

# 5

## Student Use of IT in Courses

*It's just great to e-mail a professor at 2:00 a.m. with a question about my homework and get a response at 8:00 a.m.*

—An undergraduate student

### Key Findings

- ◆ Fully 59.3 percent of respondents prefer a moderate amount of information technology (IT) in their courses. Older respondents, males, and engineering students prefer somewhat more IT in courses.
- ◆ Respondents who consider themselves early adopters of technology or have more technology skills prefer more technology in their courses.
- ◆ Most respondents were using a course management system (CMS), spreadsheets, course Web sites, and presentation software in their courses the quarter/semester of the survey.
- ◆ Seniors reported more use of spreadsheets and presentation software in their courses the quarter/semester of the survey; freshmen reported more use of course Web sites, online social networking, and IM in their courses the quarter/semester of the survey.
- ◆ Half of respondents (53.3 percent) say they like to learn through programs they can control, such as simulations and video games. About one-third of respondents like to learn by contributing content to Web sites or through text-based conversations such as e-mail, IM, and text messaging.
- ◆ Half of respondents (52.4 percent) who own laptops never bring them to class. One-quarter (25.0 percent) bring them to class at least weekly.
- ◆ Respondents' CMS use has increased this year, with 82 percent of respondents having taken a course using a CMS. Longitudinal analysis shows that this is a 13.2 percent increase since 2005. How often respondents use a CMS has also increased.
- ◆ Although CMS usage has changed, respondent ratings of their CMS experience and the usefulness of CMS features have not changed since 2005.
- ◆ At about half of surveyed institutions, 90 percent or more of respondents have used or are using a CMS.
- ◆ Most respondents (58.2 percent) agree that, overall, instructors use IT well in their courses, but 13.6 percent disagree. Those who report positive rather than negative CMS experiences are more likely to agree that their instructors use IT well.

Using the Chapter 4 profile of undergraduate technology ownership, use, and skill as a backdrop, this chapter takes the next step and looks at IT used in instruction. Student responses are presented about

- ◆ preferences for IT in courses,
- ◆ what technologies they are using the quarter/semester of the survey,
- ◆ how they like to learn through selected technologies,
- ◆ experience and use of course management systems, and
- ◆ instructors' use of IT in courses.

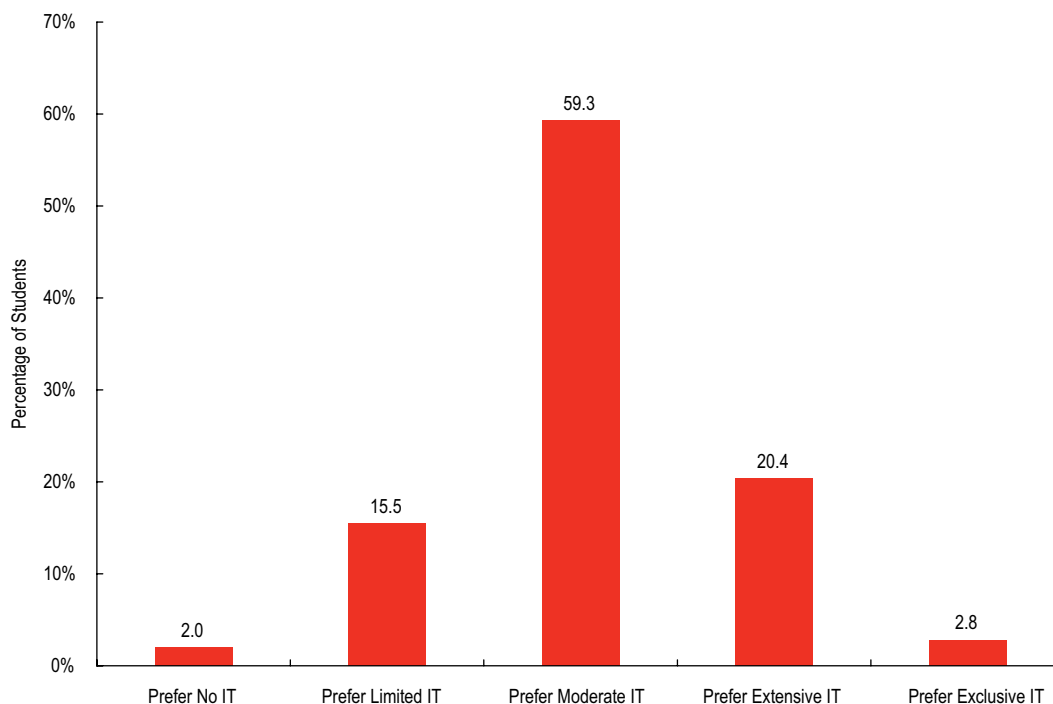
### Preference for IT in Courses

How much technology do students prefer in their courses? Responses have changed little since 2004 when ECAR first asked this question.<sup>1</sup> Though new technologies have emerged, existing technologies have gained popularity, and old technologies have faded, respondents continue to report their desire for what they perceive as "moderate" IT in their courses (see Figure 5-1). Very few respondents

prefer the extremes: only 2.0 percent prefer no IT at all in their courses, and only 2.8 percent prefer classes that use IT exclusively.

Despite this consistency over the years, we caution that these results may say more about the relative amount of technology students prefer than the absolute amount or the richness of the resources provided. As once-exotic technologies have become common and the overall digital environment has gotten increasingly dense, what once seemed like extensive use of technology may now seem more moderate. Indeed, it is possible that students take some networked resources so much for granted that they don't think of them as "IT" at all. These and other findings, however, suggest a widespread preference for IT resources that are situated in a variety of other learning modalities, such as face-to-face meetings and personal faculty interaction.

Male respondents tend to express a stronger preference for IT in courses, with 30.9 percent preferring extensive or exclusive IT in courses compared with 18.5 percent of females. Engineering and business students



**Figure 5-1.**  
Preference for IT  
in Courses  
(N = 27,675)

also prefer somewhat more IT in courses, as do older students. These findings are generally consistent with the past three years' ECAR study results.

Previous ECAR studies have looked more closely at this association with age—older students preferring more IT and younger students preferring less. Younger respondents are coming to campus having grown up immersed in technology-mediated activities and with high expectations for their campus technology environment. It follows that these students might tell us they prefer courses that use extensive technology. This is not the case. Qualitative interviews with students by ECAR and others surface several possible reasons. Younger students generally place real value on face-to-face instruction. They often feel that faculty and instructors do not use technology in a way that meets their expectations. And some may not yet feel sufficiently comfortable or skilled with specific technologies used in courses, such as course management systems, spreadsheets, and presentation software.

Lotkowski, Robbins, and Noeth examined more than 400 studies of factors contributing to student retention and degree completion.<sup>2</sup> They concluded that improving student success, especially for younger students, is associated with strengthening the formal and informal contacts with the institution that develop confidence and competence in core communication skills. In sum, "face time" with faculty and peers contributes to students' feeling included and integrated into the academic environment, and ultimately contributes to their success.

Younger respondents also talked about the value they placed on the classroom. One senior told us that "From a learning standpoint, a classroom experience is important for our age group (18- to 22-year-olds). Hearing the discussions and questions is important—you don't get that from online classes. Too much technology overshadows the course content." A freshman engineering major also noted,

"The class is an atmosphere. It's different than being at your home doing an online course where there may be partying going on behind you." A psychology major remarked, "I value interacting with my teachers. The student-teacher interaction is more powerful than it's given credit for."

Older respondents often told us their stronger preference for IT in courses reflects their need to balance competing academic, employment, and family demands. One student commented, "Older students definitely want more extensive or exclusive technology because of their jobs. Eighteen- to 19-year-olds don't generally have this." One commuter affirmed, "By having a computer with Internet access at home, I am not tied to the university computers, so I can do my class work at home at my convenience instead of having to drive to campus to physically hand in an assignment before a deadline. I believe that the need for 'brick and mortar' schools is in decline."

While this year's finding that younger respondents prefer less IT in courses than do older respondents is consistent with previous years, the difference is not as great. At this point, we can only speculate why. Are freshmen, using a greater variety of technology in their high school classes, now coming to college better prepared and more confident with technologies needed for their courses? Or are their first college experiences with a CMS and other course technologies more positive? Results reported in the earlier ECAR 2004 study lends strength to these ideas, finding that students who reported previous positive experience with technology in the classroom (such as high school or first-year college classes) preferred more technology in courses.<sup>3</sup> Future studies can help determine if this is a trend.

The ECAR 2006 study reported that three factors—technology adoption, preference for technology in courses, and self-assessment of technology skills—were highly correlated. It

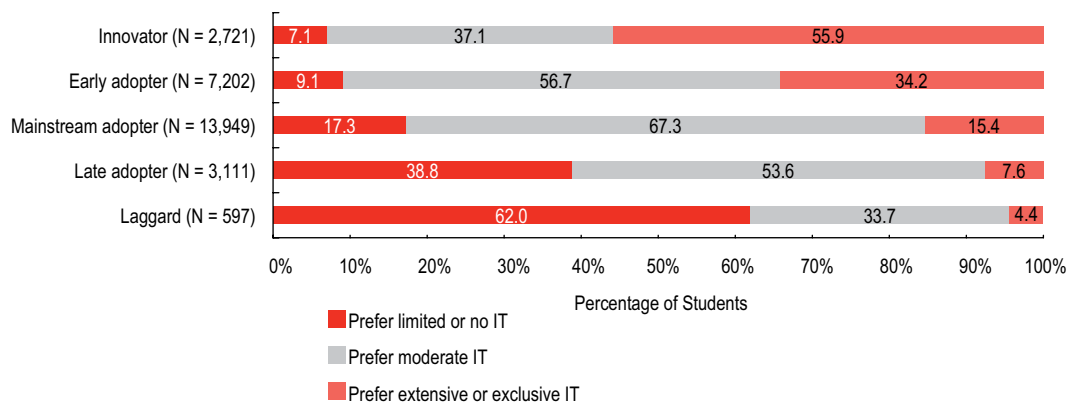
makes sense that those students who most eagerly embrace new technologies would be more inclined to like technology in their academic work. Figure 5-2 shows the strength of this finding for 2007. Notice that while most innovators prefer extensive or exclusive IT and most laggards prefer limited or no IT, most of the remainder—early, mainstream, and late technology adopters—prefer moderate IT in courses.

Respondents who prefer more IT in courses report stronger technical skills overall (see Table 5-1). As might be expected, computer maintenance shows the largest skill gap (mean difference of 1.17) between those who like extensive or exclusive technology in courses

and those who like limited or no IT in courses. More important is the relatively large skill gaps for spreadsheets, presentation software, and CMS skills. These core skills are becoming basic technology literacy requirements for many undergraduates, no matter how much technology a student prefers in courses. These findings highlight the challenge colleges and universities face in providing instructional technology that meets the needs of students with widely varying levels of technology interest and skills.

The desire for moderate IT in courses was evident in student comments from both survey open-ended comments and student focus groups. One student captured the essence of

**Figure 5-2.**  
**Preference for IT in Courses, by Technology Adoption**



**Table 5-1. Preference for IT in Courses, by Skill Level**

Technology	N	Prefer Limited or No IT	Prefer Moderate IT	Prefer Extensive or Exclusive IT	Difference in Means**
		Mean Skill*	Mean Skill*	Mean Skill*	
Computer maintenance	26,863	2.74	3.20	3.91	1.17
Spreadsheets (Excel, etc.)	24,113	3.02	3.43	3.87	0.85
Presentation software (PowerPoint, etc.)	25,270	3.46	3.82	4.14	0.68
Course management system	22,635	3.43	3.74	4.06	0.64
Graphics software (Photoshop, Flash, etc.)	18,880	2.67	2.84	3.22	0.55
Video/audio software (Director, iMovie, etc.)	8,529	2.65	2.72	3.06	0.41
Online library resources	25,707	3.27	3.47	3.64	0.37

\*Scale: 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent

\*\*Difference in means is the difference between the mean skill for “prefer limited or no IT” and the mean skill for “prefer extensive or exclusive IT.”

Note: Means and standard deviation calculations include only the students who use the technology.

these comments, saying, “I am a big fan of Internet technology, but surprisingly did not like the few online-only courses I took. On the other hand, I found Web-based resources that were included as part of ‘normal’ face-to-face classes to be very useful. This really is the best of both worlds.”

## Technologies Used the Quarter/Semester of the Survey

Respondents told us what technologies they were actively using as part of their coursework at the time of the ECAR survey (March/April 2007). Table 5-2 shows a set of core technologies used by most respondents: e-mail, course management systems, course Web sites, and software to create spreadsheets and presentations. With the exception of e-mail, seniors and freshmen do

not report equal use of these core technologies. More seniors report using presentation software and spreadsheets in courses this quarter/semester, while more freshmen report using course Web sites. Community college respondents show generally less use for all of these technologies.

This usage profile aligns well with the differences between lower- and upper-division courses. Lower-division classes, often large lectures, are adequately served by course Web sites and basic CMS functions such as online quizzes, syllabi, and electronic gradebooks. Upper-division courses, smaller and focused on student major, call for more use of application software.

E-mail is by far the most widely adopted technology in courses, used by almost all respondents in the quarter/semester of the survey. Not surprisingly, student comments

**Table 5-2. Technologies Used in Courses the Quarter/Semester of the Survey, by Class Standing**

	Senior (N = 13,038)	Freshman (N = 10,169)	Community College Students (N = 1,816)
<b>Almost All Students Use This Quarter/Semester</b>			
E-mail	96.9%	96.0%	89.4%
<b>Most Students Use This Quarter/Semester</b>			
Course management system	77.4%	78.3%	60.4%
Presentation software (e.g., PowerPoint)	77.1%	63.1%	50.4%
Course Web site	57.2%	65.7%	52.7%
Spreadsheets (e.g., Excel)	56.0%	43.9%	33.3%
<b>Few Students Use This Quarter/Semester</b>			
Discipline-specific IT (e.g., Matlab, Stella)	19.4%	18.2%	10.5%
Social networking software (Facebook, etc.)	16.9%	27.0%	19.0%
Graphics software (Photoshop, Flash, etc.)	13.2%	10.5%	9.9%
Instant messaging	11.4%	17.3%	13.9%
Programming languages (C++, Java, etc.)	10.9%	11.9%	7.2%
E-portfolios	9.0%	4.8%	4.4%
Blogs	7.9%	9.9%	8.3%
Video/audio software (Director, iMovie, etc.)	6.8%	6.3%	5.2%
Podcast	4.5%	6.0%	3.4%
Webcast	4.2%	4.4%	4.0%

are overwhelmingly positive about e-mail for courses. One typical response was, "The use of e-mail helps keep me in touch with professors and students, and keeps me informed about what is happening within the university." Another student commented, "Most of my teachers are available by e-mail, and this helps me with everything from not misunderstanding material to getting help with a paper. I think it would be cool if teachers had open chats at certain times to discuss subjects deeper with students also."

Most respondents were using presentation software themselves in courses during the quarter/semester of the survey (69.3 percent). However, their comments were not generally about their own use but about instructors' PowerPoint use. The primary discussion centered on what is effective versus ineffective use of PowerPoint by faculty in the lecture context. On the positive side, one student said, "Access to PowerPoint slides online is the major advantage of IT in courses. All of my professors post them online. So, if you miss a class, you can see what was missed." On the negative side, one representative student commented, "Teachers attempt to fit too many topics into each presentation and fail to explain things clearly. They should be adding to the PowerPoint presentation and enriching the lesson with additional information." One student summed up, "Professors who *know* how to use PowerPoint effectively are awesome; those who use it as a place to stuff 15 lines of vague notes are not. Professors need to be trained on when to use and *not* use PowerPoint."

Few respondents (5.0 percent) are using podcasts in their courses during the current quarter/semester, most likely because they are not widely available. Yet the student comments we received were chiefly positive, describing podcasts as an extremely helpful supplemental tool. One typical response was, "Podcasts are a very useful way to keep students updated on class. Everyone walks

around campus with iPods, so listening to class lectures on your way to a test, after you have missed a class, or just to reinforce information covered would be very beneficial. Moreover, some people learn better by listening. So it would be easy and beneficial for both students and teachers to post lecture podcasts." Another undergraduate commented, "Harvard, Yale, and Berkeley all have podcasts for their classes available, and I listen to them at work!" Expressing the minority opinion, a senior said, "One of my four professors is doing podcasts. But, it's not as useful as going to class. I need to go and listen in person."

Some application software appears to be used in response to student major requirements. Engineering students are avid spreadsheet users and report more use of course Web sites in courses the quarter/semester of the survey. Engineering courses also provide students extensive experience with software specific to the engineering discipline. More than two-thirds (68.2 percent) of engineering students reported using some discipline-specific IT in courses the current quarter/semester, compared with 30.4 percent of physical science students and 12.0 percent of the combined remaining majors. Engineers are also proportionally the most active programmers, with more than one-third (36.6 percent) using a programming language for coursework during the quarter/semester of the survey. Of respondents in other majors, only 8.4 percent did so.

As expected, business majors make more use of fundamental business tools. They used presentation software more often than others (77.6 percent versus 67.3 percent) and spreadsheets more often than others (67.7 percent versus 44.9 percent) during the quarter/semester of the survey.

Fine arts students use graphics and video/audio software the most. More than a quarter of these students used graphics software (27.0 percent) in their courses the quarter/

semester surveyed, compared with only 10.4 percent for other majors. Video/audio software, although minimally used overall, was still used more (14.0 percent) by fine arts students than others (5.8 percent).

E-portfolios are a mainstay in many education departments, often used as a part of the student program to fulfill teacher education requirements. It is often a vehicle for teacher applicants to provide school district administrators with tangible evidence of the skills and understanding the applicant can bring to the classroom. It's not surprising that education student respondents reported much more use of e-portfolios (32.2 percent of seniors and 6.5 percent of freshmen) in their courses the quarter/semester of the survey than other students (4.9 percent).

While 27.8 percent of respondents said that they have done blogging (refer to Table 4-5), only 8.6 percent of respondents said they were using blogs in their courses the quarter/semester of the survey. We asked about this course-related use in our focus groups. One sophomore majoring in psychology explained what worked well: "I have a class where we look at current events from different perspectives. We'll do an Internet blog on the topic. For it to work effectively, you must have an opinion! It seems that broad topics work best." Another student supplied information in the open-ended survey question: "Setting up a blog for a specific class proved effective. Cheers to Web 2.0."

Although the survey did not collect data on the use of interactive response systems (clickers), students volunteered opinions about their benefits and problems. There were a few positive comments, such as "It keeps me engaged during lecture and lets me know if I really understand the material." Many comments were negative, however, with respondents using phrases such as "a waste of time," "ineffective and expensive," and "disruptive." Students also point to instructor overuse of clickers as problematic,

with comments such as "One of my professors employs clickers poorly because he merely asks questions for us to answer but does not really *teach*."

Earlier, ECAR reported (Table 4-5) that most respondents use IM (84.1 percent) for recreation, work, or school. Far fewer respondents reported using IM in their courses in the quarter/semester of the survey (13.8 percent). The same pattern holds for online social networking, with 81.6 percent using it for recreation, work, or school and only 20.6 percent having used it the current quarter/semester in their courses. This data is consistent with what students tell us in qualitative interviews—that they think of these as tools to use with friends and they prefer that IM and online social networking remain within the scope of their private lives.<sup>4</sup> While a few survey comments mentioned that IM capabilities to chat with faculty or IT support staff would be helpful, these comments were outnumbered by those of students who strongly felt that the use of IM by the institution was not a good idea. One typical comment was, "I think that pressuring students to communicate through text/instant messaging is an invasion of personal space and preferences." Another student said, "I would hate it if a teacher made me use IM in a class because no one pays serious learning attention to instant messages." However, it is noteworthy that freshmen are more likely than seniors to use IM and social networking in courses; it may be that entering students are less adamant about keeping the boundary between school and personal life for these technologies. Future studies can help determine if this is a trend.

## How Students Like to Learn with Technology

While ECAR focuses on technology use of college-level students, other organizations such as the Pew Internet & American Life Project study teens who will soon be entering

college, tracking teen use of existing and emerging technologies such as blogs, wikis, gaming Web sites, IM, text messaging, and so forth.<sup>5</sup> These studies concur that young students are great fans of such technologies in their personal lives. But do teens and undergraduates see these same technologies as learning tools for use in their courses? In the context of this discussion, Edward Dieterle, a doctoral student at Harvard Graduate School of Education, designed four questions for ECAR (see Figure 5-3).

It is not surprising that most respondents now like to learn by doing Internet searches (72.0 percent). In the open-ended question, students often mentioned the Internet, commenting on its convenience in finding information and linking that with improved learning. For example, one student gave the following example: “An excellent use of technology was Google Earth in my genetics course. We were studying the avian flu and using Google Earth to see all the outbreaks of the flu on a 3D map of the earth. It showed us how the outbreaks spread over time. I found this a very valuable addition to the lecture.”

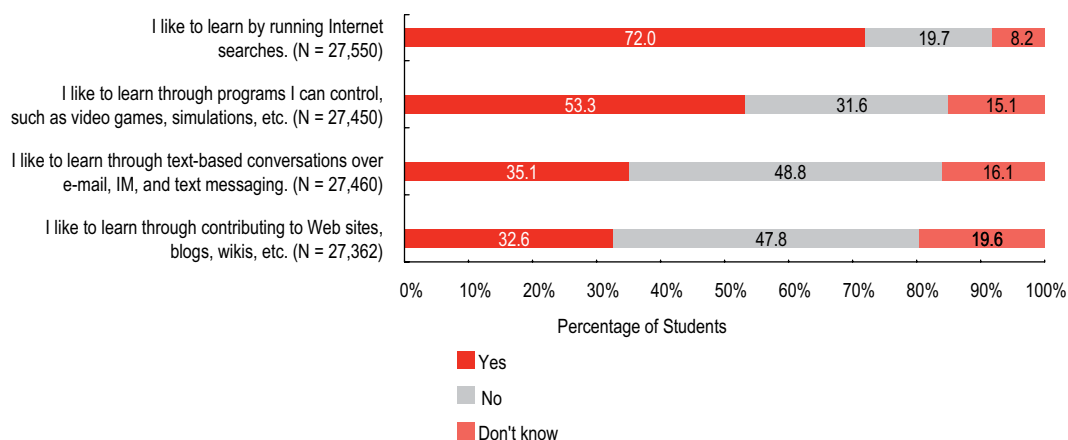
Of greater interest, though, is that about one-third of respondents like to learn through either text-based conversations (35.1 percent) or contributing to Web sites (32.6 percent). In our open-ended survey question, a number of students commented on use of wikis

in courses. One student told us, “A class I took revolved around writing a wiki as an open textbook. Chapters were written and edited by groups. This was a great experience because everyone got involved with the material and we created a useful and permanent resource.”

Further, the majority of respondents (53.3 percent) indicate that they like to learn through programs they can control, such as video games and simulations. Educators are currently pursuing the deployment and use of digital game-based learning (DGBL) to meet this demand. Richard Van Eck, assistant professor at the University of North Dakota, notes, “Educators have adopted three approaches for integrating games in the learning process: have students build games from scratch, have educators and/or developers build educational games from scratch to teach students, and integrate off-the-shelf games into the classroom.”<sup>6</sup> Regardless of the games’ development methods, more and more educators are considering what role DGBL will play in future educational offerings. Games that are based on learning theory and research can provide students with an immersive environment, allowing them to inhabit new roles and think, act, and talk in new ways.<sup>7</sup>

One in 10 respondents (10.5 percent) does not like to learn using any of these four

**Figure 5-3. How Students Like to Learn with Technology**



technology groups. At the other extreme, another 1 in 10 respondents (11.5 percent) indicates a preference for learning using all four technology groups.

Further, with the exception of learning through Internet searches, a large proportion of respondents (15 to 20 percent) do not know whether they like to learn using these technology groups. It may be that this group is not experienced enough with these modalities in a learning context, or that they are not fully aware of their individual learning preferences. In fact, younger respondents report a higher proportion of “don’t know” answers than older respondents.

The data suggest that respondent behaviors are consistent with their responses about how they like to learn. Respondents who say they like to learn through a technology are, indeed, likely to use technology in both their personal and academic lives:

- ◆ Respondents who like to learn through text-based conversations (such as IM, text messaging, and e-mail) report more use of IM in their courses the quarter/semester of the survey.
- ◆ Respondents who like to learn through programs they can control report more use of discipline-specific software (such as MatLab and STELLA) in their courses

the quarter/semester of the survey and play computer games more.

- ◆ Respondents who like to learn by contributing to Web sites, wikis, blogs, and so forth report more use of blogs in their courses the quarter/semester of the survey and more use of blogs and wikis in general.

Responding students who identify themselves as early technology adopters generally like to learn using these technology groups (see Figure 5-4). This pattern is especially striking for the newer technologies in the list—contributing to Web sites and using simulations and video games. Fully two-thirds (67.7 percent) of innovators and early technology adopters like to learn through programs they can control (such as DGBL environments). It follows that the very large number of mainstream technology adopters will be close behind. This suggests that additional exploration and adoption of gaming in coursework is appropriate for educators and technologists.

### Bringing Laptops to Class

Although respondents are clearly choosing mobile laptops over desktops, they are not in the habit of bringing them to class. Of the 73.7 percent of responding students who own

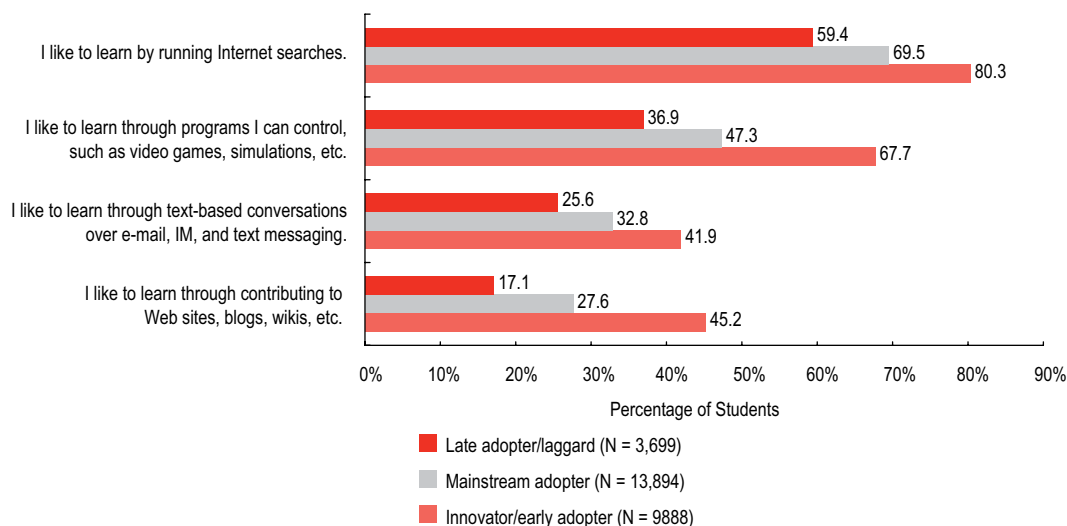


Figure 5-4. How Students Like to Learn with Technologies, by Technology Adoption

laptops, more than half (52.4 percent) never bring them to class. We find that just one-fourth (25.0 percent) generally bring them to class on at least a weekly basis (see Figure 5-5). When a University of Wisconsin–Madison survey asked “why not?” it uncovered two primary reasons: laptops are too heavy, and they are not needed.<sup>8</sup> One student commented, “I find laptop use in the class is unnecessary and distracting during lectures. I notice that most students that use laptops in the classroom spend their time instant messaging or playing online games.”

About one-third (34.5 percent) of males who own laptops bring them to class weekly or more often, compared with 19.1 percent females. Engineering majors, regardless of gender, bring laptops to class more frequently. Doctoral institution respondents (29.6 percent) and associate’s respondents (26.4 percent) are also more likely to do so than master’s (18.9 percent) or bachelor’s respondents (14.2 percent).

However, technology adoption is the key factor. More than half of respondents who own and bring a laptop to class at least weekly identify themselves as technology innovators or early adopters (58.2 percent); only a scant 5.4 percent of late adopters or laggards do so. Internet access method also makes a difference. It’s logical that more wireless users (33.6 percent) bring their

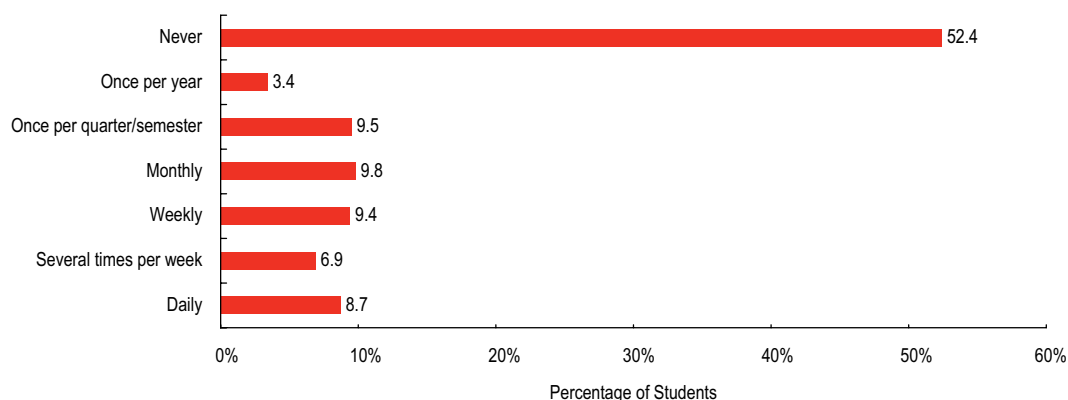
laptops to class at least weekly than others (21.8 percent). Of note is recent research at Carnegie Mellon to understand how students use their laptop computers. Researchers found that while laptops give users more flexibility in choosing where and when to study, there was no evidence that laptops improved students’ work.<sup>9</sup>

## Course Management Systems

The current year’s ECAR data indicates that overall CMS use is gaining ground. Data collected directly from students, rather than from institutional leadership, indicates that both the number of respondents exposed to a CMS and the frequency with which they use a CMS have increased. Other current research corroborates this finding.

The EDUCAUSE 2007 Current Issues Survey Report recently published findings from its annual survey asking campus IT leaders to rate the most critical IT challenges facing them and their institutions. For the first time ever, course/learning management systems moved into their top-10 ranking for both “issues of strategic importance” (ranking ninth) and “potential to become more significant in the future” (ranking seventh).<sup>10</sup> In addition, course/learning management systems moved up in ranking for “consumption of human and/or financial resources,” from eighth in

**Figure 5-5. How Often Students Bring a Laptop to Class (N = 20,357)\***



\*Students who do not own a laptop are excluded.

2006 to fifth in 2007. The report points to course management systems' accelerating role as a mission-critical application for teaching and learning.

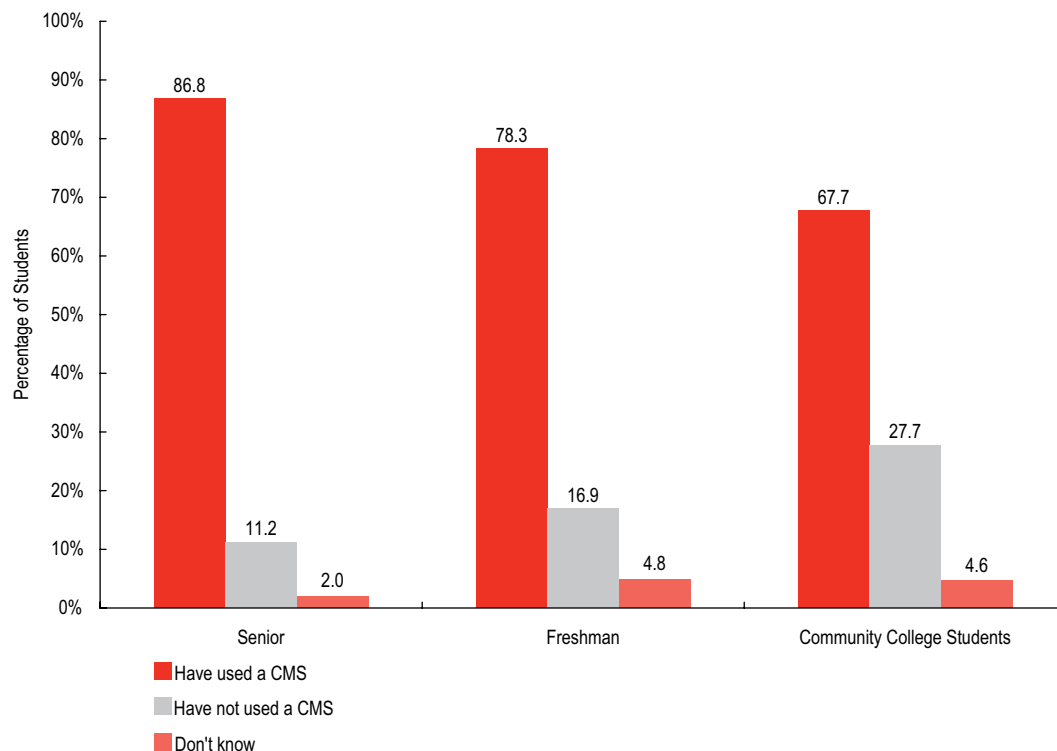
Other survey research reports mild but consistent evidence of increased CMS diffusion. The 2006 EDUCAUSE Core Data Service reported an increase in faculty CMS use. While the 2005 Core Data Service found that 22.5 percent of institutions reported that faculty used a CMS in all or nearly all of the institutions' courses, that number increased to 25.6 percent in 2006.<sup>11</sup> In addition, the Campus Computing 2006 report finds that the percentage of courses using a course/learning management system has been steadily rising since 2000 and is now at 46.8 percent. There was an increase of about 5 percent from 2005 to 2006—a finding consistent across all higher education sectors measured. The report further states that the number of institutions having a strategic plan for course/learning management systems

deployment is up from 52.4 percent in 2005 to 56.5 percent in 2006.<sup>12</sup>

### Increasing CMS Use

Fully 82 percent of respondents have used a CMS at some time. These include vendor products such as ANGEL, WebCT, Blackboard, Desire2Learn, OnCourse, and FirstClass; open source software such as Sakai and Moodle; and homegrown systems tailored to a specific institution. Figure 5-6 shows results by class standing. Of senior respondents—who have completed most of their courses—86.8 percent have used a CMS. Freshmen, even though they have attended far fewer courses, are close behind, with 78.3 percent having used a CMS. Fewer community college students have used a CMS—consistent with last year's finding. However, since this year's data includes only four community colleges, these results should be viewed with caution.

Because course management systems are becoming so widely used and are usually



**Figure 5-6.**  
Students Who  
Have Used a CMS,  
by Class Standing  
(N = 25,070)

deployed as institution-wide applications, it is not surprising that no meaningful usage differences surfaced on the basis of gender, student major, place of student residence, or full-time versus part-time enrollment status.

Both the 2005 and 2006 ECAR studies reported that about 72 percent of all respondents had taken a class using a CMS. The 2007 data show a significant jump to 82.0 percent for the whole respondent population. Table 5-3 shows the changes in the

percentage of respondents who have used a CMS from just the 40 institutions providing longitudinal data. While increased CMS exposure is seen for all respondents from four-year institutions, freshmen show a slightly greater increase from 2005 to 2007.

We now look at respondent exposure to a CMS at the 103 individual institutions participating in the 2007 study (see Figure 5-7). At the institution with the lowest CMS penetration, only 27.0 percent of its responding

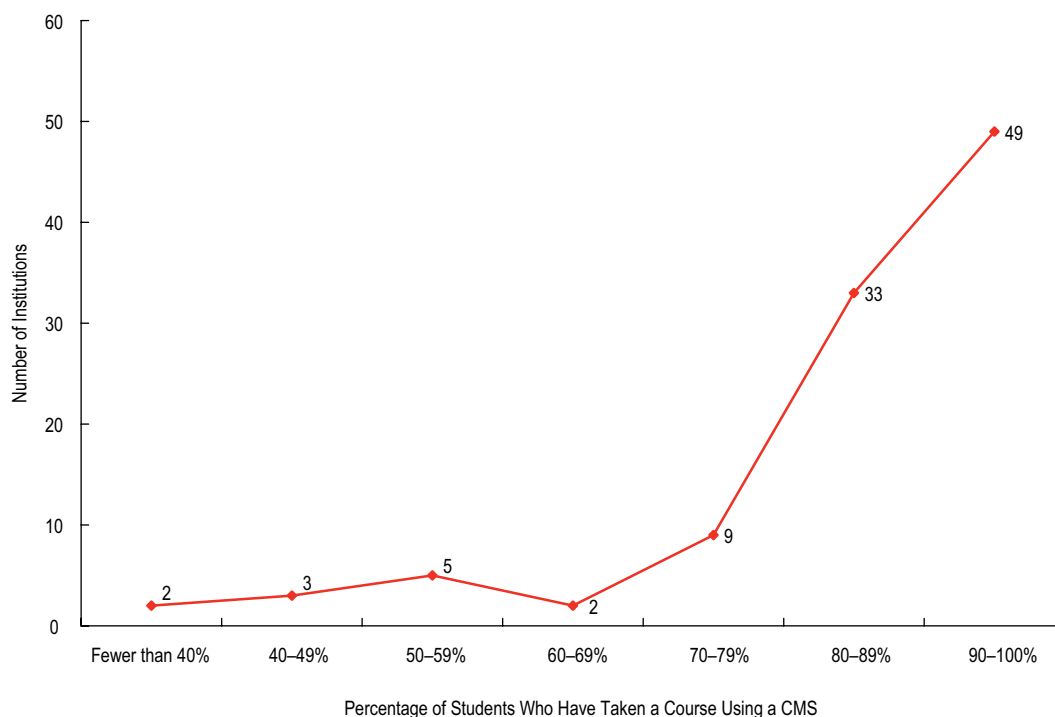
**Table 5-3. Change in Percentage of Students Who Have Used a CMS, from 2005 to 2007 (40 Institutions)\***

	Report in 2005 (N = 13,620)	Report in 2006 (N = 12,387)	Report in 2007 (N = 10,221)	Absolute Change**	Relative Change**
Seniors	74.5%	77.1%	86.5%	12.0%	16.1%
Freshmen	63.5%	66.6%	78.2%	14.7%	23.1%
All students	69.7%	72.5%	82.9%	13.2%	18.9%

\*Data are based on student responses from the 40 institutions that participated in each of the 2005, 2006, and 2007 studies. While institutions remain the same, the actual students responding are different each year.

\*\*Absolute change is the difference between the 2005 and 2007 percents. Relative change is the absolute change as a percentage of the 2005 percent.

**Figure 5-7. Profile of Institutional Use of Course Management Systems (N = 103)**



students had used a CMS. At the institution with the highest CMS penetration, 97.1 percent of its responding students had used a CMS. In fact, almost half of the participating institutions (49 out of 103) reported that 90 percent or more of their respondents said they were exposed to a CMS. Respondent CMS exposure was below 70 percent at only 12 institutions.

There is reason to believe that institutions are still in flux implementing course management systems. About 8 percent of the institutional respondents to the 2007 IMS GLC Learning Technology Satisfaction and Trends survey indicated they plan to switch to a new CMS provider in the next 12 months, and another 8 percent say they will probably switch. In addition, more than 9 percent noted that they will implement a new CMS this year.<sup>13</sup>

In 2007, not only do more respondents say they have used a CMS, but they also say they use it somewhat more frequently (see Table 5-4). For the 65 institutions participating in each of the past two years, data for 2006 show that 39.6 percent of respondents from these 65 institutions reported using a CMS at least several times a week; in 2007, 46.1 percent did so.

## Experience with Course Management Systems

While more respondents have used a CMS, they have not altered their opinions about their CMS experience (see Figure 5-8). Respondents still say that their overall CMS experience is positive (76.5 percent), and about one in six respondents goes so far as to say “very positive.” Less than 1 in 20 respondents (4.6 percent) report a negative experience. This distribution of responses is remarkably similar to last year’s. Further, whether respondents are male or female, live on or off campus, are part-time or full-time, are seniors or freshmen, are young or old, or are fine arts or engineering majors, they are consistent in their overall ratings of whether they experience course management systems as positive or negative.

Respondents are actively engaged in and expressive about their campus course management systems. The survey open-ended responses had hundreds of comments about course management systems—both positive and negative. Positive comments typically relate to the value of a CMS in helping students organize their course activities and in facilitating the exchange of information between

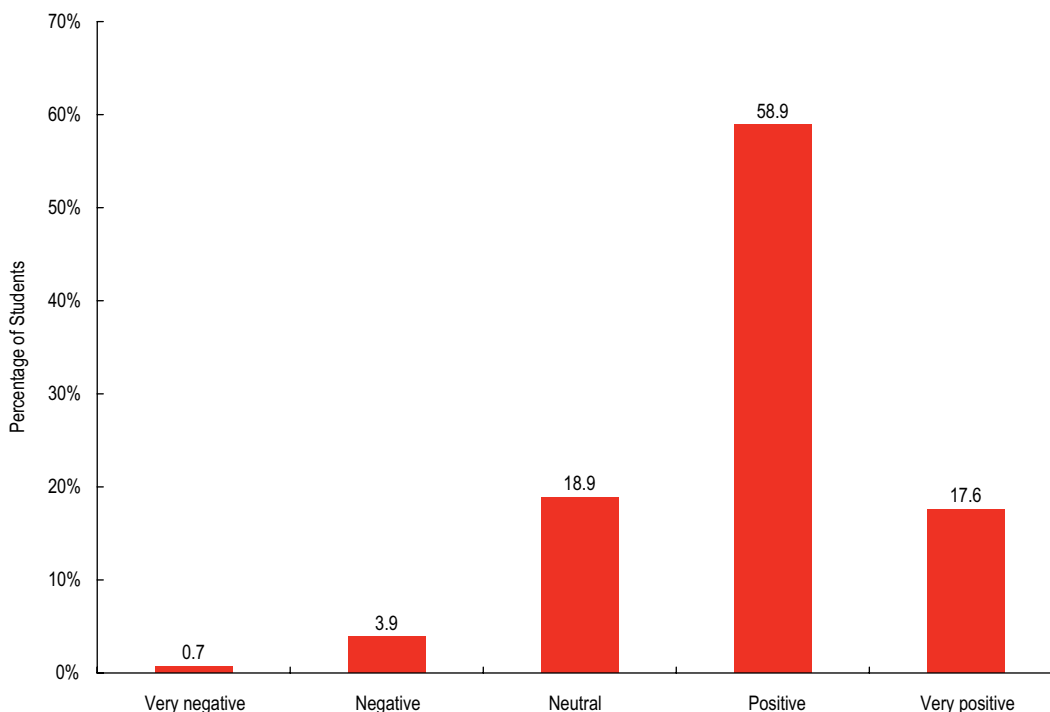
**Table 5-4. Change in How Often Students Use a CMS, from 2006 to 2007 (65 Institutions)\***

	Report in 2006 (N = 20,844)	Report in 2007 (N = 19,598)	Absolute Change**	Relative Change**
Never	23.4%	18.4%	-5.0%	-21.4%
Monthly or less	15.5%	13.3%	-2.2%	-14.2%
Weekly	21.6%	22.1%	0.5%	2.3%
Several times per week	21.7%	24.3%	2.6%	12.0%
Daily	17.9%	21.8%	3.9%	21.8%

\*Data are based on student responses from the 65 institutions that participated in both the 2006 and 2007 studies. While institutions remain the same, the actual students responding are different each year.

\*\*Absolute change is the difference between the 2006 and 2007 percents. Relative change is the absolute change as a percentage of the 2006 percent.

**Figure 5-8.**  
**Positive/Negative**  
**Experience Using a**  
**CMS (N = 22,509)**



faculty and students. One student commented, “I have been more successful in classes that use a course management system. I love being able to access all the class materials anytime I want or need to. I am lost in the classes that do not offer it, though most do.”

Negative comments typically relate to difficulty in use, technical problems, or instructors’ poor or inconsistent CMS use. Students complain about limited access: “It is extremely hard to access during busy times, and I have had to wake up in the middle of the night just to take a quiz before it expired.” They also mentioned difficulty with downloading and uploading files and taking online tests. Some specific course management systems received more positive (or negative) comments than other systems, suggesting that from a student perspective course management systems and their implementations vary.

Consistent with last year’s data, respondents reporting positive CMS experience show a stronger technical profile. They prefer more IT in their courses, are more often early technology adopters, and, especially, use a

CMS frequently and are confident about their CMS skills. Table 5-5 presents the relationship between CMS usage, skill, and experience.

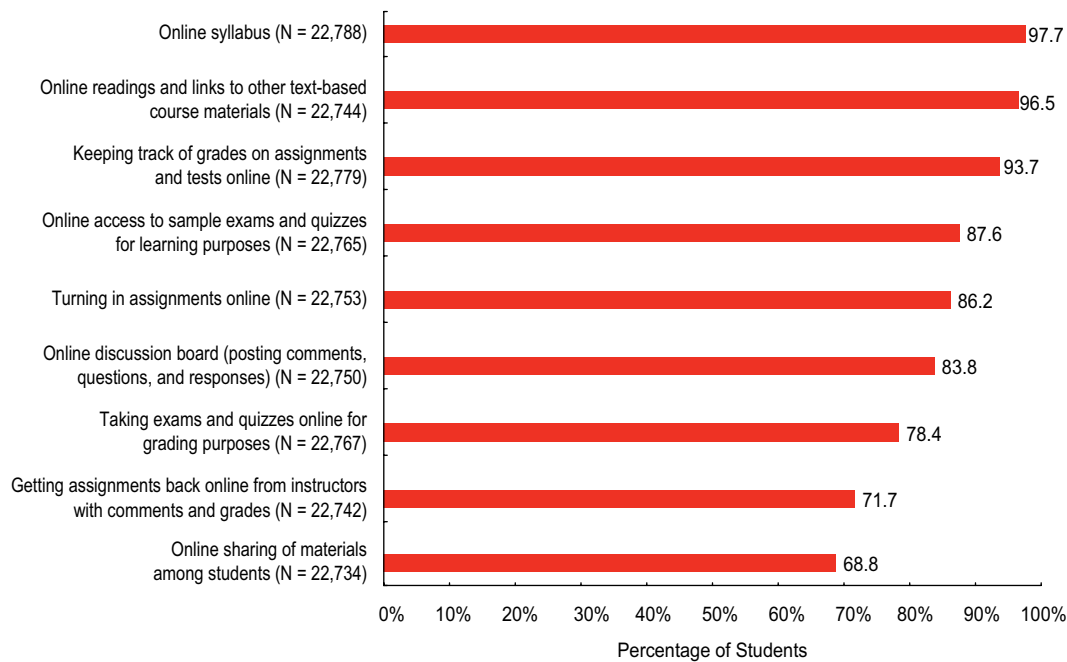
What CMS features have respondents used most? Figure 5-9 shows that almost all respondents (more than 95 percent) have accessed class syllabi, and readings and other text-based course materials—the CMS feature most commonly used by instructors. Also popular is keeping track of grades. Least used, although still used by about 70 percent of respondents, is getting assignments back from instructors and sharing of materials among students. This makes sense, since students have e-mail and other electronic ways available for sharing materials.

Exactly one-half of respondents who have used a CMS report that they have used all nine of the CMS features in the ECAR list, and three-quarters (76.0 percent) have used seven or more of these features. This finding corroborates our 2005 and 2006 data, with the exception that this year somewhat more students report having used online access to sample exams and quizzes.

**Table 5-5. Positive/Negative Experience Using a CMS, by Skill and Frequency of Use**

	N	Mean*	Std. Deviation
<b>Skill Level</b>			
Excellent	5,963	4.17	0.727
Very good	6,891	3.94	0.682
Good	5,648	3.73	0.717
Fair	1,613	3.54	0.779
Poor	294	3.49	0.881
<b>Frequency of Use</b>			
Daily	6,004	4.13	0.711
Several times per week	6,314	3.95	0.712
Weekly	5,490	3.79	0.721
Monthly	1,706	3.61	0.768
Once per quarter/semester	854	3.55	0.819
Once per year	260	3.56	0.848

\*Scale: 1 = very negative, 2 = negative, 3 = neutral, 4 = positive, 5 = very positive



**Figure 5-9. CMS Features Used by Students**

Table 5-6 goes one step further, presenting respondent opinions about the usefulness of CMS features. Respondents rate all CMS features as “useful” or better. Those rated highest, with a mean usefulness above “very useful,” are directly related to monitoring and improving grade performance—keeping track

of grades and getting access to sample exams and quizzes. Student comments about posting grades to the CMS were positive, and one student told us it was top priority: “The CMS is only effective if the teachers use it and post grades to it so you know how you are doing throughout the semester.” Student comments

**Table 5-6. Usefulness of CMS Features**

Feature	N	Mean*	Std. Deviation
Keeping track of grades on assignments and tests online	21,341	4.38	0.925
Online access to sample exams and quizzes for learning purposes	19,924	4.17	0.965
Online syllabus	22,254	3.98	1.034
Turning in assignments online	19,622	3.82	1.174
Online readings and links to other text-based course materials	21,949	3.81	1.056
Taking exams and quizzes online for grading purposes	17,848	3.66	1.250
Getting assignments back online from instructors with comments and grades	16,314	3.74	1.252
Online sharing of materials among students	15,643	3.50	1.221
Online discussion board (posting comments, questions, and answers)	19,075	3.13	1.291

\*Scale: 1 = not useful, 2 = somewhat useful, 3 = useful, 4 = very useful, 5 = extremely useful

Note: Students who do not use a CMS feature are excluded.

were also largely positive about the availability of syllabi and readings online.

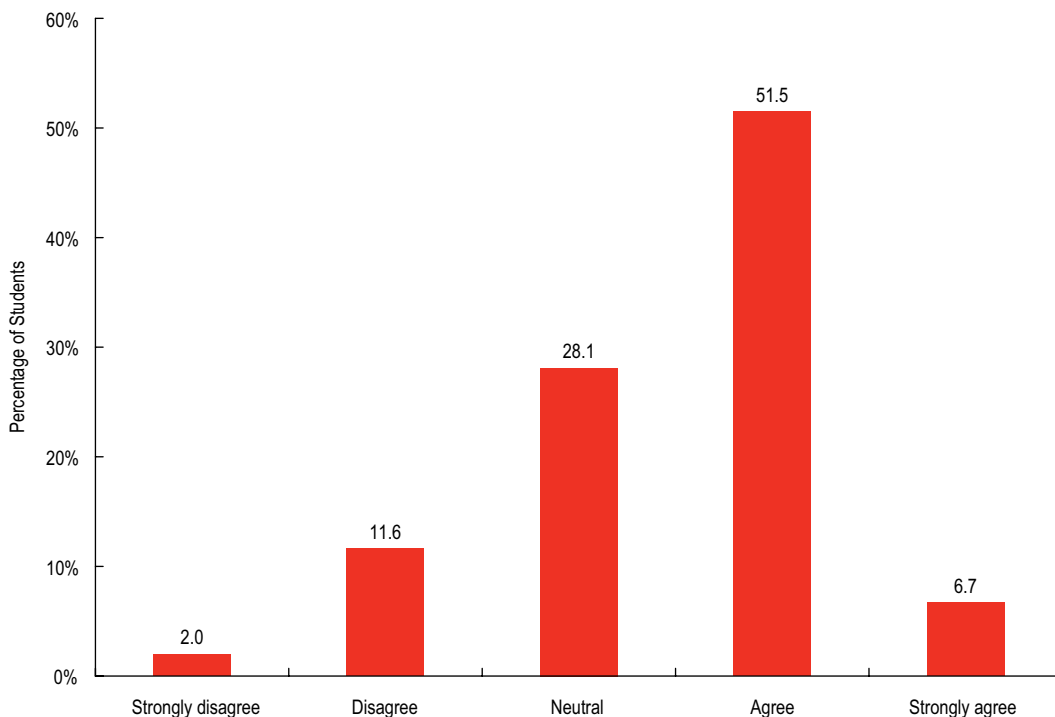
Those CMS features rated lowest relate to student interaction—discussion boards and sharing materials among students. Again, respondent comments are consistent with the data. While they were universally positive about online grades, comments about discussion boards were more mixed, and more often negative. Students experienced them as more time-consuming and less interesting than live discussions. One psychology student admitted, “Online discussions for me personally don’t work well. I don’t like it because you don’t have the personal interaction. It’s hard to read between the lines. You can’t observe how others really feel about something.” A few students, however, felt it was a benefit for shy students. One noted, “For students who don’t like to or don’t feel comfortable speaking up in class but still want to contribute and have opinions, online discussion boards for classes are really useful.”

Respondents often commented about how the CMS directly affects their grades—taking exams and turning in assignments. A typical positive comment was, “I think that being able to submit assignments online is convenient

and fast. It saves paper, too. Students are forced to save their work before an upload, which reduces the chance of a teacher losing an assignment. Moreover, the number of lost assignments decreases because everything is online.” However, several students complained about CMS operational problems affecting their grades. One student told us, “Because computers are so prone to malfunction, things can easily get messed up. I have already failed three quizzes, and all, yes *all*, of my English assignments got turned in late. I did speak to my teacher, and all of my assignments are now counted as on time—but the CMS marked them as late.”

### Faculty Use of IT in Courses

Respondents were asked whether they agreed or disagreed with the statement “Overall, instructors use IT well in my courses.” Figure 5-10 shows that instructors get generally good marks: half of respondents (51.5 percent) agree, and a few (6.7 percent) even strongly agree. Of note, however, more than 1 in 10 respondents (13.6 percent) disagree. What is remarkable about this finding is its stability. No mean-



**Figure 5-10.**  
**Instructors Use**  
**IT Well in My**  
**Courses**  
**(N = 27,719)**

ingful differences in ratings were found among respondents on the basis of

- ◆ demographic factors of gender, class standing, major, age, grade point average, or part-time versus full-time status;
- ◆ institutional factors of Carnegie classification, institution size, or public versus private status;
- ◆ the past three years' ECAR studies (2005, 2006, and 2007) that asked this question;
- ◆ student technology adoption practice (early, mainstream, or late adopters);
- ◆ student opinion about whether their institution needs to give them more training; or
- ◆ technologies students used in their courses this quarter or semester, whether more common software (such as spreadsheets or presentation software) or more sophisticated software (such as programming languages, video/audio software, or graphics software).

What *does* make a difference? By far the strongest indicator as to how respondents rate their instructors' use of IT is how positively or negatively students rate their own overall CMS experience. It is likely that when students think about faculty use of IT, first and foremost they think about course management systems. In fact, respondents who are positive about their CMS experience rate faculty use of IT much higher than do respondents who are negative about their CMS experience (see Table 5-7). This strong association between course management systems and instructor use of IT is an important finding for institutional leaders, suggesting that the enormous amount of work done by campus IT units and their vendors to implement high-quality, easy-to-use course management systems for faculty and students may well be worth the effort.

Looking deeper into the student CMS experience, we find that two of the CMS features listed in Figure 5-9 are more strongly associated with positive ratings for faculty

**Table 5-7. Instructors Use IT Well in My Courses, by Positive/Negative Experience Using a CMS**

Experience Using CMS	N	Mean*	Std. Deviation
Very negative	149	2.64	1.203
Negative	878	2.99	1.044
Neutral	4,245	3.25	0.850
Positive	13,205	3.55	0.788
Very positive	3,950	3.78	0.860

\*Scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

use of IT than others. These are online access to sample exams and quizzes, and online readings and links to other course materials. For example, 63.3 percent of respondents reporting that online access to sample exams is “very” or “extremely” useful also agree that their instructors use IT well in courses. In contrast, only 12.3 percent of respondents who find access to sample exams less than “very” useful do so. This suggests that students appreciate using these particular CMS features.

While respondents agree that their instructors use IT well in courses *overall*, respondent comments from the open-ended survey question describe student experiences at the extremes. Namely, students find some of their instructors to be inspiring, some mediocre, and some dismal when it comes to integrating technology into coursework. As one student described, “In some cases, the use of IT in my classes has been very helpful and has improved the overall efficacy of the course. Yet, recently I’ve taken a few classes where the instructors use no IT resources whatsoever. They hand out the syllabus on the first day of class, break out the chalk, and start teaching. These classes have been very informative. I believe that IT can be extremely useful in some situations, and a complete waste of time in others, depending on the subject matter.”

And finally, ECAR finds that respondents who say their instructors use IT well are much more

likely to report that technology has a positive impact on their academic experience—their degree of engagement in courses, how much they learn, and the convenience afforded by technology. Because faculty use of IT in courses is such an important issue, and because so many students commented on this, ECAR conducted a qualitative analysis of student comments about this from the survey. We discuss the results in Chapter 6.

## Endnotes

1. The shape of the response curve in 2007 is a near-perfect bell, as it was in the 2004, 2005, and 2006 studies (see Robert B. Kvavik, Judith B. Caruso, and Glenda Morgan, *ECAR Study of Students and Information Technology, 2004: Convenience, Connection, and Control* [Boulder, CO: EDUCAUSE Center for Applied Research, 2004]; Robert B. Kvavik and Judith B. Caruso, *ECAR Study of Students and Information Technology, 2005: Convenience, Connection, Control, and Learning* [Boulder, CO: EDUCAUSE Center for Applied Research, 2005]; and Gail Salaway, Richard N. Katz, and Judith B. Caruso, *The ECAR Study of Undergraduate Students and Information Technology, 2006* [Boulder, CO: EDUCAUSE Center for Applied Research, 2006]). In 2006 and 2007 the percentage of students choosing “moderate use of technology” was higher, possibly because the answer options in the 2004 and 2005 question provided examples of what constituted limited, moderate, and extensive and exclusive information technology in courses.
2. Veronica A. Lotkowski, Steven B. Robbins, and Richard J. Noeth, *The Role of Academic and Non-Academic Factors in Improving College Retention* (ACT, 2004), [http://www.act.org/path/policy/pdf/college\\_retention.pdf](http://www.act.org/path/policy/pdf/college_retention.pdf).
3. Robert B. Kvavik, Judith B. Caruso, and Glenda Morgan, *ECAR Study of Students and Information Technology*,

- 2004: *Convenience, Connection, and Control* (Boulder, CO: EDUCAUSE Center for Applied Research, 2004).
4. These percentages for using IM and social networking may be high, as students may be reporting personal use as well as use in their courses.
  5. Amanda Lenhart and Mary Madden, *Teen Content Creators and Consumers* (Washington, DC: Pew Internet & American Life Project, 2005) and Amanda Lenhart, Mary Madden, and Paul Hitlin, *Teens and Technology: Youth Are Leading the Transition to a Fully Wired and Mobile Nation* (Washington, DC: Pew Internet & American Life Project, 2005).
  6. Richard Van Eck, "Digital Game-Based Learning: It's Not Just the Digital Natives Who Are Restless," *EDUCAUSE Review* 41, no. 2 (March/April 2006): 20, <http://www.connect.educause.edu/library/abstract/DigitalGameBasedLear/40614>.
  7. Diana Oblinger, "Simulations, Games, and Learning," (Boulder, CO: EDUCAUSE, 2006), <http://www.connect.educause.edu/library/abstract/SimulationsGamesandL/39338>.
  8. Judy Caruso, "2006 UW–Madison Student Computing Survey Report," (University of Wisconsin–Madison, 2006), <http://www.doit.wisc.edu/about/research/2006/DoITStudentSurveyReport06.htm>.
  9. Brock Read, "Laptops Change How Students Work but Do Not Improve Their Performance, Study Finds," *Chronicle of Higher Education* (November 29, 2006), <http://chronicle.com/daily/2006/11/2006112901t.htm>.
  10. John S. Camp and Peter B. DeBlois, and the EDUCAUSE Current Issues Committee, "Current Issues Survey Report, 2007," *EDUCAUSE Quarterly* 30, no. 2 (2007), <http://educause.edu/apps/eq/eqm07/eqm0723.asp>.
  11. EDUCAUSE, "EDUCAUSE Core Data Service (2005 and 2006)," (Boulder, CO: EDUCAUSE, 2005, 2006), <http://www.educause.edu/coredata/>. Finding was generated directly from the Core Data.
  12. Kenneth Green, *Campus Computing 2006: The 17th National Survey of Computing and Information Technology in American Higher Education* (Encino, CA: Campus Computing, 2006), 12.
  13. IMS Global Learning Consortium, "IMS GLC Learning Technology Satisfaction and Trends, North American Higher Education" (IMS Global Learning Consortium, 2007), <http://www.imsglobal.org/>. This survey sample included a sample of 197 institutions and claimed that "a reasonable distribution of institution types are represented in the sample of respondents as compared to the higher education industry at large."