer use these systems to their fullest capacity. Tomorrow's digital learning environment will find ways to bridge these gaps, through making users aware of system features, providing integrated training and support, setting expectations or standards for use, and/or prioritizing the user-friendliness of system interfaces. These systems (or ecosystems) will be optimized to enhance the teaching and learning experience.
- **Satisfaction with LMS Features and Operational Functions:** Today, user satisfaction is highest for basic LMS features and lowest for features designed to foster collaboration and engagement. Tomorrow's system environments will better integrate collaboration and engagement features into the user experience, allowing faculty to easily make these features an integral part of their courses and providing students with flexible, varied, and ongoing means of engagement.
- **Training, Support, and the Intuitive LMS Interface:** Faculty say they could be more effective instructors—and students say they could be better students—if they were more skilled at using the LMS. Tomorrow's learning environments will approach the need for training and support from multiple angles: more intuitive interfaces to minimize the need for training; individualized assessments that calibrate training tools with what users need; and integrated, on-demand support solutions built into the LMS.
- **The LMS Learning Curve:** Although students' general digital literacy may be solid, their skills and experiences do not necessarily transfer to institutionally specific technology services and applications such as the LMS. Awareness of this lack of transfer can help students and faculty manage their expectations as students cultivate or refine the skills they need to use campus systems effectively. Tomorrow's digital learning environment will minimize this learning curve.
- **Mobile Access Demand for the LMS:** Mobile devices have become ubiquitous in the hands of students, and mobile access to student-facing enterprise systems such as the LMS are becoming more common and increasingly important. Tomorrow's digital learning environments will meet demands for anytime, anywhere access to course materials and 24/7 engagement by being mobile optimized and mobile friendly.
- **Personalizing the LMS Experience Within a Favorable Climate for Learning Analytics:** Students and faculty want their learning support applications to have enhanced features and operational functions; be

personalized; and use analytics to enhance learning outcomes. Tomorrow's LMS will solve the technical, procedural, and process challenges in promoting meaningful interaction among users; allow for "what works for me" personalization of the system settings and interface; and add value to the student experience with early alerts and predictive modeling suggestions for promoting success strategies within and across courses.



## Methodology

The data for this report were primarily harvested from three EDUCAUSE research sources: Core Data Service 2013; *ECAR Study of Undergraduate Students and Information Technology, 2014*; and *ECAR Study of Faculty and Information Technology, 2014*. ECAR researchers pooled LMS data from these three sources to paint a landscape of the current LMS environment in higher education. CDS data provided the institutional practices perspective, while student and faculty data provided the perspective of the end users' experiences.

### 2013 Core Data Service

- Survey data are from 525 institutions of the 800 survey respondents.

### 2014 ECAR Student and Faculty Studies

- Student survey data for 2014 were collected from February to April 2014 from 75,306 students at 213 institutional sites. The findings for 2014 were developed from a representative sample of 10,000 students from 185 colleges and universities in the United States.
- Faculty survey data for 2014 were collected from February to March 2014 from 17,451 faculty members at 151 institution sites. The findings reported here were from all respondents from all sites.

Additional information about LMSs and the next-generation digital learning environment are archived in EDUCAUSE's [online library](#). These include original EDUCAUSE publications and multimedia resources, as well as curated materials from secondary sources.

## Notes

1. EDUCAUSE Core Data Service. For more information, please see the [CDS website](#).
2. Eden Dahlstrom and D. Christopher Brooks, *ECAR Study of Faculty and Information Technology*, research report (Louisville, CO: ECAR, forthcoming); and Eden Dahlstrom and Jacqueline Bichsel, *ECAR Study of Undergraduate Students and Information Technology*, research report (Louisville, CO: ECAR, forthcoming).
3. Phil Hill, “New Data Available for Higher Education LMS Market,” E-Literate Blog, posted November 5, 2013; Josh Bersin, “LMS 2013: The \$1.9 Billion Market for Learning Management Systems,” Bersin by Deloitte, October 8, 2012.
4. CDS, Module 3, Question 8.
5. Phil Hill, “State of Anglosphere’s Higher Education LMS Market: 2013 Edition,” E-Literate Blog, posted November 9, 2013.
6. CDS, Module 3, Question 8.
7. George Kroner in collaboration with the Edutechnica team, “Does Your LMS Do This?” *Edutechnica*, January 7, 2014.
8. Ibid.
9. Brian L. Hawkins, Julia A. Rudy, and Joshua W. Madsen, *EDUCAUSE Core Data Service: 2002 Summary Report* (Boulder, CO: EDUCAUSE, 2003).
10. Leah Lang and Judith A. Pirani, *The Learning Management System Evolution*, research bulletin (Louisville, CO: ECAR, May 2014). Actual replacement rates for LMSs are about 7% per year, indicating that replacement plans are a slight underestimate of actual replacement activities.
11. CDS defines *customization* as the “changes that are made to a college or university’s specific instance of an administrative system application, usually to make the system meet an institutional need or fit an institution’s established processes.”
12. Lang and Pirani, *The Learning Management System Evolution*. “Individual level” refers to both the person level and the course level.
13. David Trevvett, *Enterprise Application Projects in Higher Education*, research report (Louisville, CO: ECAR, August 2013).
14. Figures 10, 11, and 12 show the percentage of respondents indicating that they were satisfied or very satisfied.
15. Susan Grajek and the 2013–2014 EDUCAUSE IT Issues Panel, “Top-Ten IT Issues, 2014: Be the Change You See,” *EDUCAUSE Review* 49, no. 2 (March/April 2014); EDUCAUSE Learning Initiative (ELI) [Content Anchors](#).
16. Jacqueline Bichsel, *The State of E-Learning in Higher Education: An Eye toward Growth and Increased Access*, research report (Louisville, CO: ECAR, June 2013), available from the ECAR [E-Learning Research Hub](#).

17. Robin L. Flanagan, “[Movement Grows to Assess Students’ Digital Literacy](#),” *Education Week*, March 10, 2014.
18. Eden Dahlstrom, J.D. Walker, and Charles Dziuban, with a foreword by Glenda Morgan, *ECAR Study of Undergraduate Students and Information Technology, 2013*, research report (Louisville, CO: ECAR, September 2013), available from the [ECAR 2013 Student Study Research Hub](#).
19. [Administrative and Enterprise IT Systems](#), EDUCAUSE Research Snapshot, July 14, 2014.
20. D. Christopher Brooks, *IPAS Implementation Issues: Data and Systems Integration*, research report (Louisville, CO: ECAR, June 2014), 10–11, 12, available from the ECAR [IPAS Research Hub](#).
21. Percentage of students saying they are very or extremely interested in the institution providing this information to them; Dahlstrom et al., *ECAR Study of Undergraduate Students, 2013*.