Next-Generation Course Management Systems

Course management systems could use some improvements—and we have some ideas
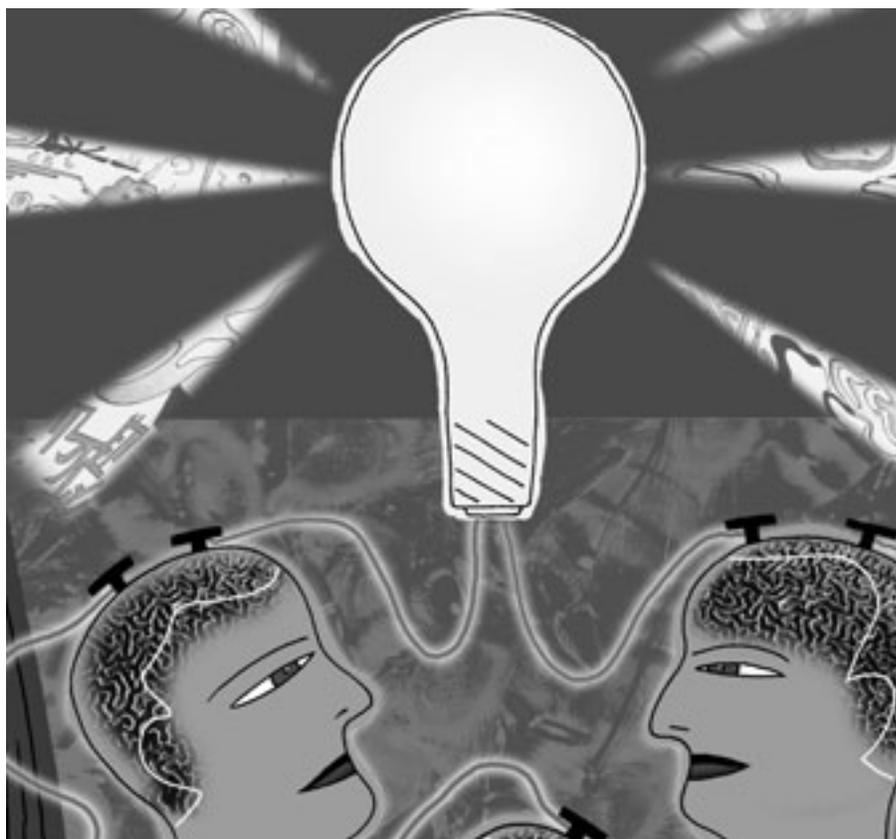
By **Colleen Carmean** and **Jeremy Haefner**

It's déjà vu all over again, in the words of Yogi Berra. As course management systems (CMSs) spread worldwide and become more complex, they grow larger, slower, more costly, and less responsive in customer support. A creature that once seemed to embody the best qualities of technology and instruction is now entering a difficult adolescence, and we all wonder how to deal with changes in teaching and learning that are happening too quickly for reflection or assessment. Despite an appreciation of the many fine qualities of this hybrid creature, customers of the CMS (whether commercial or homegrown) have a list of expectations as CMSs move into the next stage of maturity.

One great frustration, with CMSs and with life in general, is simple time management. A CMS should not demand significantly more time from students and faculty than the same course before technology was added. CMS improvements that simply save time may not be pedagogically driven, but if time-saving features can't be built into the technology, the users' initial incentive and enthusiasm will turn to frustration, exhaustion, and disappointment.

Improvements for next-generation CMS software might include the following capabilities:

■ *The ability to share materials and modules across course containers.* New partnerships of commercial vendors with the Open Knowledge Initiative (OKI) allow for standards of course export, but it's unclear whether CMS vendors will ever implement easy export of developmental pieces. An oft-heard example of where module sharing is needed lies in the new burden on library support. As information literacy grows more significant in learning outcomes, the role of the library in course support increases. We cannot ask librarians to create assessments, announcements, and electronic reserves over and over again for each course container. Integrated library services need to be available via the course container. Within departments and programs, the lack of CMS module export capability has hampered learning-object sharing and collaboration at a time when national endeavors like the IMS Global Learning Consortium,[1] OKI, Multimedia Educational Resource for Learning and Online Teaching (MERLOT), and the National Learning Infrastructure Initiative (NLII) Learning Objects Pro-

ject have begun to make the need for open learning-object access clear to faculty, instructional designers, and administrators who feel the pressure of limited time and resources. Where were the CMS vendors when the learning-objects discussion was taking place?

■ *The ability to export CMS materials in desktop-accessible source formats.* Many faculty committed to using CMSs are adjunct and part-time faculty. Asking them to commit their resources to a closed container that cannot be exported when they leave the institution makes the use of commercial CMSs a difficult decision for this growing body of instructors. Content belongs to the instructor, but if content gets "locked away" from external (non-CMS, non-vendor-specific) access, where does ownership of the course truly reside? Good faith commitment to a CMS umbrella should come with reciprocity in understanding of faculty needs for exportable access to their own materials, including exportable navigation, announcements, course documents, and quizzes. The engine and tools of the CMS cannot be exported, but the content created by the faculty member should be accessible for export and sharing.

■ *The need for WebDAV-driven upload and download.* Web-based, distributed, multi-file transfer and viewing are needed in CMS file transfers. An excellent resource becomes a time drain when the faculty member must individually download 30 (or 60) papers. For faculty who use word-processing track-changes features, individually uploading these same, commented papers can bring tears to the most stoic eyes. We hear that CMS vendors have been listening to the howls of beleaguered faculty and plan to incorporate WebDAV in future versions. Although it will be some time before we see these versions at our institutions, we impatiently await the upgrades. While waiting, we note that students would benefit if they could access a collective drop box for all their materials, in all their classes,

One great frustration, with CMSs and with life in general, is simple time management.

rather than clicking from course to course to access their stored work.

■ *The ability to edit, comment, and track changes on student documents from within the CMS.* This would eliminate the need to download, manage, and upload documents. We like the track-changes features, but the time it takes to download, open, edit, save, and upload student work makes us yearn for the old red pencils. If the feature cannot be brought into the CMS, a transparent interface to word-processing programs in the CMS window would benefit the majority of users.

■ *Tying student work directly to the assignment in the grade book.* This would save faculty time and reduce the organizational busy work of collating, recording grades, entering the grade book, and recording the grades again.

■ *Much greater speed.* Pages should load quickly over high-speed lines. If we watch the page load, if we're aware of the interface, if we watch ourselves fidgeting, it takes too long. If faculty impatiently wait in their offices for the grade book to load or reports to generate, what are captive students doing from home, on dial-up lines?

Improvements directly related to the quality of teaching and learning that technology affords include improvements in the tools now associated with use of a CMS, as follows:

■ *Assessment tools could improve greatly.* Assessment is one of the most alluring features for faculty new to the CMS environment. Greater sophistication of the tool, including instructional design support, could foster better assessment. Options to guide students to resources based on their responses, options for setting the number of times a student can retake an assessment, options for the fac-

ulty member to assess the comprehension of material by collecting data on responses generated—all could lead to better assessment of learning and effectiveness of teaching.

■ *The ability to open uploaded documents in a new, target window.* The CMS frame often is too small for lengthy documents, PowerPoint slides, Excel spreadsheets, media objects, and so forth. Some CMS systems allow the "open in new window" setting, some of the time. If not set on each object by the faculty member, however, the student has no control. This should be a simple right-click option, available on all links. The ability to close the navigational frames whenever not needed, giving the content more space, would also help.

■ *Simplified navigation.* It is difficult for all but the best hacker faculty to lead their students directly from one area of the CMS to the next. Assignments should easily link to online readings. Announcements should allow navigation to the assignments or specific discussion threads, and so on.

■ *Improved grade books.* One screen cannot contain all columns of assignments. This makes navigation to the latest grade columns difficult to associate with student names and impossible to print. Instructors should have the spreadsheet options of drag-and-drop sorting of columns and hiding columns from view. Although other grade views are available (by one assignment or one student), these are numerous clicks away, take longer to load, and are difficult to print and carry to class.

■ *Expedited collaborative teaching.* Collaborative teaching is difficult in the current faculty view. Dividing the grade book or drop box is impossible. The rigidity of the view contributes to the traditional isolation of teaching, now being challenged in learning communities, capstone classes, and shared teaching models.

Although we cannot predict the technology on the horizon, we know that a number of relatively easy-to-implement improvements are possible right now. Such upgrades would clearly provide

richer tools for effective teaching, deeper and more engaged learning, and innovative possibilities for rich and meaningful assessment.

Next-Generation Wish List

Most significant in our wish list for future-generation CMSs is a place for the student. For CMSs to become true learning environments, the needs of the student must become as important as those of the faculty in building a setting for the course.

From a design perspective, the singular view of learning being "the course" is not learner centered. Vicki Suter, Director of NLII Projects, made this point to vendors at a recent meeting:

> There are ways, with well-designed database infrastructures, to organize views as though there were two different "containers," and right now the student's view is missing entirely. I think that gets in the way (and will continue to get in the way) of the real transformation of teaching and learning.

Students need to see their learning as an integrated approach to outcomes, rather than as isolated requirements toward a degree. Integrated access via the CMS to their materials, readings, mail lists, instructors, and storage areas would contribute to this learning goal.

In the current course view, CMS tools could have better instructional design built in. Many faculty don't have the skills to design good learning modules. We are experts in our content area and passionate about our subjects, but might never have had the time or resources to become well versed in instructional design. CMS tools could provide direction, prompts, and modules that model and link learning activities associated with content and teaching modules. This could be done with a richer control panel and with a design area that offers options, links, and best practices. More seamless access to shared sources like MERLOT in the design area would assist faculty in embedding better teaching materials and learning objects.

New technologies should make tasks that are expensive, or impossible to develop individually, more retrievable

and open platform. We cannot ask CMSs to reinvent already well-developed wheels, but we strongly suggest that CMS vendors partner with third-party developers of applications and tools. Semantic networking software like Inspiration, visual modeling tools, flowchart generators, and so forth are all strong possibilities for collaborative packaging. Light Web versions of these tools would introduce faculty and students to software and could serve as a strong marketing tool for the richer third-party vendor products.

Student-initiated threads in discussions and more student-assigned controls would provide better access to collaborative learning modules. In addition, tools that support output or byproducts of learning, especially the next generation of electronic portfolios, should be evaluated for inclusion. CMS vendors should actively participate in the discussions of teaching, learning, and technology now happening in higher education.

CMS vendors must begin to take more responsibility for value-added development resources, linking students and faculty to best practices and resources for learning. Gathering standard tools under an umbrella interface has served the first generation of CMS users well and has created a demand for uniform access and seamless enterprise management of resources. This will not be enough for the next generation of CMSs, as we look to open standards, open source, open resources, and new tools built on those standards to improve our access to deeper learning options.

Visions and Nightmares: Where's the Money?

We assume that vendors want to do the right thing. And they understandably want to make a profit. We are now seeing multiple products released by vendors to satisfy the growing demand for campus enterprise systems and centralized control and management. Relatively inexpensive installations, plugged in all over campus, running on departmental servers, have given way to costly, campus-wide initiatives. Administrators must find resources for portals, enterprise editions of the software, integrated systems, campus licensing, and centralized CMSs. All good ideas, but what costs will the continued feeding of the hungry beast incur? Will improvements in CMS functionality be limited to the new tier of "enterprise-class e-learning systems" being deployed by CMS vendors? Will the rich get richer tools while the struggling state schools and small campuses contend with constant pressure to upgrade to systems they can ill afford?

Will campuses lose choice as CMS vendors entering the portal market make the case that enterprise compatibility

demands their portal product? How many IT leaders will make choices using criteria of academic alignment over performance, options, support, and manageability of a portal product? Is there any evidence that portals serve the campus mission? What ongoing cost will enterprise systems impose—to the budget, to faculty resources, and to student learning?

Vendors know that lack of interoperability or course exportability means that faculty will commit to only one CMS once installed on the campus. Once a choice is made, IT is bound to continue to support that choice. As faculty become dependent on a single product and frustrated with its rough patches, the demand and cost of improvements will grow. Vendors will offer a new mega-beast product as a solution to those with large budgets and dark fears.

Difficult choices lie ahead both for CMS vendors and for institutions of higher learning. A very good thing has grown very large, very quickly, and few faculty are speaking or being heard in the discussions of what an ideal

> **Difficult choices lie ahead both for CMS vendors and for institutions of higher learning.**

CMS might look like in maturity.

Vendors also know their market, turning to CIOs with deep pockets for guidance. We've seen rapid agreement for compliance with standards like OKI and IMS. This allows easier enterprise solutions, makes middleware workable, and eases server upgrades, but what of the constituents who brought the beast onto campus, fed it, nurtured it, and watched it grow?

Faculty have quickly committed to the CMS for what it offers in good, tool-rich instructional design and active, anytime learning. Students request and seek out classes where anytime access to their materials and colleagues is available. For students, CMSs have significantly

changed the educational experience in many courses. The number of faculty and students committed to using a CMS is growing, and these constituencies should not be neglected. We know what we need, and we're easy to please: give us speed, tools, exportability, and interoperability. Feed us. *e*

Endnote
1. See <http://www.imsglobal.org/>.

Colleen Carmean (carmean@asu.edu) is IT Director of Consulting Services and Faculty Associate in Integrative Studies at Arizona State University West in Phoenix, Arizona. Jeremy Haefner (haefner@engineering.uccs.edu) is the Dean of the College of Engineering and Applied Science at the University of Colorado, Colorado Springs.