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Executive Summary

The July 2005 Pew report *Teens and Technology* makes a compelling case for its subtitle: “Youth are leading the transition to a fully wired and mobile nation” (Lenhart et al., 2005). According to this report, fully 87 percent of U.S. teens aged 12 to 17 use the Internet; half of them use the Internet daily. Half of U.S. families with teens have broadband. Eight in 10 “wired” teens play games online, and most (78 percent) have gone online from school (Lenhart et al.). As a result of technology’s breathtaking advance in teenagers’ lives, many assume that today’s undergraduate students possess unprecedented IT skill levels and think about and use technology radically differently from earlier student cohorts. In the context of higher education, this assumption has several implications:

- ◆ Students will demand greater use of technology in teaching and learning.
- ◆ It is increasingly necessary for faculty to use technology in order to appeal to the attention and learning styles of this generation of students.
- ◆ Students already possess good IT skills.
- ◆ Students gain these skills largely outside their courses.
- ◆ Students need little further training or education in the use of IT.

Key Findings

- ◆ Information technology in the higher education experience adds convenience, connection, and control for students.
- ◆ Students believe that IT in courses enhances their learning.
- ◆ Ownership levels of laptop computers and cell phones among surveyed students rose from 2004.
- ◆ While nearly half (49.0 percent) of students surveyed in 2004 obtained broadband access through the university, 39.8 percent of those surveyed did so in 2005.
- ◆ The curriculum continues to be a prime motivator of student IT skill acquisition.
- ◆ The percentage of students using media-intensive applications rose in 2005, although reported skill levels in these applications remained unchanged.
- ◆ Surveyed students continue to prefer a “moderate” amount of IT in their course experience.
- ◆ Students appear to like course management systems.

An objective of this study is to find evidence that supports or qualifies the merit of these implications.

The 2005 ECAR study of undergraduate students and IT is a study chiefly of “traditional” freshman and senior students at predominantly four-year institutions. While we

studied IT ownership and uses generally, we focused on the application of IT skill and time primarily to the business of being a student. We recognize, therefore, that this paints a portrait with a limited palette.

Vis-à-vis the assumptions above, first made in the 2004 study, many of the study findings continued to surprise us. We expected to find that today's undergraduate students demanded greater use of technology in the context of their courses. They did not: We found instead a moderate preference for technology. We expected that it would be increasingly necessary for faculty to use technology in order to appeal to the attention and learning styles of this generation of students. Ironically, we found that many of the students most skilled in the use of technology had mixed feelings about technology in their courses. We expected students to possess good IT skills in support of learning prior to matriculating at a college or university. We found that many necessary skills had to be learned at the collegiate level and that the impetus for acquiring these necessary skills was often the requirements of the curriculum. The students in the 2005 ECAR survey had not gained many of the necessary skills to use IT in support of academic work. We found a significant need for further training in the use of IT in support of learning and problem-solving skills. Lastly, we found that students viewed course management systems quite positively but used them primarily to communicate information and execute administrative activities, and much less to support learning.

The 2005 ECAR study is a snapshot in time, providing a factual description of the state of student technology skills at 63 higher education institutions. It focuses on four issues:

- ◆ What kinds of information technologies do students use?
- ◆ What skills do students have with these technologies?
- ◆ How does student use of information and

communications technologies contribute to their undergraduate experience?

- ◆ What contribution does using IT make to students' learning?

Methodology and Study Participants

The study consists of eight data collection and analytical initiatives:

- ◆ We undertook a literature review and reviewed other surveys, both U.S. based and international.
- ◆ The results of the *ECAR Study of Students and Information Technology, 2004: Convenience, Connection, and Control* provided necessary insight into student perceptions about their IT experiences (Kvavik, Caruso, & Morgan, 2004).
- ◆ The 2003 ECAR study *Faculty Use of Course Management Systems* provided useful data on how faculty members actually use course management systems. It includes comparative data for analysis of student and faculty perceptions (Morgan, 2003).
- ◆ A Web-based survey of undergraduate freshmen and seniors supplied student quantitative data based upon their experiences with IT in higher education. A sample of 143,730 students at 63 higher education institutions in 24 states received the e-mail invitation to participate in the study. Fully 18,039 students responded.¹
- ◆ We supplemented quantitative data with interviews of 82 undergraduate students at seven institutions to provide diverse perceptions of IT's impact in higher education.² We recognize, of course, that as consumers of higher education, few students can offer expert opinions about either instructional methods or IT. Opinions and perceptions nevertheless have meaning.
- ◆ Interviews with 20 instructional technology support staff at University of Wisconsin System institutions gave further insights

on student IT issues. This activity, too, was designed more to inform and calibrate the investigators' understanding of issues than to fulfill a direct research objective.

- ◆ More than 8,000 students commented on IT in open-ended survey questions. They expressed opinions on their use of and skill with IT, the state of their institutions' IT support services, and their perceptions of technology use in their courses. They also offered advice on how to improve IT at their institutions. These comments are analyzed and give additional perspectives on the undergraduate IT experience.
- ◆ A comparison between 2004 and 2005 results to identify similarities and dissimilarities is also an important part of this study.³ Eleven institutions participated in both 2004 and 2005 surveys.

The ECAR Framework

Based on the results of the 2004 ECAR study of students, ECAR investigators have classified student activities with information and communications technologies into four

groupings: (1) convenience, (2) connection, (3) control, and (4) learning. The ubiquity and use of IT in the lives of our study's youngest students produces a set of attributes that further define them. This taxonomy does not purport to be exhaustive. There are many attributes of student technology usage, and we discuss here only the few that this study is able to address—the contribution of IT to convenience, connection, control, and learning (see Figure 1-1). Needless to say, there is overlap among these four categories of activity. We use ECAR data, both quantitative and qualitative, to describe the current student experience with and expectations of IT in each of the four quadrants.

Higher education has spent considerable resources on technologies aimed at satisfying these preferences and expectations and on facilitating students' maturation from exuberant social and recreational technology users to purposeful and effective users who are well-socialized network citizens. Campus networks, messaging systems, portals, and online student services, for example, promote

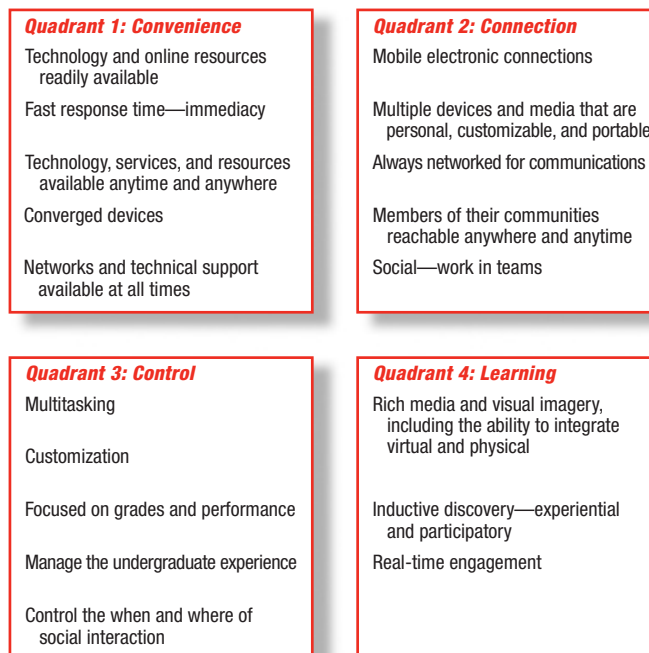


Figure 1-1. Current Student Expectations and Preferences

widespread student access to one another as well as connections to institutional services and resources, while course management systems, library systems, and personal information systems (like e-portfolio) offer students the opportunity to plan and manage their academic experience. We believe instructors are steadily responding to students' expectations and preferences in the learning sphere.

Undergraduates Live with Abundant Technology and Networks

The vast majority of student respondents own at least one computer and a cell phone (see Table 1-1). They use these technologies daily for studying, social interaction, and entertainment. Students are increasingly mobile, using a combination of cell phone, laptop, and PDA, and about 25 percent have wireless adapters. Virtually all have Internet access and most have broadband access.

Students Prefer Technology in Their Courses, to a Moderate Degree

Students prefer moderate IT use in their courses, and they expect faculty to use technology well (see Figure 1-2). They give good grades to their instructors' skill in using IT in courses. The primary benefit of technology in courses is convenience, followed by connectedness.

Students Are Comfortable with a Core Set of Technologies and Less Comfortable with More Specialized Technology Applications

Both male and female students are comfortable using core information technologies such as e-mail, messaging, and word processing, and they rate themselves as skilled in their use. The majority of students perceive that

they need no additional training to use these technologies. Students differentiate their skills with different technologies—word processing is highest and specialized applications are lowest (see Table 1-2). Gender differences are small and declining, as are differences between engineering and business students and students in nonscience disciplines. The exceptions are specialized applications such as spreadsheet and presentation (for example, PowerPoint) software and computer maintenance, where engineering and science majors rate their skills much higher.

Students View Technology in the Classroom as Supplemental to Their Course Experience, Not as Transformational

Students see IT in courses not as transformational but rather as supplemental. Students prefer face-to-face interaction with their instructors and with other students. One student told us, "Overall, I feel that using information technology could increase opportunities for classroom engagement and teacher-student accessibility. At the same time, though, it could become overwhelming and even distract from truly understanding a certain discipline or subject. Basically, as long as we stay in control of technology and use it with balance and thought, it will definitely be reliable and useful."

Core IT Skill Levels Are Comparable Across Class Standing

Core IT skill levels in e-mail, messaging, and word processing appear to be level throughout a college career. Specialized technology skills needed to satisfy specific course requirements, such as the use of spreadsheets, PowerPoint, and online library searches, on the other hand, are more evident in college seniors.

Table 1-1. Ownership of Selected Technologies

Technology Owned	Males (N = 6,123)	Females (N = 11,835)	Seniors (N = 10,042)	Freshmen (N = 7,997)	Overall (N = 18,039)
Personal desktop	68.7%	58.0%	70.1%	50.9%	61.6%
Laptop	55.0%	55.9%	49.3%	63.5%	55.6%
PDA	17.0%	10.4%	15.5%	9.0%	12.6%
Smart phone	2.2%	0.8%	1.4%	1.2%	1.3%
Cell phone	86.5%	92.1%	90.5%	89.7%	90.1%
Music device	46.3%	34.2%	34.3%	43.5%	38.4%
Wireless adapter	32.3%	20.9%	26.4%	22.8%	24.8%

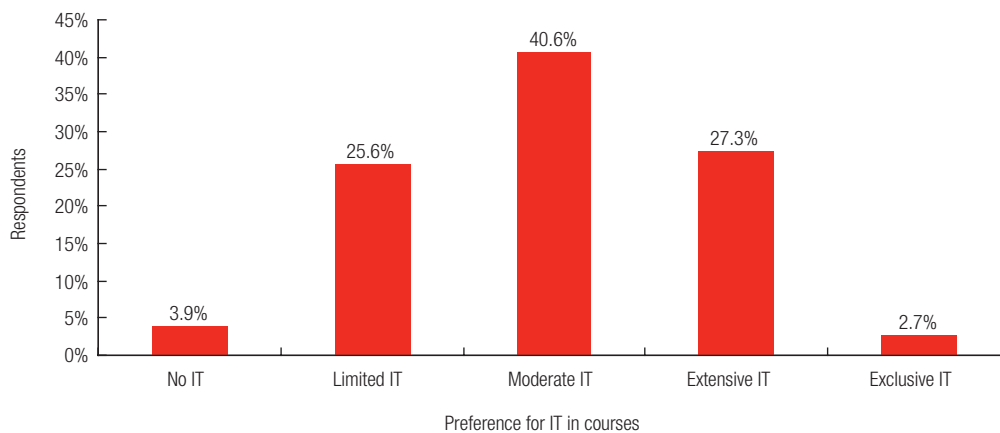


Figure 1-2. Student Preference for Use of IT in Courses (N = 17,856)

Table 1-2. Student Self-Reported Skill Level

Activity	N	Mean	Std. Deviation
Word processing (Word)	17,951	3.52	0.548
Computer operating systems (Windows, OS X)	17,371	3.04	0.773
Presentation software (PowerPoint)	17,191	2.98	0.745
Spreadsheets (Excel)	17,264	2.88	0.760
Online library resources	17,144	2.85	0.687
Course management systems	14,416	2.67	0.822
Computer maintenance	16,853	2.47	0.927
Securing your electronic device (firewalls, antivirus software)	17,102	2.47	0.922
Graphics (Photoshop, Flash)	14,686	2.40	0.850
Creating Web pages (Dreamweaver, FrontPage)	11,210	2.14	0.913
Creating and editing video/audio (Director, iMovie)	10,656	2.01	0.867

Scale: 1 = very unskilled, 2 = unskilled, 3 = skilled, 4 = very skilled

Technologies In Use

All students use IT for recreation, and this is especially true for younger students. The largest behavioral gap seems to be between those students below age 20 and those 20 and older who settle into their majors, have jobs, are increasingly concerned about getting good grades, and generally have less discretionary time than younger students.

Virtually all survey respondents use computers for writing documents and e-mail, followed by surfing the Internet for coursework (98.4 percent) and for studying and classroom activities (96.2 percent). As Table 1-3 illustrates, the least used (though hardly insignificant) capabilities are creating Web

pages (24.9 percent) and editing video/audio (24.1 percent).

Curriculum and Technology Use Are Intertwined

The importance of the curriculum of the academic discipline is evident in the use of more specialized applications such as spreadsheets, presentation software, graphics, video/audio, and creation of Web pages. As mentioned, engineering and business students reported the highest levels of use of spreadsheets and presentation software. Spreadsheets are used by engineering students (79.3 percent) and business students (78.5 percent) much more than by fine arts

Table 1-3. Technologies Used by Students

Activity	N	Senior	Freshman	Total
Creating, reading, sending e-mail	17,865	99.7%	99.7%	99.7%
Writing documents for your coursework	17,902	99.1%	98.7%	98.9%
Surfing the Internet for information to support your coursework	17,936	98.7%	98.1%	98.4%
Class activities and studying using an electronic device	17,961	96.4%	96.0%	96.2%
Surfing the Internet for pleasure	17,925	94.7%	95.0%	94.8%
Using a library resource to complete a course assignment	17,960	88.8%	86.9%	88.0%
Creating, reading, sending instant messages	17,782	74.2%	89.7%	81.1%
Downloading or listening to music or videos/DVDs	17,891	68.2%	83.8%	75.1%
Online shopping	17,905	77.2%	65.3%	71.9%
Creating presentations (PowerPoint)	17,909	73.2%	54.6%	65.0%
Completing a learning activity or accessing information for a course using a CMS	17,910	64.6%	61.9%	63.4%
Creating spreadsheets or charts (Excel)	17,943	71.2%	51.7%	62.5%
Playing computer games	17,865	57.3%	64.9%	60.7%
Writing documents for pleasure	17,825	59.3%	61.9%	60.4%
Creating graphics (Photoshop, Flash)	17,837	49.3%	47.2%	48.7%
Creating Web pages (Dreamweaver, FrontPage)	17,821	26.1%	23.4%	24.9%
Creating and editing video/audio (Director, iMovie)	17,854	23.4%	25.0%	24.1%

students (47.6 percent). The same pattern exists for presentation software.

Students Spend a Lot of Time Online

Students indicate that they use a computer, on average, 11–15 hours per week, most frequently for course activities, writing documents for courses, instant messenger activities, e-mail, and surfing the Internet for pleasure. Least frequent activities include creating graphics, creating Web pages, and creating and editing video/audio⁴ (see Table 1-4).

IT Permeates All Aspects of Student Life, but Its Use as a Tool Has Become Paramount

A pattern emerges from the data: Students use technology first in support of their coursework, second for connectedness, and third for entertainment. This varies, however, by gender. On the whole, men spend more time each week on their computer for entertainment than do women. For example, men report that they spend, on average, three to five hours per week surfing the Internet for pleasure, while women

Table 1-4. Hours Spent per Week on Technology-Related Activities

Activity	N	Average Number of Hours Used
Excluding cell phones, hours each week using an electronic device	17,964	11–15 hours
Course activities and studying using electronic device	17,281	3–5 hours
Writing documents for your coursework	17,701	3–5 hours
Creating, reading, sending instant messages	14,421	3–5 hours
Creating, reading, sending e-mail	17,811	1–2 hours
Surfing the Internet for pleasure	16,996	1–2 hours
Surfing the Internet for information to support your coursework	17,652	1–2 hours
Downloading or listening to music or videos/DVDs	13,437	1–2 hours
Playing computer games	10,836	1–2 hours
Completing an activity using a CMS	11,356	1–2 hours
Using a library resource to complete a course assignment	15,798	Less than 1
Online shopping	12,876	Less than 1
Creating spreadsheets or charts (Excel)	11,214	Less than 1
Creating presentations (PowerPoint)	11,636	Less than 1
Writing documents for pleasure	10,773	Less than 1
Creating graphics (Photoshop, Flash)	8,680	Less than 1
Creating Web pages (Dreamweaver, FrontPage)	4,438	Less than 1
Creating and editing video/audio (Director, iMovie)	4,303	Less than 1

report an average of less than three hours per week.

The attributes of today's students are more readily observable in nonacademic contexts than in the academic setting, despite the presence of enabling technologies readily accessible in both spheres. Technology use in classes is controlled and very much dependent upon instructor pedagogical preferences and teaching and IT skills. Course management systems, for example, which support new patterns of interaction, are faculty-centric. The instructor determines the features that will be used.

Outside courses, there is compelling evidence that students can and do use the Internet and a variety of devices to create and enliven social networks. To a great extent, these capacities are "left at the classroom door," as the formal learning process remains—despite much progress—largely teacher centered. Newer conventions such as social networking, blogging, and instant messaging, while in limited official use, are neither understood nor embraced widely by the faculty. New patterns of social interaction, which converged and mobile devices enable, occur mostly outside the academic setting. Indeed, students in this study express a much lower preference for online discussion groups in courses. This observation requires more study and could relate to the present characteristics of students, faculty, IT, or any mixture of the three.

Technology Facilitates Student Communications and Academic Feedback

When asked about the impact of IT in courses, students respond that IT has a positive impact, especially in communications. The highest scores are given to improved communications—communication with instructors (mean of 3.89), feedback from instructors on coursework (3.77), and com-

munication with classmates (3.70), where the scale is 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Related to this is the ability to improve the presentation of one's work (3.56) and to take greater personal control of course activities—planning, apportionment of time (3.51).

The student perspective: Technology is improving their learning. The constraint may be the real or perceived ability of faculty to use technology effectively.

Although students might not see learning as the primary benefit of IT use in courses, 64.1 percent of student respondents nevertheless perceive that IT used in courses improves learning. The remaining students are largely neutral (28.8 percent), and only 7.0 percent disagree or strongly disagree.

The instructor's skill in using IT in courses makes a significant difference in the students' perception of IT's impact in courses. When comparing the differences in the means between students who rate the instructor's IT skills highest versus those who rate them lowest, we see results indicating that the instructor's IT skills have the greatest positive impact on student engagement in the course, student interest in the subject matter, and student understanding of complex concepts. For example, 40.0 percent of students who strongly agree that their instructor uses IT well in courses also strongly agree that they are more engaged in courses that use IT. In contrast, of the students who strongly disagree that instructors use IT well, only 10.1 percent strongly agree that IT increases their engagement in courses. There is a similar pattern for increased interest in the subject matter and understanding complex concepts. Where the instructor's skill is less relevant to the activity (such as communication), the mean differences are significantly lower. The instructor's overall pedagogy undoubtedly plays a role here but the questionnaire did not address this complex factor.

Technology in Courses Is Helping

Students report that the most valuable benefit of using technology in courses is convenience (50.3 percent), followed by connectedness (19.7 percent). Management of course activities (13.5 percent) and learning (12.7 percent) are next. Only 2.8 percent of the students perceive no benefit whatsoever from using technology in courses.

While learning is the fourth highest benefit mentioned when students are required to pick just one benefit, students agree that IT in courses improves learning. Fifty-three and one half percent of respondents agree and 10.6 percent strongly agree (total of 64.1 percent) that IT in courses improves learning. For these students who indicate that IT in courses improves learning, the most important factor indicated from the regression analysis, regardless of the student's age, gender, or major, is the instructor's skill. Many students commented on the importance of the instructor's skill on the learning outcome, regardless of technology, in the qualitative interviews and in the open-ended question comments. Students also think that IT, used well, can make a good instructor better.

Most Students Have Used Course Management Systems, and Most of Those Using Them Have Had Positive Experiences

The institutions in the study use course management systems differently. Some are just beginning to adopt them and have limited use; others have used them for many years. Student respondents, however, report an overall use rate of 72 percent. Of the institutions in the study, the lowest use rate for an institution is 12.2 percent and the highest rate is 95.8 percent. In the 2005 study, seniors (76.1 percent) are more likely than freshmen (65.8 percent) to have taken a course that used a CMS. Also, students at doctoral insti-

tutions (75.1 percent) are more likely to have taken a course that used a CMS, and students at AA institutions (23.8 percent) are least likely to have done so.⁵

Of students who have used a CMS, more than 75 percent report a positive or very positive experience using the system. Only 5.0 percent are negative or very negative, and 19.8 percent are neutral.

When assessing what factors contribute to a positive experience with a CMS, we found three of medium significance. Students who agree or strongly agree that courses using IT allow them to take greater control of their course activities (planning, apportioning time) report the most positive experience with a CMS. The next greatest factor is instructor skill, followed by the instructor's use of IT to provide prompt feedback to students.

Those students who prefer little or no technology in courses do not reflect a negative attitude toward course management systems. Almost 50 percent of students who prefer no IT in courses report a positive experience with a CMS. Also, students who have a very positive experience using a CMS overwhelmingly report a preference for IT in courses.

While students overall express a positive experience with course management systems, in the qualitative comments students also express frustration about poor and inconsistent use of the systems, along with concerns about reliability.

Students Use a Variety of CMS Features

Students report the highest use of the CMS syllabus feature (95.2 percent), followed by online reading (94.0 percent). Other features used extensively are keeping track of grades (90.5 percent), access to sample exams and quizzes (83.7 percent), and turning in assignments online (80.1 percent). The features used least are getting assignments back from instructors with comments and grades

(67.2 percent) and sharing materials among students (67.5 percent).

Student feedback on CMS use is fairly consistent: Students seem to like many of the features, but they wish instructors used them more extensively and consistently.

Students Who Have a Good CMS Experience Also Have Positive Feelings About IT and Learning

Students who report a positive experience with a CMS are more likely than students with a neutral or negative experience with a CMS to agree that IT use in courses has a significant positive impact on student engagement in the course and interest in the subject matter, improves presentation of their coursework, and increases their understanding of complex concepts.

Nearly two-thirds of students who have a very positive experience with a CMS also agree or strongly agree that the use of IT in courses improves their learning. Conversely, a student whose experience with a CMS is negative is more likely to indicate that the use of IT in courses does not improve learning.

While positive about technology, these college students are balanced.

A key finding of the 2004 ECAR study was that students prefer a moderate amount of technology in their courses. This year's findings are very similar, showing slightly less preference for technology in courses than last year. Students' general enthusiasm for technology balanced with an expressed preference for only moderate engagement of technology in course activities suggests that students in fact value the traditional facets of face-to-face instruction (and books, discussion, and so forth) and do not devalue the supplemental contributions that IT makes. Qualitative comments suggest that students have a nuanced understanding of the differences between direct interpersonal engagement and technol-

ogy-mediated engagement in the context of learning activities.

Implications of the Study

The analysis of quantitative and qualitative data can help us develop strategies to improve the undergraduate IT experience. Such strategies must be responsive to student expectations in the four quadrants (Figure 1-1). To a large degree, higher education has come a long way with convenience and connectedness, and to a lesser degree with control. Learning is a work in progress.

Listening to the students and paying attention to this study's findings, we believe institutions must pay particular attention to six areas:

- ◆ integration of IT into the curriculum,
- ◆ definition of IT skills,
- ◆ training for students and faculty,
- ◆ common environments and common approaches,
- ◆ IT service and support, and
- ◆ monitoring and benchmarking.

Importance of the Curriculum

A major finding of the 2005 ECAR study on student use of technology is that students with the highest IT skill levels acquired many of these skills as a result of course (or program) requirements. Many curricula in science, engineering, medicine, and accountancy are becoming increasingly IT intensive as professional societies and government redefine required competencies for some professions.

In medicine, for example, the National Academy of Science's Institute of Medicine recently defined competencies in five areas: providing patient-centered care, working in interdisciplinary teams, employing evidence-based practice, applying quality improvement, and utilizing informatics. Several of these competencies are likely to be technology intensive and technology dependent. Such mandates and professional standards will likely lead to

requirements for colleges and universities to develop clear and explicit policies on IT's role in courses and in the curriculum.

Defining Skills Needed for Learning

We believe that once we have a more global understanding of which information technologies we want to use in courses and in the curriculum, at what level of sophistication, and for what purposes, it will become possible to establish a set of required skills. To use the example of medicine, what competencies are required in the area of informatics, simulation, and visualization? What level of digital literacy is required to find, retrieve, assess, and manage digital information? And how skilled with IT and mobile devices must students be, especially as they enter the workforce?

Comprehensive Training

Once we have an agreed-upon level of needed skills, we can design training programs for faculty and students. Students expect their faculty to be skilled with PowerPoint and course management systems. We believe students are looking for more innovative use of information technologies to provide real-time data in experiential learning exercises, more visual materials, and simulation.

We cannot assume that students are prepared to take advantage of these technologies in the absence of planned, systematic, and just-in-time training that is based on a recognized level of required skills. Students need to learn how to learn with the new technologies. Training must be deliberate and continuous. Institutions should require all of their colleges to articulate concrete IT learner competencies and literacy for students in their programs. Once these competencies are aggregated, a work plan can be developed to achieve the proposed competency levels—through courses, curriculum changes, help centers, and so forth. It would be useful to articulate

desired faculty competency as well, although we recognize this may be more difficult to do and harder to implement. Articulating student competencies will probably guide the articulation of faculty members' required competencies, as the one will likely have to complement the other in a sensible work plan.

Common Environments and Common Approaches

Like us, students want technology that is reliable and easy to use. They understand the value of consistency, standards, and common practice, and they seek greater commonality both in the information technologies used (standard platforms) and in how technologies are used (standard methods). This was especially an issue with course management systems, which students claim are used inconsistently by faculty. Students clearly want most of their classes to use course management systems, and they want faculty to use the CMS in a familiar, if not standardized, manner. They want courses and course materials to have a common appearance. We suspect this concern extends into departmental and collegiate Web sites, which often vary considerably.

IT Services and Support

In their survey responses and in interviews, students directly stated that they need IT services that are fast, easy to use, and reliable. Without basic reliability, students feel they can't count on the technology when they need it most—for submitting papers to their instructors, taking online exams, and communicating with instructors and classmates. They express frustration when networks or servers are down, technical support is unavailable, or the technology gets in the way of completing their required coursework. Without a core set of dependable IT systems and services, students and instructors alike will not fully adopt technologies to enhance the learning environment.

Monitoring and Measuring

On a more conjectural note, we strongly believe in the need to measure and assess student and faculty IT competencies, their attitudes toward the use of IT in courses, and how they actually use IT. Such assessment can contribute to our understanding of curriculum effectiveness, technology use, where and when to invest, and training programs' performance. And of course colleges and universities over time will also want to assess the financial impacts of e-learning and specifically the impacts on faculty, institutional, and learner productivity.

Next Steps

ECAR plans to repeat this study in 2006, providing a third snapshot in time and making possible an assessment of trends and rates of change in IT use, satisfaction with IT, and IT's impact, especially on learning. We will also collect institutional data on the use of IT in the curriculum, whether IT skills have been identified and defined, the quality and breadth of training programs, consistency of implementation, and monitoring. It will be interesting to see whether institutions that have adopted policies and practices in these areas show improvements in students' use of and skills with information technologies in courses and their ability to learn more as a result.

Endnotes

1. Students in this sample attend 30 doctoral institutions, 18 MA institutions, 12 BA institutions, 2 AA institutions, and 1 specialized institution. Two-thirds of the respondents are female. Thirty-nine percent of respondents are 18 or 19 years old, 48 percent are 20 to 24 years old, and 13 percent are over 25. Only 1.1 percent of the students are over 50. Ninety-two percent of respondents are full-time students. In the absence of our weighting of institutional responses, this means that we can generalize to the sampled students but not to the 63 institutions. These findings are instructive and not necessarily conclusive of student experiences at different types of institutions. One can say with 99 percent confidence that the error attributable to sampling and other random effects is ± 2 percent.
2. Interviews were conducted at Brandeis University, Bridgewater State College, Colgate University, Franklin W. Olin College of Engineering, South Dakota State University, University of Wisconsin–Madison, and University of Wisconsin–Milwaukee.
3. The information collected from the student respondents is confidential and no personally identifiable data is available from the quantitative survey. The required institutional review board approval was received from every participating institution.
4. Note that students who did not use the application are excluded from the table.
5. It is important to note that only two AA institutions are reflected in this data and that generalizations about AA college students cannot be made with any confidence.