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Impressions of Community College Students' IT Experiences

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When ECAR first undertook the study of undergraduate students and information technology (IT) with a baker's dozen of institutions in 2004, it recognized the compelling need in higher education to measure student perceptions about the impact IT was having on their academic experiences. In its third year of undertaking the study, fully 96 institutions participated (Salaway, Katz, & Caruso, 2006), including eight two-year community colleges.¹ From those eight community colleges, a total of 3,380 students responded to the survey for the study, representing 11.8 percent of the total survey respondents.

According to the American Association of Community Colleges, the average age of the nation's 11.6 million community college students is 29. The average age of community college respondents to the ECAR survey was 29.1 years, with 26.1 percent aged 18–19. Almost 52 percent were full-time students (within 1 percent of the national average), and 96.6 percent of the student respondents live off campus. The majority (55.8 percent) were either not in a degree program or had completed less than 25 percent of their program. When asked about their technology adoption profile, 12.6 percent of respondents identified themselves as early adopters of technology, 44.4 percent as mainstream adopters, and only 3 percent as skeptical of new technologies.

While the eight institutions in this study represent less than 1 percent of the 1,186 community colleges in the United States, a review of the summarized results of the student responses to the study provides a glimpse of the perceived impact of IT on these students' academic experiences. Their experiences with IT are varied, covering the spectrum from using many technologies daily to not using technology at all. While these students represent a diverse population, their responses are indicative of their experiences at their institutions only and should not be construed to apply to community colleges in general. They are, in essence, impressions.

According to the 2006 ECAR study results, there are many similarities and, of course, some differences in the experiences with IT between students attending four-year institutions and students at community colleges.² This research bulletin highlights some of these similarities and differences, focusing on those areas where there are challenges and opportunities for using IT to improve students' academic experiences.

Highlights of Community College Students' IT Experiences

The responses reported in *The ECAR Study of Undergraduate Students and Information Technology, 2006* reveal some valuable insights into the IT experiences of college students.

Student Technology Ownership

The ECAR studies of 2004, 2005, and 2006 indicate that overall, student respondents in higher education are switching from desktop to laptop computers, although the trend is more strongly in evidence among students attending four-year institutions than among those attending community colleges. In the 2006 study, 84.0 percent of community college student respondents owned desktop computers, as compared to 69.4 percent of students at four-year institutions. Laptop ownership among survey respondents, however, is lower at the community colleges (58.0 percent) than at four-year institutions (67.5 percent).

Student respondents at community colleges reported higher levels of ownership of PDAs, smart phones, gaming devices, digital cameras, and wireless hubs than their four-year counterparts but lower levels for electronic music devices such as iPods. These ownership levels might be explained by the fact that community college students, who are older and more frequently live off campus, have accumulated these devices over the years (see Table 1).

Table 1. Respondent Ownership of Technologies: Community Colleges and Four-Year Institutions

| Technology Device | Community Colleges | Four-Year Institutions |
|---|---------------------------|-------------------------------|
| PDA (Palm, iPAQ, etc.) | 19.2% | 15.3% |
| Smart phone (combination cell phone and PDA device) | 12.0% | 7.9% |
| Electronic music device (iPod, etc.) | 51.0% | 59.6% |
| Digital camera | 75.6% | 71.9% |
| Electronic game device | 55.8% | 50.9% |
| Wireless hub | 39.7% | 35.7% |

Communication Preferences

More than 57 percent of student respondents at community colleges maintain one or two e-mail accounts, while the remaining 43 percent maintain three or more accounts. These percentages are similar to those reported by respondents at four-year institutions. When asked which e-mail account was preferred, community college students overwhelmingly preferred their non-university account (82.9 percent), while only 45.3 percent of four-year student counterparts preferred their non-university account. Because many community college students are part-time and live off campus, their preference for their non-university account is not surprising. They often have e-mail accounts established, either personally or at work, before taking college courses. E-mail is the communication method most preferred by community college students for receiving university communications (78.5 percent).

Use of Information Technology

Community college student respondents varied greatly in their responses to how many hours each week they use an electronic device overall and how much for particular activities. They reported a median use of 15 hours/week overall, with 15.4 percent reporting 0–5 hours per week and 16.4 percent reporting more than 40 hours per week. When asked about use for particular activities, community college students reported less use per week for most course-related activities, similar use for some social activities, and less use of social networking and instant messaging than their four-year counterparts (see Table 2).

Table 2. Student Use of Electronic Devices for Activities, by Community Colleges and Four-Year Institutions

| Activity | Community Colleges | Median Frequency of Use | Four-Year Institutions | Median Frequency of Use |
|----------------------------------|---------------------------|--------------------------------|-------------------------------|--------------------------------|
| E-mail | 99.9% | Daily | 99.9% | Daily |
| Course activities | 96.7% | Several times per week | 98.7% | Several times per week |
| Writing documents for coursework | 96.3% | Several times per week | 99.1% | Several times per week |
| Library | 83.2% | Monthly | 95.5% | Monthly |
| Online shopping | 83.1% | Monthly | 84.3% | Monthly |
| Spreadsheets | 79.8% | Monthly | 85.8% | Monthly |
| Presentations | 79.5% | Once per semester/quarter | 92.3% | Monthly |
| In-class requirement | 77.9% | Weekly | 84.4% | Weekly |
| Instant messaging | 71.2% | Several times per week | 82.9% | Daily |
| Computer games | 70.2% | Monthly | 73.9% | Monthly |
| Graphics | 65.8% | Monthly | 68.3% | Monthly |
| Download music/video | 63.2% | Weekly | 71.6% | Weekly |
| Course management system | 58.9% | Several times per week | 77.1% | Several times per week |
| Online social networking | 43.5% | Several times per week | 74.3% | Several times per week |
| Online gaming | 32.2% | Monthly | 34.5% | Monthly |
| Blogging | 29.1% | Monthly | 28.5% | Monthly |
| Web pages | 26.4% | Once per semester/quarter | 28.9% | Once per semester/quarter |
| Audio/video | 24.8% | Once per semester/quarter | 28.1% | Once per semester/quarter |

It is tempting to speculate that tools that reflect or promote community or are associated with youthfulness are less in evidence among community college respondents. Survey results indicate that much instant messaging use in four-year institutions is among residential students. It might be the overwhelmingly commuter nature of community colleges, coupled with the higher age of their student populations, that explains these very interesting differences. This does not explain the course management system (CMS) difference, which is also quite interesting. When asked about CMS use at community colleges, Linda Beith, Manager of Instructional Support at the Community College of Rhode Island, noted

These numbers don't surprise me. CMS use at community colleges is likely lower than use at four-year institutions for a variety of reasons. For example, community colleges traditionally have a larger number of adjunct faculty whose course assignments change from semester to semester, often entailing last-minute assignments due to the nature of course scheduling. The tight timelines and changing course preps make it difficult for them to develop courses within the CMS. Also, our faculty members are sensitive to the fact that some of their students may not have access to a home computer or an Internet connection, so it may be a burden for those students to have to obtain course materials online. We also do not have the resources to provide the course production services for faculty that many four-year institutions do, which places the chore of developing online materials on faculty who are already carrying heavy course loads.

Skills with IT

Student respondents at community colleges overall reported similar skills with some technologies and fewer skills with others, as compared to students at four-year institutions. They reported fewer basic and fewer advanced skills with presentation software, spreadsheets, library resources, and CMSs than their four-year counterparts (see Table 3). These skill levels are not surprising in that community college students also reported less use of these technologies. This decreased use is associated with decreased skills. The study overall reported that the curriculum was instrumental in students' use and skills with software such as spreadsheets and presentations. Increased requirements in the use of these tools in the community college curriculum will likely result in increased student skills with these tools.

Table 3. Skill Level with Technologies, by Community Colleges and Four-Year Institutions

| Technology | Community Colleges | Four-Year Institutions |
|---|---------------------------|-------------------------------|
| Spreadsheets (Excel, etc.) | | |
| Minimal skill or no use | 26.5% | 18.8% |
| Basic skills | 40.0% | 42.2% |
| Advanced skills | 33.4% | 39.1% |
| Presentation software (PowerPoint, etc.) | | |
| Minimal skill or no use | 28.7% | 12.2% |
| Basic skills | 38.7% | 42.7% |
| Advanced skills | 32.7% | 45.2% |
| Online library resources | | |
| Minimal skill or no use | 22.1% | 7.8% |
| Basic skills | 42.9% | 47.4% |
| Advanced skills | 35.1% | 44.9% |
| Course management system | | |
| Minimal skill or no use | 48.8% | 32.3% |
| Basic skills | 29.5% | 36.8% |
| Advanced skills | 21.8% | 31.0% |

Community college students were more likely to report that they learned technologies as a job requirement than four-year students. Given that almost 50 percent of the community college respondents were part-time students, this result is understandable. Many of them are using IT in their jobs and enhancing their IT skills there. For spreadsheets, they reported primarily learning the software because of a job requirement (24.1 percent). Four-year students noted that a course requirement (33.3 percent) was the main reason they learned this software. Table 4 compares community colleges and four-year institutions in terms of the top reasons student respondents learn technologies. A course requirement was the primary reason for both student groups for learning presentation software, with job requirement also being a major requirement for community college respondents.

Table 4. Top Two Reasons for Learning Technologies, by Community Colleges and Four-Year Institutions

| Technology | Community Colleges | Four-Year Institutions |
|---|---------------------------|-------------------------------|
| Spreadsheet software (Excel, etc.) | | |
| Course or major requirement | 17.8% | 33.3% |
| Job requirement | 24.1% | 11.7% |
| Presentation software (PowerPoint, etc.) | | |
| Course or major requirement | 22.2% | 41.1% |
| Job requirement | 16.8% | 4.7% |

Internet Access

Fully 15 percent of community college student respondents depend on dial-up access to the Internet. Over 70 percent reported that their primary Internet access was through wired broadband service and 14.6 percent through wireless access. This compared with 9 percent of respondents at four-year institutions using dial-up access, 73.6 percent using wired broadband, and 17.5 percent using wireless access. Because almost all community college students live off campus, they are required to obtain off-campus Internet access on their own. Perhaps because of financial or geographic constraints, a fair number of students only have dial-up access to the Internet. The challenge for community colleges is to provide adequate online services to students, regardless of their Internet access, or to uncover ways to provide economical access to broadband for most students.

Areas for Institutional Improvement

When community college students were asked to identify the top-three IT items they thought their institution should spend money on, 42.2 percent said computer labs. The next two most commonly identified items were student IT training (40.1 percent) and free access to software that was required for courses (32.7 percent). This priority of items was different from the priorities of students at four-year institutions, who placed computer labs first (37.7 percent), printing second (35.9 percent) and network speed third (33.4 percent).

IT in Courses

When asked how much IT they preferred in their courses, a majority of both community college and four-year respondents indicated a preference for a moderate amount of technology in their courses.³ But the responding students at community colleges indicated a somewhat stronger preference for extensive or exclusive use of IT in their courses than their four-year counterparts. For community college respondents, 51.2 percent reported a preference for moderate use of IT in their courses and 29.1 percent preferred extensive or exclusive use of IT in their courses. This compares with 23.5 percent of students at four-year institutions preferring extensive or exclusive use of IT in their courses. Some responses to the survey's open-ended question indicated a preference for having course materials available online so that students would not have to attend class sessions in a classroom but rather could perform their course-related activities at their convenience.⁴

Many different kinds of technologies were reported in use in courses. When presented with a list of technologies used in courses this semester or quarter, community college student respondents reported overall less use than four-year institution students, with the exception of clickers, online discussions, online quizzes or tests, Webcasts, and blogs (see Table 5).

**Table 5. Technologies Used in Courses This Semester/Quarter, by
Community Colleges and Four-year Institutions**

| Technology | Community Colleges | Four-Year Institutions |
|------------------------|---------------------------|-------------------------------|
| E-mail | 85.0% | 95.3% |
| Course Web site | 61.4% | 65.0% |
| Online gradebook | 57.9% | 62.3% |
| Online quizzes or test | 50.0% | 39.9% |
| CMS | 49.0% | 66.7% |
| Online discussions | 45.0% | 36.5% |
| Presentations | 42.1% | 66.1% |
| Spreadsheets | 34.9% | 49.4% |
| Clickers | 20.6% | 18.0% |
| Simulations | 14.0% | 16.3% |
| Instant messaging | 13.7% | 14.3% |
| Social networking | 12.3% | 21.6% |
| Discipline-specific | 10.1% | 18.0% |
| Blogs | 8.2% | 6.8% |
| Webcasts | 5.9% | 3.8% |
| E-portfolios | 5.3% | 7.5% |
| Podcasts | 3.2% | 3.3% |

In the survey, students were also asked several questions about their academic experiences using IT. Student respondents at community colleges overall reported that they perceived slightly less impact of IT on their academic experiences than student respondents at four-year institutions. This difference was slight, however. The results were largely positive, with 63.8 percent of community college respondents agreeing or strongly agreeing that they perceived that the use of IT in their courses improves learning, and 49.7 percent agreeing or strongly agreeing that IT in their courses helps them better communicate and collaborate with their classmates than in courses that do not use technology,

Although only 51.2 percent of the community college respondents reported using a CMS, 78.8 percent of those who use a CMS reported a positive or very positive experience. This compares with 75.6 percent of respondents from four-year institutions reporting use of a CMS, of whom just over 75 percent indicated a positive or very positive experience. Community college student respondents found some CMS features more useful than their four-year counterparts. Two examples are “turning in assignments online” and “getting assignments back,” features that provide easy mechanisms for commuting students to ensure their coursework gets submitted and assessed without having to go to campus (see Table 6).

Table 6. CMS Features Rated Very or Extremely Useful, by Community Colleges and Four-Year Institutions

| CMS Feature | Community Colleges | Four-Year Institutions |
|-------------------------------------|---------------------------|-------------------------------|
| Keeping track of grades | 73.9% | 71.4% |
| Syllabus | 63.4% | 60.2% |
| Turning in assignments online | 62.5% | 52.2% |
| Sample exams and quizzes | 58.0% | 58.9% |
| Getting assignments back | 58.0% | 38.6% |
| Taking exams and quizzes for grades | 56.8% | 43.4% |
| Online readings | 56.7% | 54.1% |
| Online discussion board | 50.9% | 34.1% |
| Sharing materials among students | 43.6% | 34.2% |

When asked about the primary benefit of IT in their courses, community college students selected “convenience” first (45.3 percent), followed by “improved learning” (19.3 percent), “helped manage course activities” (17.2 percent), and “helped communicate with classmates and instructors” (11.2 percent). This order is slightly different from the order selected by the four-year institution students, who put “helped manage course activities” second and “improved learning” third. Almost 64 percent of community college students agreed or strongly agreed that IT in their courses improves learning.

What It Means to Higher Education

With their larger population of nontraditional students, community colleges face some different challenges from those of four-year institutions. More community college students, for example, depend on dial-up access to the Internet and desire training in IT used in their courses. Despite these challenges, however, these students reported positive experiences with IT used in their courses.

Access to IT

Improving student access to IT provides both a challenge and an opportunity for colleges and universities. Students in the ECAR study from both two- and four-year schools cited computer labs as their first priority for increasing spending for IT at their institutions. Despite high computer ownership levels, students still value institutionally provided computer labs. Many students also depend on Internet access from their home or residence hall. Fifteen percent of community college respondents identified modem dial-up as their primary Internet access service. Given the level of technology used in instruction, this slow access is likely a problem for those students. Efforts by their institutions to ensure that technology works well, no matter the access method, will benefit these students.

Improving Students' IT Skills

One of the opportunities for community colleges is to strengthen students' IT skills. More than 40 percent of responding students desired more institutional spending on student IT training. These students reported lower skills overall with IT than their four-year counterparts. With the increasing demand from prospective employers for graduates with IT skills, meeting students' IT training needs will be important to these institutions.

Making a Difference with the Curriculum

Students at community colleges reported less use of IT in their courses overall than students at four-year institutions. Like respondents from four-year institutions, they reported a positive experience with IT in their courses. Community college respondents also viewed the usefulness of some features of CMS more positively than their four-year counterparts. These findings may suggest an opportunity to increase the use of IT in community college courses. Community college students are also more likely to learn spreadsheets as a job requirement rather than as a course requirement. One way to improve their skills is to integrate the use of the information technologies in students' coursework, as many students indicate that they only learn technologies when required to do so. Expanding IT's use in the curriculum would not only increase student skills but also help students acquire the IT skills they might need for future employment.

Key Questions to Ask

- How can our institutions measure student IT skills?
- What IT training programs do our students need?
- What information technologies can provide the greatest value in improving students' academic experience?
- What changes in the curriculum are needed to enhance the IT skills of the students?
- How can instructor skills with IT be improved?
- What can institutions learn from each other in seeking to improve student satisfaction with IT use in their courses?
- What future technology developments will contribute most to learning?

Where to Learn More

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Endnotes

1. The community college institutions that participated in the 2006 study were Brazosport College, Community College of Rhode Island, Community College of Vermont, De Anza College, Foothill College, Lakeland Community College, Santa Fe Community College, and University of Wisconsin Colleges.
2. In the 2006 study, student respondents at both four-year institutions and community colleges were largely female (62.8 percent at four-year institutions; 65.9 percent at community colleges). Regarding age, respondents over the age of 24 represented 18.0 percent at four-year institutions compared to 49.5 percent at community colleges. At four-year institutions, most respondents (90.4 percent) were full-time, while only 51.9 percent of the community college respondents were full-time. Community college respondents were more likely to live off campus (96.6 percent) than their four-year institution counterparts (58.6 percent). At four-year institutions, only freshmen and seniors were surveyed. At community colleges, all students, regardless of year in school, were surveyed.
3. The survey question was "Which of the following best describes your preference with regard to the use of technology in your courses?" Response options were "I prefer taking courses that use no information technology," "I prefer taking courses that use limited technology," "I prefer taking courses that use a moderate level of technology," "I prefer taking courses that use technology extensively," and "I prefer taking courses that use technology exclusively."
4. *The ECAR Study of Undergraduate Students and Information Technology, 2006* included an open-ended question: "If you have any other comments or insights about your information technology use and skills or about how IT has helped or not helped your undergraduate experience, please feel free to share them with us." Almost 5,000 students responded to this question.

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