The ECAR Study of Undergraduate Students and Information Technology, 2010

By Judith Borreson Caruso, Fellow, EDUCAUSE Center for Applied Research, and University of Wisconsin–Madison, and Shannon D. Smith, Fellow, EDUCAUSE Center for Applied Research

KEY FINDINGS

• More than 8 of 10 respondents (84%) own a full-size laptop computer, while less than half (46%) own a desktop.

• On average, respondents report spending 21.2 hours per week on the Internet for school, work, or recreation.

• Almost two-thirds of respondents (63%) own an Internet-capable handheld device, and 67% of them use it to access the Internet weekly or more often.

• More than three-quarters of students (77%) who own an Internet-capable handheld device use the device to access social networking websites.

• The more that students use a technology, the higher they assess their skills with it.

• Twenty percent of students take some or all of their courses online.

• Over one-third of respondents (36%) used web-based word processor, spreadsheet, and presentation applications in a course during the quarter/semester of the survey. Also, about a third used wikis (33%), social networking websites (29%), and college-related review/opinion sites such as RateMyProfessors (27%).

• About half of students (50%) agree or strongly agree that IT in their courses improves their learning.

Since the ECAR study of undergraduate students and information technology began in 2004, student ownership of computing devices has moved relentlessly toward portability. While 93% of students owned a computer in 2004, most owned desktops. By 2010, computer ownership increased to 99% and shifted dramatically away from the desktop, with 89% now owning either a laptop or netbook computer. Students are also rapidly adopting Internet-capable mobile devices. This year just under two-thirds of student respondents (63%) said they own an Internet-capable mobile device, an increase from the 51% ownership reported in 2009.

A dramatic shift in technology use toward untethered, convenient, web-based or cloud services...
is also reflected in the student responses. Just over the past few years, student adoption of some web-based technologies has increased dramatically, changing their use from predominantly local to global applications. For example, 9 out of 10 students (90%) in 2010 reported using social networking websites.

**Technology Adoption and Usage Patterns**

ECAR maps student responses to a set of statements about technology adoption into five categories: innovators, early adopters, mainstream adopters, late adopters, and laggards. Students’ technology adoption category is often strongly associated with their use and experience with IT both generally and in the academic context. Student responses have been quite consistent over the years of the ECAR student studies, and this year’s responses retain the traditional distribution of a rough bell curve, with about half (49%) of all respondents identifying themselves as mainstream adopters. However, there is a persistent gender gap: about half of the male respondents see themselves as innovators or early adopters versus just a quarter of females choosing these categories.

The amount of time students spend online varies and is associated with a respondent’s technology adoption category. A third of respondents reported they are online 10 hours or less each week, and a similar percentage reported 11–20 hours per week. At the high end of the spectrum, almost 1 in 10 respondents (9%) reported spending more than 40 hours online per week. Engineering majors reported the most hours, with a mean of 24.6 hours per week, and education majors reported the least, with a mean of 18.1 hours per week. Respondents who identified themselves as early adopters or innovators spend more time actively doing Internet activities than those who identified themselves as late adopters or laggards.

More than 4 in 10 respondents (43%) who own an Internet-capable handheld device reported using the Internet from their device daily, up from the 29% reported in the 2009 study. More than half (54%) of the students who identified themselves as innovators or early adopters use the Internet daily from their handheld device, compared with only 7% of the late adopters and laggards.

More than 90% of respondents reported using the college/university library website, presentation software, text messaging, social networking websites, and course or learning management systems. Large majorities are also engaged with spreadsheets (86%), instant messaging (71%), and graphics software (67%). A majority of the students who own an Internet-capable handheld device and use the Internet from the device do so to check information such as news, weather, sports, or specific facts (85%), send or receive e-mail (82%), access social networking websites (77%), and use maps to find places, get directions, or plan routes (69%).

**Social Networking**

Social networking continues to be the extremely popular activity that previous ECAR student studies found it to be. The allure of these websites is clear, with over 9 of 10 students engaged and more than half reporting daily social networking activity. For the past few years, 18–24 year olds have consistently reported higher rates of use than older students, but the age gap in social networking has been steadily decreasing. In 2010, majorities of students reported using social networking sites across every age range we looked at (86% for 25–29 year olds, 82% for 30–39 year olds, 69% for 40–49 year olds, and 58% for students ages 50 and older). Nine of 10 students said that they apply “some” or “a lot” of restrictions on who has access to their social networking profiles, while less than 7% reported they apply no restrictions at all. Females (59%) were more likely than males (37%) to report “a lot” of restrictions.

**Preparedness for Use of College-Level Technology**

To get a sense of how students felt about their technical skills when they started college, we asked respondents if they agreed with the statement “When I entered college,
I was adequately prepared to use IT as needed in my courses.” We found that half agreed or strongly agreed. We also asked them to think about the end of their undergraduate experience and found that fewer than half agreed or strongly agreed with the statement “By the time I graduate, the IT I have used in my courses will have adequately prepared me for the workplace.”

Surprisingly, we found no meaningful relationship between class standing and the level of agreement with either of these IT preparedness statements, nor were there any demographic factors that influenced the responses to these or any of the other statements about IT in courses. The only consistent factor associated with how a student responded to these questions was our technology adoption scale. Innovators and early adopters agreed or strongly agreed with all of these statements at higher levels than did mainstream adopters, late adopters, or laggards.

Technology Used in Courses

ECAR asked students about two groups of technologies used in courses: a core set of mostly older online and PC-based technologies, and newer web-based (or “cloud”) resources with collaborative potential. Of the core technologies used in courses the quarter/semester of the survey, at least two-thirds of respondents reported using the college/university library website, presentation software, or a course or learning management system. Least-used of the 15 technologies asked about were video-creation software (7%), e-portfolios (7%), and audio-creation software (6%). The top three web-based technologies used in courses during the quarter/semester of the survey were web-based word processor, spreadsheet, presentation, and form applications such as Google Docs, iWork, or Microsoft Office Live Workspace (36%), wikis (33%), and social networking websites (29%). When asked if they would like to see more use of social networking websites in their courses, just over a quarter (28%) said yes, and about half (49%) said no, although students who said they were using social networking websites in their courses the quarter/semester of the survey were more likely to say yes to this query.

Impact of Technology in Instruction

For the past three years, respondents were asked to estimate how many of their instructors—almost none, some, about half, most, or almost all—met the criteria stated in three questions about instructors and IT in courses. Each year, fewer than half of respondents have told us that most or almost all of their instructors met the criteria for any of the questions. This year 49% told us that most or almost all of their instructors have adequate IT skills for carrying out course instruction, and 47% said that instructors use IT effectively in courses. Only 38% said that most or almost all instructors provide students with adequate training for the IT used in his or her course, and nearly half (47%) indicated that just some or almost none of their instructors do so.

When asked about what types of technology they like to learn with, students preferred less interactive activities such as learning through listening to audio or watching video content (81%) and through running Internet searches (79%). Lower percentages said they like to learn through programs they can control, such as video games or simulations (51%) or through text-based conversations over e-mail, instant messaging, and text messaging (45%). The most active learning technologies came in with even lower responses: contributing to websites, blogs, wikis, or other sites only received 37% of responses, and creating audio or video content was cited by just over a quarter of respondents (27%).

Because IT is integrated with many student activities that influence college success, ECAR asked several questions about IT outcomes related to student success. The questions related to the dimensions of technology impact on student engagement, convenience, learning,
and workplace preparedness. Convenience was the clear front-runner, as almost 70% of students agreed that IT makes doing their course activities more convenient. Half (50%) agreed that the use of IT in their courses improves their learning, and a little over a third (37%) said they get more actively involved in courses that use IT. As mentioned earlier, under half of students (47%) agreed that by the time they graduate, the IT in their courses will have adequately prepared them for the workplace, with 38% neutral and 15% disagreeing.

OBSERVATIONS: WHAT DOES THIS MEAN?

Based upon its findings in The ECAR Study of Undergraduate Students and Information Technology, 2010, ECAR suggests that the following observations are worth further consideration:

1. Web-based technologies’ use in courses has arrived.
   Students have been using web- or cloud-based technologies such as social networking sites socially for a number of years. This year, over a third of students (36%) indicated that they used web-based word processor, spreadsheet, presentation, or form applications (such as Google Docs, iWork, or Microsoft Office Live Workspace) in their courses during the quarter/semester of the survey. About a third also indicated use of wikis (33%) and social networking websites (29%). As many as half of the respondents who use these tools said they were using them to collaborate with other students in their courses. Use of these technologies is likely to increase, and institutions will need to decide how they want to handle/monitor this use. Issues surrounding the protection of students’ privacy, including compliance with federal and state privacy laws, need to be considered. Institutions might choose to create policies covering web-based services and contract with desired vendors to ensure their institutional needs are met.

2. Mobile web use is growing.
   Almost two-thirds (63%) of student respondents own an Internet-capable device. Among these owners, 43% reported using the Internet on the device daily. As costs come down, more and more students will be using these technologies. Moreover, they will expect institutional IT services to be available on their mobile device. In focus-group conversations, students indicated that some services work well on mobile devices and some don’t. Institutions might engage their students in a discussion of their IT services and prioritize their implementation of mobile applications.

3. Instructors continue to need training in effective use of technology.
   Instructors’ use of technologies in their instruction may impact the students’ academic experience. Less than half (49%) of students said that most or almost all of their instructors have adequate IT skills for carrying out instruction, and another 18% said that about half of their instructors do. The remaining third reported that some or almost none of their instructors have adequate skills. Institutions might decide to explore these perceptions and design focused faculty training where needed.

4. Students also need training in technology.
   Despite the commonly held belief that undergraduates are tech-savvy, students reported in this survey that they don’t have all the skills they need. They are fluent in common office suite software and searching the Internet but are not as skilled in other technologies used in their courses. Half of the respondents (50%) agreed that, when they entered college, they were adequately prepared to use IT as needed in their courses; about the same percent (47%) agreed or strongly agreed that by the time they graduate, the IT they have used in courses will have adequately prepared them for the workplace; and another 38% were neutral. Also, one in five (19%) of the respondents reported that almost none of their instructors provided students with adequate training for the IT the instructor uses in his or her course. These results point to the need for more training and experiences with technologies for undergraduate students.

5. With more online courses, IT services must be reliable.
   In 2010, 20% of students indicated that they are taking some or all of their courses entirely online, up from 15% in 2008. This trend is likely to continue as more students return to or enter higher education for the first time while working and managing a family. Additional entirely online courses, however, can stress the institution’s technical infrastructure. Half of this year’s respondents agreed or strongly agreed that their institution’s IT services are always available when they need them for coursework. A third were neutral, and 15% disagreed or strongly disagreed. Without strengthening the institution’s IT infrastructure, many institutions may find it difficult to ensure that their IT services are available when needed by students.