

Student Perceptions of Course Management System Tools

Implications for Evaluation and Adoption of Online Tools in Higher Education

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Overview

Student learning preferences extend beyond the traditional visual/auditory/kinesthetic paradigm. Students will not always have the opportunity to learn via their preferred style or mode, however, and must function across modes to use a course management system (CMS) successfully. It can be argued, therefore, that institutions do not need to worry about student attitudes toward CMS tools when deciding whether to change them or adopt a new system; after all, students will learn what they need to when they need to. Aren't they "digital natives"?¹

Given an expectation of digital literacy among students, why should we worry about student perceptions of CMS tools? For the same reason exemplary instructors stay aware of their students' general learning style preferences—to evolve their teaching styles to meet diverse preferences and maximize learning while also attempting to develop and enhance students' abilities to learn in different ways. Likewise, knowing the CMS tools that students find most effective establishes an important baseline for understanding student needs that can be addressed not only in a CMS but also through other online systems and services. To act consciously requires knowing where to begin.

What, then, are student perceptions of CMS tools and functionality? Obviously, they will vary across institutions and often within an institution based on how instructors use a CMS and how students perceive that use. The University of Florida (UF) conducted a survey investigating that question in spring 2009, during the university's most recent CMS evaluation and adoption decision to replace the existing CMS.² This research bulletin presents the survey results to help inform other institutions with their own evaluation and adoption processes. The information will also benefit instructors looking to maximize their own use of a local CMS and/or to choose tools that enable personal learning environments,³ as well as specific tools for learning, such as portfolios, wikis, blogs, file repositories, and collaboration.

Highlights

As part of the CMS evaluation process, the UF review committee established a subcommittee of volunteers to develop the student survey. Members of the student survey subcommittee undertook an Internet search to identify similarly focused student surveys.⁴ Likewise, committee members explored online resources available through EDUCAUSE, ECAR, and others. Existing surveys were evaluated for general guidance as well as for specific questions that might be adapted to the UF context.

After this “literature review” the subcommittee decided that the best approach was to determine CMS features, functions, and tools and instructor practices that students identified as valuable or problematic. The subcommittee believed this kind of information would be most transferable across the different CMSs under evaluation and could inform training efforts by CMS support staff. Also, the subcommittee wanted to keep the survey as short as possible to encourage a high response rate.

The entire committee reviewed and approved the subcommittee’s proposed question set, which also received UF Institutional Review Board approval. In addition to basic demographic questions, the survey listed various CMS functions and asked students to rate their value during a course. The subcommittee decided to use Qualtrics,⁵ a web-based survey application, to administer the survey.⁶

One of the subcommittee members ran a pilot of the survey with 101 students taking a class she taught, and then solicited face-to-face feedback. After the survey questions and pilot results were reviewed and a small number of minor edits made, the survey launched publicly. An e-mail message initiated by the registrar’s office invited all UF students to participate in the survey. Announcements were posted on the centrally supported CMS, the portal page through which students access the CMS, and the Office of the University Registrar website. Many colleges, departments, and programs further helped publicize the survey among their students. Participation was restricted to one response per IP address to limit “ballot stuffing.”

The Survey Instrument

The survey consisted of 10 questions. The first question was an informed consent indicator that required a “Yes” response for a student to take the rest of the survey.

Three questions elicited demographic information about the students taking the survey, asking class rank (freshman, sophomore, junior, senior, graduate student, or professional student), college affiliation, and whether they were on-campus or distance education students. No attempt was made to delineate or identify various “types” of on-campus or distance students, courses, and programs.

The remaining questions asked about experience with and perceived value of current and future CMS tools. Question 5 asked students if they had ever used a CMS. Students responding “Yes” received four questions about their experiences and tool preferences and a final, open-ended question asking what they would like to see in a future CMS. Students answering “No” jumped directly to the final question. A review of student responses found that many comments from students who indicated having never used a CMS actually revealed familiarity with one. This issue is discussed in detail below.

For students familiar with CMSs, question 6 asked the systems they knew: WebCT Vista (E-Learning System),⁷ Moodle, or Other.⁸ Question 7, which employed a Likert scale, asked respondents to assess how useful they found the CMS for their experience as a student, with seven options ranging from “Very Useful to “Very Useless.”

Questions 8 and 9 employed a drag-and-drop format based on the “card sort” methodology, a common technique for eliciting users’ categories for non-scalar groups.⁹ While commonly used,¹⁰ there is “surprisingly little guidance on this [technique] in the literature,”¹¹ including how to use the technique in a digital format. However, this method was deployed because it allowed students to categorize tools according to perceived value and, at the same time, to rank-order tools within those categories, as illustrated in Figure 1.¹²

A strong majority (86%) of respondents reported having used a CMS, with most reporting familiarity with WebCT, the centrally supported system at UF at the time. When examining comments from the 14% who indicated no experience with a CMS, however, it seemed clear that many had, in fact, used one or more CMSs. For example, one respondent in the “no familiarity” group wrote, “Make sure the tests that are completed through e-learning work properly. I recently took a test and e-learning marked some of my answers as incomplete, therefore lowering my grade.”

Because the survey did not define or give examples of CMSs, lack of clarity might have led to confusion and inaccurate responses. We carefully evaluated all open-ended responses and, where appropriate, included those that clearly indicated CMS familiarity in the “familiar” group. This explains the inconsistencies in the number of respondents apparent in the analysis of text responses below.

Students who reported that they had used a CMS then saw a question concerning the usefulness of the current e-learning system. Of the 1,140 respondents, 92% reported they found the system very useful, useful, or somewhat useful (Table 1), providing further evidence of the mission-critical nature of CMSs.¹³

Table 1. How useful do you think the e-learning system is for your experience as a student?

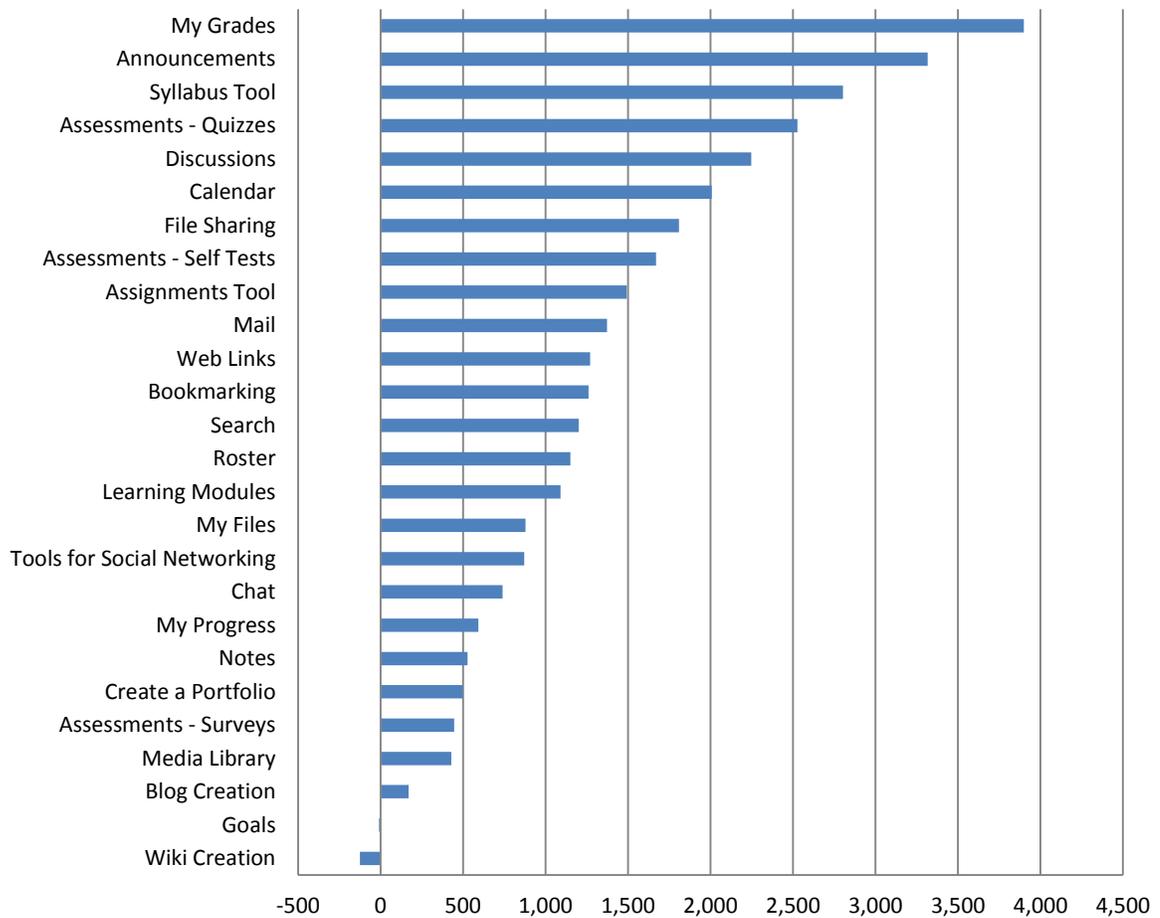
Usefulness		Response	Percentage
Very Useful		422	34%
Useful		488	39%
Somewhat Useful		230	19%
Neutral		31	3%
Somewhat Useless		38	3%
Useless		17	1%
Very Useless		11	1%
Total		1,237	100%

Next, students were asked to use a response matrix to indicate what they considered the most valuable tools in the current or a future e-learning system. The survey subsequently offered students five rating options (scored as shown in Table 2) to produce the final ranking of student value perceptions (Figure 2). Responses identified their top choices as the ability to see their grades, course announcements, syllabus, assignment submission, online quizzes and tests, discussions, and calendar.

Table 2. Scoring Matrix for Relative Valuation of CMS Features

Rating	Matrix Score
Gotta have it	3
Like it	2
I like it but can do without it	1
I like the idea, but it doesn't work the way I would like	-1
This stinks	-2

Figure 2. Students' Relative Valuation of Features in a UF CMS



The final question requested input on improving a future “e-learning system.” Students most frequently cited the need for a better user interface. For example, they wanted better labels and navigation to make it easier to use. Some students also noted that they frequently heard instructors complain about systems not being easy to use; therefore, they suggested that a more “instructor-friendly system” could improve feedback about their performance and decrease the time required for feedback on graded activities.

Students also wanted better features in the e-mail interface and a better calendar system. Finally, a small but significant number of students noted that any future system needed to be more compatible with the Macintosh operating system and run more smoothly (e.g., fewer crashes, fewer problems with Java).

Text Response Analysis

Analyzing the responses to the open-ended question posed challenges but also yielded multiple insights. As mentioned, many text responses from students who claimed no familiarity with CMSs often indicated exactly the opposite. This led us to undertake an evaluation process to determine which “no familiarity” text responses actually indicated familiarity and therefore ought to be included in the evaluation of “familiar user” text responses.

First we individually and separately reviewed all 197 “no familiarity” responses, marking each comment as “Yes” (clear evidence of prior use), “Maybe” (possible evidence of prior use), and “Unknown” (no evidence of prior use). We then met to compare results, finding three-party agreement on 128 responses and one- or two-party disagreement on 69 responses. We discussed the items on which we disagreed and changed 55 to “Yes,” 11 to “Maybe,” and 3 to “Unknown.” As a result, 183 of 197 responses from the “no CMS familiarity” group were identified as actually indicating familiarity. This obviously indicates a flaw in the survey design and strongly suggests that very little can be said about any distinctions between students claiming familiarity or lack thereof with CMSs at UF. Regardless, the 183 “Yes” responses were included in the final text response analysis that follows.

The open-ended responses gave additional depth and insight into students’ thinking. For example, while the main body of questions did not elicit information about student perceptions of instructor use of the CMS, the open-ended question makes it clear that students have mixed perceptions about this issue. Likewise, these responses from students add interesting details about both the attitudes of some instructors to the CMS as well as toward administrative attitudes and support for use of the CMS, most likely as reflected through instructor comments. Both insights have value to institutional support units and campus administration.

Text Response Scoring

We further evaluated all text responses to categorize repeated comments and suggestions. While there were many unique comments, quite a few had repeated themes. The most commonly repeated suggestions fell into the areas of:

- Improving ease of use of the e-learning system
- Requesting specific tools or features
- Requesting—perhaps even requiring—instructors to use the CMS

Topping the list of student interests is a system that is easier to use, particularly for instructors. Clearly at least some students recognized that their learning experience is influenced, positively and negatively, by instructor experience with and use of online technologies.

The second most popular category was requests related to specific tools, typically individual tools, such as “I would like the e-mail tool to interface with the campus e-mail service.” Interestingly enough, the third most common response was simply that many students indicated they were happy with the system and had no suggestions for improvement.

Perhaps the most interesting finding, at least from our point of view, is that a significant number of students took this feedback opportunity to request—sometimes insist—that all instructors be required

to use the CMS for every course. Couple this with the no. 7 and no. 9 top 10 responses—that instructors be required to take training and that course organization be improved—and it becomes clear that students value the CMS, but they want it used effectively.

The remaining comments frequently revolved around technical aspects: students wanted a fast, robust, and reliable CMS because their day-to-day course activities, study sessions, and assignment and homework submissions—indeed, all aspects of their academic life—depend on that system.

Running a word-based analysis of the text from the student survey elicited additional common terms and insights. In response to the question “What is the biggest one IMPROVEMENT you would suggest for a future e-learning system?” (posed to students who indicated familiarity with CMSs), the most commonly used terms were *teachers* (128 mentions), *tools* (97), *grades* (87), *processes* (74), *exams* (65), *e-mail* (50), *features* (46), *discussions* (39), and *video* (22).

That *teachers* is the most commonly recurring term makes it clear that students are very aware of instructor attitudes toward the CMS system and of instructor competence and skill using the system. As mentioned, students want instructors to use the CMS effectively.

Students who indicated no familiarity with CMSs were asked a slightly different version of this question: “What is the biggest one RECOMMENDATION you would suggest for a future e-learning system?” The most commonly used terms were *system* (24), *courses* (17), *computer* (15), *class* (14), *grades* (14), *students* (12), *teachers* (10), *work* (9), *access* (8), and *file* (8).

It is interesting that students who reported lacking familiarity with CMSs spoke most frequently about the system—perhaps indicating concerns about learning to use a new system or about its compatibility with personal desktop/laptop computers. Likewise, it is interesting to see concerns about instructors drop significantly in ranking, while more generalized concerns about courses climb to the top of the list.

General Trends

An additional layer of analysis indicated that student responses could easily be generalized into three categories, with students desiring tools that:

- Empower self-monitoring
- Enhance course-specific communication
- Provide information about the course

Table 3 shows the number of responses in each category. That students seem to assign the greatest value to tools that empower self-monitoring has important implications for instructors, given that self-quizzes, practice tests, etc. are among the most underutilized capabilities of CMSs.¹⁴

Table 3. Most Valuable CMS Tools as Indicated by Students

Empower Self-Monitoring	N = 715
Grades	385
Assessments	234
Assignments	96
Course-Specific Communication	N = 463
Communication	395
Discussion	68
Information About Course	N = 129
Announcements	94
Syllabus	35

What It Means to Higher Education

The results of this survey confirmed that UF students value the CMS despite their extensive “wish lists.” While sympathetic to the challenges instructors often face when using technology, students demanded more extensive and skillful use of the CMS by instructors in the courses they take.

Students most value tools that support self-monitoring: tracking progress, self-assessments, grade book views, and the like. They also value tools that provide information about courses, expectations, instructions for assignments, critical due dates, etc. Finally, students want tools that enhance communication in and about a course, both with the instructor and with their peers. These general trends can significantly inform institutional CMS adoption processes and training initiatives. Because nearly all CMSs include these kinds of tools and features, however, deciding which CMS to adopt might not be nearly as important as deciding to invest time, energy, and resources in faculty training—both in using the local CMS and in best practices for using available tools effectively.

Of course, UF is a large (52,000+ students) Research 1 institution, and these findings might not apply at other institutions. Nonetheless, we believe the issues raised by UF students are likely to be universal and easily generalizable for most institutions in the process of considering a new CMS or evaluating how to maximize return on investment from their current system.

While we have not done a systematic evaluation of tool use in CMS accounts at UF, it is our impression that the majority of courses limit themselves to presenting the course syllabus, hosting course documents such as readings, and perhaps reporting grades to students—which certainly fits the comments and suggestions captured in the survey and informal discussions with colleagues at other institutions. These findings thus suggest much room for growth and improvement at UF and elsewhere.

As a result, our IT training program is making a focused effort to encourage instructor use of progress-monitoring tools such as self-assessment. Our development efforts with the open-source Sakai system focus on improving the grade books, quizzes, and other tools and features valued by the students who responded to this survey. We also plan subsequent efforts to elicit ongoing instructor input.

As a final observation, we would like to note that rapid growth at UF—and at many institutions—in both hybrid education and distance education raises a number of considerations not examined through this survey. For example, would on-campus and distance education students identify different preferences and priorities for tools? Likewise, a more successful effort to isolate students familiar with CMSs from students unfamiliar with a CMS could also lead to new insights. Future survey efforts might consider how to isolate these populations and compare how they rank tools and functions, particularly in what students envision for the future of their education.

Key Questions to Ask

- What information has our institution gathered regarding student perceptions of our course management system or other supported technologies? What about faculty perceptions?
- How have we used the data gathered about student and faculty perceptions of the CMS specifically? If the data are inadequate for making decisions on technology, how might we gather more useful data?

- What training do we offer to help instructors use our CMS effectively? How have we evaluated its appropriateness and efficacy? How many of our instructors take advantage of that training and how frequently? How might we encourage instructors to participate in training for effective online instruction using the CMS?
- What kind of information might we need to consider before making changes to our current CMS? What are the best ways of gathering that data? From whom and how frequently?

Where to Learn More

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Notes

¹ Marc Prensky, "Digital Natives, Digital Immigrants," *On the Horizon* 9, no. 5 (October 2001): 1–6, available from <http://www.marcprensky.com/writing/prensky%20-%20digital%20natives,%20digital%20immigrants%20-%20part1.pdf>.

² We would like to acknowledge the efforts and dedication of the members of the CMS review committee, in particular that of Professor Diane Beck, who chaired the committee to its successful conclusion. Without their hard work, this article would not have been possible. The final report of this committee is cited elsewhere in this document, and the members of the committee are listed for those who might be interested.

³ According to Mohamed Chatti, "A PLE is characterized by the freeform use of a set of lightweight services and tools that belong to and are controlled by individual learners. Rather than integrating different services into a centralized system, the idea is to provide the learner with a myriad of services and hand over control to her to select and use the services the way she deems fit. A PLE driven approach does not only provide personal spaces, which belong to and are controlled by the user, but also requires a social context by offering means to connect with other personal spaces for effective knowledge sharing and collaborative knowledge creation." Posted 2 January 2007, <http://mohamedaminechatti.blogspot.com/2007/01/personal-environments-loosely-joined.html>. See also ELI, "Seven Things You Should Know About Personal Learning Environments" (Boulder, CO: EDUCAUSE Learning Initiative, 2009), <http://net.educause.edu/ir/library/pdf/ELI7049.pdf>.

⁴ See, for example, EDUCAUSE Center for Applied Research, “University of Wisconsin Course Management System Survey,” *Faculty Use of Course Management Systems*, Vol. 2 (Survey Instrument, 2003) (Boulder, CO: EDUCAUSE Center for Applied Research, 2003), <http://net.educause.edu/ir/library/pdf/si/esi0302.pdf>; Northwestern University, Course Management System, “Spring 2008 Faculty Survey” (Spring 2008), <http://www.it.northwestern.edu/bin/docs/course-management/faculty-survey/2008sp.pdf>; Oklahoma State University, “Course Management System: Task Force Report Site” (no date), <http://fp.okstate.edu/fsc/cms/>; Washington State Board for Community and Technical Colleges, “Course Management System Review: USER Requirements Research Project” (March 2007), <http://www.sbctc.ctc.edu/college/dl/CMSReviewUserSurveyReportFinal.doc>.

⁵ See <http://www.qualtrics.com/>.

⁶ Qualtrics was already being used by one of the colleges represented on the committee, so this tool was available to the committee at no additional cost.

⁷ The University of Florida CMS is locally identified/branded simply as the “e-learning system” in accordance with UF policies that require avoiding vendor names for campus services whenever possible to avoid suggesting an institutional endorsement.

⁸ While UF has a centrally supported CMS that hosts the vast majority of students, instructors, and courses, a small number of other college- or program-specific systems are being used at a smaller scale. Local systems at UF include a Moodle instance, a homegrown CMS, and an unknown number of content management systems (Drupal, Joomla) used by small groups or individual instructors to provide course content for students. We are also aware of a small number of UF instructors using external services (Facebook, WordPress, Blogger, Ning, etc.) to provide course content to students.

⁹ George Rugg and Peter McGeorge, “The sorting techniques: a tutorial paper on card sorts, picture sorts and item sorts,” *Expert Systems* 14 no. 2 (December 16, 2002): 94–107, <http://onlinelibrary.wiley.com/doi/10.1111/1468-0394.00045/pdf>.

¹⁰ Angi Faiks and Nancy Hyland, “Gaining user insight: A case study illustrating the card sort technique,” *College & Research Libraries* 61 no. 4 (2000): 349–357, <http://crl.acrl.org/content/61/4/349.full.pdf>.

¹¹ Rugg and McGeorge, “The sorting techniques.”

¹² Results in Figure 1 are not actual results; they were generated to illustrate how sorting worked.

¹³ See for example, Shannon Smith, Gail Salaway, and Judy Caruso, *The ECAR Study of Undergraduate Students and Information Technology, 2009* (Boulder, CO: EDUCAUSE Center for Applied Research, 2009), <http://www.educause.edu/Resources/TheECARStudyofUndergraduateStu/187215>.

¹⁴ “Research shows that students value checking grades and accessing practice quizzes more than any other function in a course management system, yet few instructors use these online ‘killer apps’ to facilitate self-regulated learning.” Karen Readle, John Fritz, and T. Warren Hardy, “A Case for Leveraging the Online Grade Book” (presentation at the EDUCAUSE Learning Initiative 2011 Annual Meeting, Washington, D.C., February 15, 2011), <http://www.educause.edu/Resources/ACaseforLeveragingtheOnlineGra/223791>.