

# Roadmap

TOOLS FOR NAVIGATING COMPLEX DECISIONS

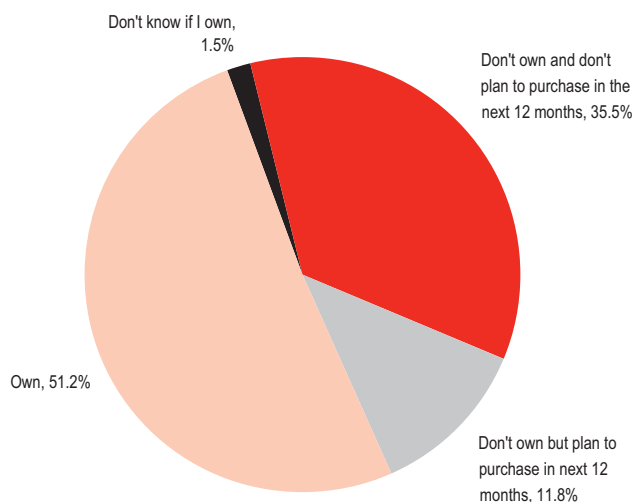
## The ECAR Study of Undergraduate Students and Information Technology, 2009

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### KEY FINDINGS

- ▶ Laptops are owned by 87.8% of the student respondents, and 79.0% of freshmen own a laptop one year old or less.
- ▶ Internet-capable handheld devices are owned by 51.2% of respondents, with 29.0% of these owners using the Internet from their device daily.
- ▶ Respondent students say they spend 21.3 hours per week, on average, actively doing Internet activities for school, work, and recreation.
- ▶ During the quarter/semester of the survey, 73.1% of students report using the college/university library website, 66.5% use presentation software (PowerPoint, etc.), and 46.3% use spreadsheets (Excel, etc.) in their courses.
- ▶ Just under half (45.0%) of the respondents report that most or almost all of their instructors use IT effectively in their courses.
- ▶ Almost half (49.9%) of the respondents cite “plenty of other ways to access the Internet” as one of the top-three reasons they don’t use the Internet at all—or don’t use it more often—from an Internet-capable handheld device. Cost of the data service was cited second (46.2%), and cost of the handheld device was third (36.4%).

Ownership of Internet-Capable Handheld Device (N = 30,616)



In this, the sixth ECAR study of undergraduate students and information technology, students continue to indicate the dominance of technology in their personal and academic lives. This year, in addition to questions about students’ computer ownership and their use, skill, and experiences with technology for school, work, and recreation, ECAR asked about ownership and use of Internet-capable handheld devices. As more and more institutions explore the possibilities of providing mobile access to student administrative systems, campus maps, and instructional technologies, information about what students actually own and use will assist campuses in planning and setting strategies.

### Technology Ownership, Adoption, and Use

Since 2004, student computer ownership has been almost universal. In 2004, 93.4% of the student respondents owned a

*This ECAR Roadmap synthesizes the results of 30,616 freshman, senior, and community college student responses from a spring 2009 survey at 115 higher education institutions as well as interviews with students from four institutions as reported in The ECAR Study of Undergraduate Students and Information Technology, 2009, by Shannon D. Smith, Gail Salaway, and Judith Borreson Caruso. It also compares the 2009 results with the results from the 2006, 2007, and 2008 ECAR studies. While ECAR’s findings are statistically significant for the institutions involved, it is also likely that these results are indicative of student perspectives at many similar institutions. To order the full study and learn about subscribing to ECAR, visit the ECAR website at <http://www.educause.edu/ecar> or contact us at [ecar@educause.edu](mailto:ecar@educause.edu).*

## COMPARING 2006–2009 RESULTS

Among the 39 institutions that participated in each of the surveys from 2006 to 2009, ECAR found...

- ▀ Increased ownership of laptop computers (65.4 % in 2006, 72.8% in 2007, 82.1% in 2008, 88.3% in 2009)
- ▀ Decreased ownership of desktop computers (71.0% in 2006, 59.4% in 2007, 49.7% in 2008, 44.0% in 2009)
- ▀ Increased use of social networking sites weekly or more often (65.3% in 2006, 77.0% in 2007, 84.6% in 2008, 86.6% in 2009)
- ▀ Decreased use of instant messaging weekly or more often (72.5% in 2006, 71.5% in 2007, 57.5% in 2008, 55.7% in 2009)

computer, and in 2009, 98.8% own one. There has been a shift, however, from desktop ownership to laptop ownership over the past six years, and in this year's study, 87.8% of respondents report owning a laptop and 45.8% own a desktop. For the 39 institutions that participated in each year from 2006 to 2009, laptop ownership has increased from 65.4% in 2006 to 88.3% in 2009, while desktop ownership declined from 71.0% in 2006 to 44.0% in 2009. A little over one-third (34.5%) of the respondents to this year's survey report owning both a laptop and a desktop.

Students are engaged in a wide variety of computer and online activities. Virtually all students use the college/university library website (94.6%), presentation software such as PowerPoint (93.8%), and social networking websites such as Facebook, MySpace, Bebo, and LinkedIn (90.3%). Students are also heavily engaged in text messaging (89.8%), spreadsheets (86.8%), course or learning management systems (86.0%), and downloading web-based music or videos (84.2%).

Over half (51.0%) of students consider themselves mainstream adopters of technology—adopting technology when their peers do so. On average, students spend 21.3 hours per week actively doing Internet activities. Early adopters/innovators of technology spend more hours per week than other students. Degree program also influences how many hours students spend actively doing Internet activities, with engineering majors reporting more hours than other majors.

When asked about their preference for notification of a campus emergency, over half (55.3%) of the student respondents say they prefer text message notification. Other methods are much less preferred, including e-mail (17.6%), voice telephone call (12.2%), and public-address systems (sirens, loudspeakers, intercoms, etc.) (11.1%).

### Students' Technology Skills

Students consider themselves quite skilled in many technologies. They rate their skills between fairly skilled and very skilled for presentation software, the college/university library website, course or learning management systems, and spreadsheets. They are even more positive about their skills in using online information. Eighty percent of students consider themselves very skilled or expert at using the Internet to effectively and efficiently

search for information. Nine out of ten (91.5%) of those students who identify themselves as early adopters/innovators also identify themselves as very skilled or expert at using the Internet to effectively and efficiently search for information.

### Information Technology in Courses

Most students indicate they like to learn through running Internet searches (79.5%). While many students say they like to learn through programs they can control, such as video games, simulations, and so forth, ECAR found that males (63.6%) are more likely to say they like to learn this way than females (40.1%).

Most students say they used the college/university library website (73.1%) and presentation software (66.5%) in their courses during the spring of 2009, when the survey was administered. Seniors are more likely to use presentation software and spreadsheets than freshmen or community college students. Students' majors have a significant impact on the technologies used in their courses, with spreadsheets dominating in engineering (75.9%), business (68.6%), physical sciences (61.2%), and life/biological sciences (54.0%). Graphics software (Photoshop, Flash, etc.) was more widely used by fine arts students (34.5%). Course or learning management systems were used during the spring of 2009 by 70.4% of the students, and almost 9 of 10 respondents (88.9%) had taken a course that used a course or learning management system. When asked if they skip classes when materials from course lectures are available online, 64.7% disagree or strongly disagree.

Just under half (45.0%) of students think that most or almost all of their instructors use IT effectively in their courses, with another 21.4% saying about half of their instructors do so. An almost equal portion (45.9%) think that most or almost all of their instructors have adequate IT skills for carrying out course instruction. Every year since 2004, a majority of student respondents have stated they prefer a moderate amount of IT in their courses. In 2009, 59.6% again say they prefer moderate IT in courses. However, a large number of students say they prefer extensive or exclusive IT in their courses (24.4%), while some prefer limited or no IT in courses (16.0%).

## METHODOLOGY

- ▶ A literature review to identify and clarify the study's major elements, including a review of past ECAR studies and other higher education IT student surveys.
- ▶ A longitudinal analysis of the data from the 2006, 2007, 2008, and 2009 ECAR studies of students and information technology.
- ▶ A quantitative survey using a sample of freshman, senior, and community college students at 115 U.S. and Canadian higher education institutions; 30,616 students responded. Respondents by Carnegie class were 55.6% Doctoral, 26.8% Master's, 6.0% Bachelor's, 8.2% Associate, and 3.3% Other and Canadian. Respondents were 61.5% female, 87.4% attended school full-time, and 59.6% lived off campus. Three international institutions participated but were not included in the study results.
- ▶ Interviews with 62 students in focus group settings at four institutions.

### IT's Impact on the Academic Experience

Questions about student academic success included those related to active involvement in courses, convenience, learning, and workplace preparedness. Almost half (49.4%) of the students agree or strongly agree that IT in their courses improves their learning, and another 39.0% are neutral. Over two-thirds (70.4%) of the students agree or strongly agree that IT makes doing their course activities more convenient. Students who say that most or almost all of their instructors use IT effectively are more likely to agree or strongly agree that IT improves learning or makes doing course activities more convenient.

### Internet-Capable Handheld Devices

Recognizing the interest institutions have in student use of mobile devices and potential mobile applications to support them, ECAR chose ownership and use of handheld devices capable of accessing the Internet as an area of special focus for the 2009 study.<sup>1</sup> About half of the respondents (51.2%) indicate they own an Internet-capable handheld device, and another 11.8% say they plan to purchase one in the next 12 months. Of device owners, over one-third (35.4%) say they never use their device to access the Internet. However, nearly 3 of 10 (29.0%) owners access the Internet daily from their handheld device, and another 20.5% use the Internet weekly or several times per week.

When all respondents were asked to select up to three reasons why they either don't use the Internet from a handheld device or don't use it more often, the primary reason was "plenty of other ways to access the Internet," followed by "cost of the data service," and "cost of the handheld device." Those students who own such a handheld device but never use the Internet from it (76.0%) selected the "cost of the data service" as their primary reason. For respondents overall, 24.5% say that device usability issues (small screen, keyboard, etc.) prevent them from accessing the Internet or from doing so more often. In the open-ended survey comments and in the focus groups, students reinforced these reasons with comments of the widespread availability of computers on campus, the high

cost of mobile computing devices and services, and the difficulty working with a small screen.

In response to the question "Do you use the Internet from your handheld device even when a networked computer (laptop or desktop) is easily available?" 26.0% of students who own and use a handheld Internet-capable device say never, and another 44.9% say very seldom or seldom. Only 17.1% indicate that they often or very often use their handheld device, even when a networked computer is available. From a list of 13 possible Internet activities performed from a handheld device, the primary activity selected is checking information (news, weather, sports, specific facts) (76.7%). E-mail is used by 75.1% of the students, and students who identify themselves as early adopters/innovators of technology are more likely to e-mail from their handheld device than other students. Social networking websites (Facebook, MySpace, Bebo, etc.) are used from handheld devices by 62.5% of student respondents who own and use those devices to access the Internet.

About a third (32.2%) of all respondents agree or strongly agree they use their cell phones or handheld devices for non-course activities (texting, Internet access, playing games, etc.) while in class. Fewer respondents (11.3%) agree or strongly agree about using them for course-related activities (texting, Internet access, etc.). Age is associated with using handheld devices for non-course activities, with 18–19 year olds agreeing or strongly agreeing most often (41.6%). Students who are 18–19 years old are, on average, neutral about whether instructors should have the authority to forbid the use of cell phones and handheld Internet devices during class time. Older students are more apt to agree that instructors should have that authority.

Currently, institutions are beginning to enable mobile device access to campus services. Students were asked to select up to three potential institutional IT services (from a list of eight options) they would most likely use if they were available for their handheld device. Of these institutional IT services, student owners and users of handheld devices indicate that the e-mail system (63.4%) is the service they

## OBSERVATIONS—WHAT DOES THIS MEAN?

Based upon its findings in *The ECAR Study of Undergraduate Students and Information Technology, 2009*, ECAR suggests that the following observations are worth further consideration:

**1. Students perceive that more instructors need to use IT effectively in courses.**

Every year, in the focus groups and in the open-ended comments, students praise and complain about instructors' use of technology in their courses. In the 2009 study, 45.0% of students perceive that most or almost all of their instructors use IT effectively in their courses. In their comments, students emphasize the importance of balance between the use of technology in instruction and the value of classroom interaction. They desire engagement with their instructors, but they also want access to course materials online. Many of them observe that instructor skills with technology could be improved.

**2. Students desire multiple opportunities for learning through the use of technology.**

Today students use a wide variety of technologies in their work, academic, and social lives. These technologies enhance their daily living, and students adopt technologies readily. Students like to learn by a variety of methods: running Internet searches (79.5%); through programs they can control such as video games, simulations, etc. (49.2%); text-based conversations over e-mail, IM, and text messaging (43.4%); contributing to websites, blogs, wikis, etc. (38.0%); and creating or listening to podcasts or webcasts (31.7%). In their comments, students often comment on the importance of learning the same course material with multiple methods such as listening to a podcast of a course lecture, studying class PowerPoint slides online, and watching an online video. They prefer these technology enhancements to the lecture to aid them in their learning.

**3. Faculty should bring communication technologies into instruction.**

Use of communications technologies has greatly increased over the past few years. From 2008 to 2009, use of text messaging weekly or more often grew from 76.8% to 84.9% of student respondents from the 39 institutions that participated in the studies over the past four years. Social networking has also seen a significant increase in use weekly or more often—from 65.3% in 2006 to 86.6% in 2009. Many students use social networking in their courses today—often creating study groups and other interactions with classmates without the knowledge of the instructor. Institutions should consider how they can encourage and engage instructors in use of these technologies. In the 2008 ECAR study, Nicole Ellison, assistant professor, Department of Telecommunication, Information Studies, and Media at Michigan State University, suggested, "Real opportunities will be realized by institutions that infuse social networking site practices into learning activities using sound pedagogical practices, drawing upon concepts such as digital literacy to articulate the institutional potential of these tools."

**4. The trend toward mobility continues.**

Over 50% of this year's respondents own an Internet-capable handheld device. Nearly two-thirds of these students use the Internet from their device. Over the next year, another 11.8% intend to purchase one. While early adopters/innovators of technology are more likely to own and use a handheld device, as costs drop additional students will obtain these devices. Additionally, 87.8% of students responding to this survey own a laptop. Students are "always connected," and they freely move from one device to another as needed, depending upon the application and the situation.

**5. Institutions should implement mobile device applications for key campus services.**

As students come to rely on use of their handheld devices, they will fully expect to use campus applications on their devices. Institutions should continue to improve their ability to express their institution's uniqueness and character by their online presence. Mobile applications can enable access to data and services at students' convenience—anywhere, at any time. Students' most desired applications are the campus e-mail system, student administrative services, and course or learning management systems. Institutions should consider how to best provide these services to their students.

are most likely to use from their device if it was available. Other services garnering about half of student selections are student administrative services (official grades, registration, etc.) (46.8%) and a course or learning management system (Blackboard, WebCT, Desire2Learn, Sakai, institution-specific system, etc.) (45.7%).

### Endnote

1. The survey question was, "Do you own a handheld device that is capable of accessing the Internet (whether or not you use that capability)? Examples include iPhone, Treo, BlackBerry, other Internet-capable cell phone, iPod touch, PDA, Pocket PC, etc."