Educating the Net Generation

Diana G. Oblinger and James L. Oblinger, Editors

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CHAPTER 7

Convenience, Communications, and Control: How Students Use Technology

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Introduction

Much has been made about the new generation of technology-savvy students currently in and entering college. These students possess unprecedented levels of skill with information technology; they think about and use technology very differently from earlier student cohorts. They are characterized as preferring teamwork, experiential activities, and the use of technology. Prensky calls them "digital natives," referring to the fact that they have grown up with technology as opposed to "digital immigrants" who did not.[1a,b]

Jason Frand observed that today's young students take technology for granted and that staying connected is a central part of their lives. Doing is more important than knowing, and learning is accomplished through trial and error as opposed to a logical and rule-based approach.[2] Similarly, Paul Hagner found that these students not only possess the skills necessary to use these new communication forms, but there is an ever increasing expectation on their part that these new communication paths be used.[3]

The assumption of the technology literate undergraduate student population needs to be demonstrated with quantitative data. Much of the work to date, while interesting and compelling, is intuitive and largely based on qualitative data and observation. A study by the EDUCAUSE Center for Applied Research (ECAR), using both quantitative and qualitative data, addressed four questions:

- What kinds of information technologies do students use, and what are their preferences?

- With what levels of skill are they using these technologies?
- How does this use contribute to their undergraduate experience?
- What value does the use of information technology add in terms of learning gains?

Student Demographics

This study presents the responses of 4,374 students who replied to a 2004 survey. The students were mostly traditional-age college students from 13 institutions in five states. Ninety-five percent of the students were 25 years old or younger. Ninety-five percent were enrolled full-time; the other 5 percent were enrolled part time. Students surveyed were either freshmen or seniors. Forty-five percent of the students surveyed reported living on campus.

The institutions included in the survey were

- Colgate University
- Drexel University
- University of California, San Diego
- University of Minnesota, Crookston
- University of Minnesota, Twin Cities
- University of Wisconsin–Colleges
- University of Wisconsin–Eau Claire
- University of Wisconsin–La Crosse
- University of Wisconsin–Madison
- University of Wisconsin–Milwaukee
- University of Wisconsin–Oshkosh
- University of Wisconsin–Stout
- University of Wisconsin–Whitewater

Student Use of Technology

There is an inexorable trend among college students to universal ownership, mobility, and access to technology.

Ownership

Fully 93.4 percent of 4,374 students surveyed at 13 higher education institutions in 5 states owned a computer. We found that 70.7 percent of the senior respondents and 57.1 percent of the freshmen respondents reported ownership of a personal desktop computer; 38.5 percent of the senior respondents and 52.7

percent of the freshmen respondents owned laptop computers. Personal digital assistants (PDAs) were owned by only 11.9 percent overall, with male students more likely to own a PDA than female students. Cell phones were owned by 82 percent of the students, with females (84.7 percent) more likely to own one than males (77.7 percent).

Internet Access

All of the students in this study had access to the Internet. Freshmen students, who most often reside on campus, access the Internet using university networks (82.2 percent). Seniors used commercial access most often (56.4 percent). More than 81 percent of students had access to broadband service, either through commercial or university sources, while 18.5 percent used modems.

Use of Technology

Students were asked about the applications they used on their electronic devices. They reported that they use technology first for educational purposes, followed by communication. Students reported using computers for writing documents (99.5 percent) and e-mails (99.5 percent), followed by surfing the Internet for pleasure (97.2 percent) and for classroom activities (96.4 percent). Students reported using technology for creating/editing video and audio and for creating Web pages the least.

Hours of Technology Use

By a wide margin, students said that they used a computer first for doing classroom activities and studying (mean of 4.01 on a scale where 1 represents "do not use," 2 represents less than one hour weekly; 3 represents 1–2 hours; 4 represents 3–5 hours; 5 represents 6–10 hours, and 6 represents 11 or more hours per week). Students used the computer approximately 2–5 hours a week for writing documents, surfing the Internet for pleasure, e-mailing, using instant messaging, using an electronic device at work or downloading/listening to music or videos. Other activities such as completing a learning activity, playing games, creating spreadsheets, and creating presentations (including Web sites) occupied an average student's time less than 2 hours per week (see Table 1).

These findings are supported by the qualitative data. When interviewed, students reported making heavy use of a computer for communication, but that was secondary to their use of the computer for schoolwork.

Table 1. Activities and Hours Spent

Activities	Mean*
Classroom activities and studying using an electronic device	4.01
Writing documents (word processing)	3.76
Surfing the Internet for pleasure	3.47
Creating, reading, sending e-mail	3.47
Chatting with friends or acquaintances using instant messaging	3.45
Using an electronic device (computer, Palm device) at your place of employment	3.31
Downloading or listening to music or videos/DVDs	3.15
Completing a learning activity or accessing information for a course using course management systems	2.48
Using a university library resource to complete a class assignment	2.46
Playing computer games	2.39
Creating spreadsheets or charts (Excel)	2.07
Online shopping	2.06
Creating presentations (PowerPoint)	1.82
Creating graphics (Photoshop, Flash)	1.79
Creating Web pages (Dreamweaver, FrontPage)	1.39
Creating and editing video/audio (Director, iMovie)	1.34

**Scale: 1 = do not use, 2 = less than an hour, 3 = 1–2 hours, 4 = 3–5 hours, 5 = 6–10 hours, 6 = 11 or more hours*

We found that the highest computer use was in support of academic activities and that presentation software was driven primarily by the requirements of the students' major and the curriculum. Students reported strong use and skill levels in support of communications and entertainment. As one student commented, "I would feel very disconnected and lost if my laptop and cell phone were taken away from me. However, had I never been introduced to them, I may not rely on

them as much as I do now. Still, I believe they are very useful tools, especially for communication."

Factors that explain hours of use fall into the following categories: academic requirements, class status, gender, and age. Academic usage is strongly related to the student's academic major and class status (senior/freshman). Communications and entertainment are very much related to gender and age.

The significance of student major is supported by both survey data and findings from the qualitative interviews. From student interviews, a picture emerged of student technology use driven by the demands of the major and the classes that students take. Seniors reported spending more time overall on a computer than do freshmen, and they reported greater use of a computer at a place of employment. Seniors spent more hours on the computer each week in support of their educational activities and also more time on more advanced applications—spreadsheets, presentations, and graphics.

Men, and especially the youngest men in our sample, were more likely to spend more hours playing computer games, surfing the Net, and downloading music. Women spend more time communicating. Confirming what parents suspect, students with the lowest grade point averages (GPAs) spend significantly more time playing computer games; students with the highest GPAs spend more hours weekly using the computer in support of classroom activities. At the University of Minnesota, Crookston, students spent the most hours on the computer in support of classroom activities. This likely reflects the deliberate design of the curriculum to use a laptop extensively. In summary, the curriculum's technology requirements are major motivators for students to learn to use specialized software.

Level of Skill

Undergraduate students need to develop two types of skills: information literacy or fluency and the technical skills needed to use the tools. Defining technology skills is difficult because of rapid changes in software that require new and different skills. Recognizing this dynamic, the National Research Council in 1999 defined technology fluency,[4] and our research is premised upon their definition.

When asked about the level of skill they felt they had attained for each application, students rated themselves highly skilled in the use of communications, word processing, and the Internet (see Table 2). On a scale where 4 = very skilled, 3 = skilled, 2 = unskilled, and 1 = very unskilled, the means for e-mail, instant messenger, word processing, and Web surfing were all greater than 3.0. They

Table 2. Levels of Skills Attained

Application	Mean*
E-mail	3.60
Instant messenger	3.54
Word processing	3.53
Web surfing	3.47
Presentation software (PowerPoint)	2.90
Online library resources	2.88
Spreadsheets (Excel)	2.86
Course management systems	2.83
Graphics (Photoshop, Flash)	2.45
Creating Web pages (Dreamweaver, FrontPage)	2.17
Creating and editing video/audio (Director, iMovie)	2.07

**Scale: 1 = very unskilled to 4 = very skilled*

rated themselves least skilled on graphics (mean = 2.45), creating Web pages (mean = 2.17), and creating and editing audio and video (mean = 2.07). Seniors tended to rank themselves higher than freshmen with tools such as PowerPoint and spreadsheets. The student's major had a significant influence, with the highest skills reported by business, engineering, and life science students. While the quantitative data indicate that students say they have the skills they need, in the qualitative interviews student skills seemed more problematic. The interviews indicated that students are skilled with basic office suite applications but tend to know just enough technology functionality to accomplish their work; they have less in-depth application knowledge or problem solving skills.

Sharon Fass McEuen's study of student technology skills at Southwestern University in Georgetown, Texas, noted similar patterns.[5] Skill levels were highest in the use of word processing, use of the Internet, and communications. They were significantly lower for specialized applications such as spreadsheets and presentation software. She also found much lower levels of skill in the maintenance of computers. According to McEuen, student technology skills can be likened to

writing skills: Students come to college knowing how to write, but they are not developed writers. The analogy holds true for information technology, and McEuen suggested that colleges and universities approach information technology in the same way they approach writing.[6]

As noted earlier, the highest levels of self-reported computer and application skills were among business students, engineering students, and life science students. But when we looked at graphics skills, having a fine arts or engineering major was associated with higher self-reported skills. What this suggests is that the major requires the development of higher-level skill sets with particular applications. Business students are more likely to use presentation applications and spreadsheets; arts students are more likely to use graphics applications. At the University of Minnesota, Crookston, all students are required to use PowerPoint to present their work. Not surprisingly, we found that Crookston students had the highest reported level of skills in PowerPoint.

There is virtually no difference in reported skills by GPA, and differences among the 13 institutions in our study were minimal for every application when controlling for majors. One explanation may be that students rate themselves vis-à-vis their peers, so the variation in skill levels may not appear in our study. Conversely, using these applications might be like riding a bicycle for these students. Everyone can do it. Or it may confirm Garrison Keillor's observation about the upper Midwest—"everyone is above average."

Our quantitative data show that, in general, students say they have the skills they need. The qualitative data suggest a slightly different picture. Students have very basic office suite skills as well as e-mail and basic Web surfing skills. Moving beyond basic activities is problematic. It appears that they do not recognize the enhanced functionality of the applications they own and use.

The comparative literature on student IT skill self-assessment suggests that students overrate their skills; freshmen overrate their skills more than seniors, and men overrate their skills more than women.[7] Our data supports these conclusions. Judy Doherty, director of the Student Technologies Resource Group at Colgate University, remarked on student skill assessment, "Students state in their job applications that they are good if not very good, but when tested their skills are average to poor, and they need a lot of training."[8]

Professor Larry Rudnick of the University of Minnesota, Twin Cities, noted that one danger of the computer, especially for those students who expect the computer to give them an instant answer, is that it always comes up with an answer,

even if that answer is wrong.[9] Mary Jane Smetanka of the Minneapolis–St. Paul *Star Tribune* reported that some students are so conditioned by punch-a-button problem solving on computers that they approach problems with a scattershot impulsiveness instead of methodically working them through. In turn, this leads to problem-solving difficulties.[10]

A student technology service worker at the University of Wisconsin–Milwaukee observed that students "mystify" technology and some are "afraid to putz." The aversion to experimentation seems driven by a fear of doing damage to their machines and applications. One Colgate student stated, "I know that I am clueless. I am so afraid. I am petrified that I am going to do something wrong." This student described how he was trying to get rid of some of the viruses on his computer and somehow deleted the driver for his sound card. No one had been able to get it back for him.

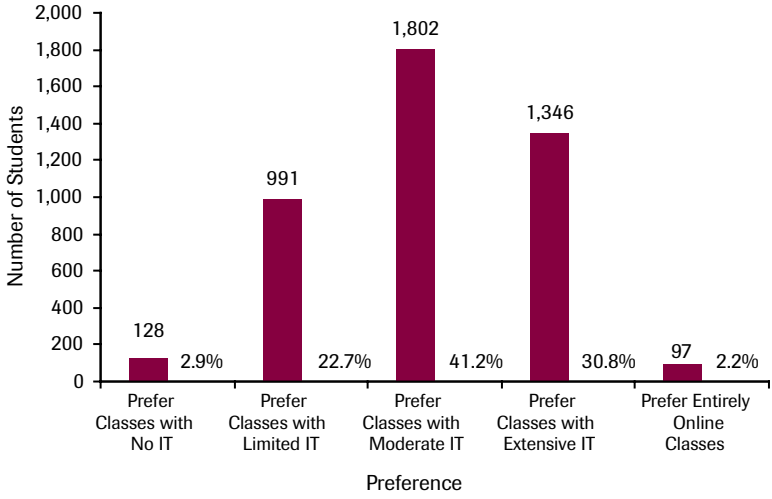
In short, institutions need to provide ample opportunity for training of students. It cannot be assumed that they come to college prepared to use advanced software applications.

Information Technology in the Classroom

We expected to find that the Net Generation student prefers classes that use technology. What we found instead is a bell curve with a preference for a moderate use of technology in the classroom (see Figure 1). The mean (3.07), median (3.00), and mode (3) were squarely at the moderate level of preference for technology use on a scale of 1 to 5, with 1 being "I do not prefer the use of technology" to 5 being "I prefer taking courses that are taken totally online." We found that 30.8 percent of the students preferred taking courses that use extensive levels of technology. Least preferred (2.2 percent) were courses that are delivered entirely online. Nevertheless, 25.6 percent of the students preferred limited or no use of technology in the classroom.

One student captured the respondents' mixed opinions on technology in the classroom, noting, "Information technology is just a tool. Like all tools, if used properly it can be an asset. If it is used improperly, it can become an obstacle to achieving its intended purpose. Never is it a panacea." Another commented, "I think universities should ease up on pushing information technology. I have an associate's degree in computer science, and, yes, I am a Luddite." Conversely, one enthusiastic student commented, "I love information technology. It has helped me to grow tremendously academically this year and it strengthened my relationships

Figure 1. Student Preference for Use of IT in Classes (*N*=4,363)



with teachers, classmates, and friends." Another noted that technology made the faculty member seem more detached.

For many, Luddite or not, information technology in the classroom is problematic in that it undermines face-to-face contact and has little impact on their learning. "I feel like I have lost part of the vital student-teacher connection."

The following factors were considered in evaluating students' preferences:

- Previous experience with the use of technology in the classroom
- Faculty skill using technology
- Hours students use technology
- Perceived levels of skill using computers by the respondents
- Institution
- Major
- GPA
- Demographics

A student's previous positive experiences in the classroom had a beneficial impact on the preference for classroom technology. It is not surprising that if technology is used well by the instructor, students will come to appreciate its benefits. This may explain why seniors had a higher preference level for the use of technology in the classroom than did freshmen.

Table 3. Preferences for Technology by Major

Discipline	Prefer No Technology	Prefer Limited Technology	Prefer Extensive Technology
Engineering	4.8%	24.4%	67.8%
Business	1.3%	28.2%	64.3%
Life sciences	4.8%	35.3%	56.3%
Physical sciences	5.7%	40.9%	51.8%
Social sciences	7.9%	44.4%	44.2%
Education	3.5%	47.9%	42.9%
Humanities	7.7%	47.9%	40.2%
Fine arts	9.0%	46.9%	39.3%

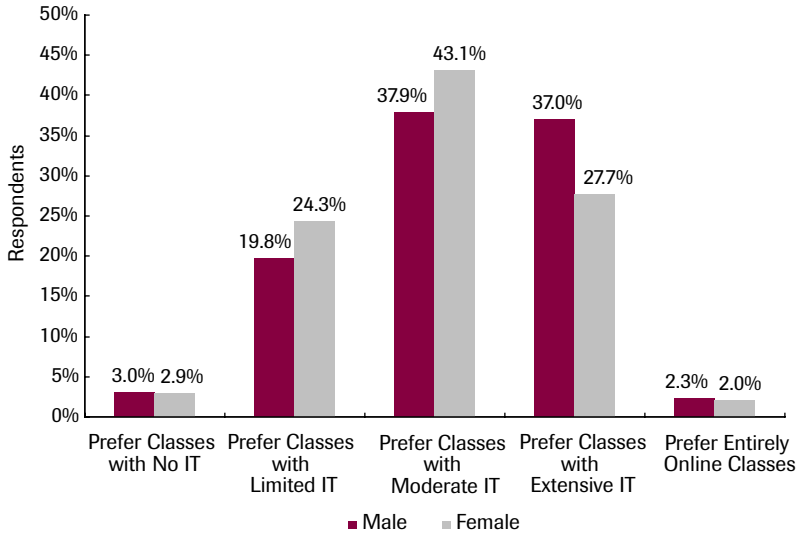
A student's major was also an important predictor of preferences for technology in the classroom (see Table 3), with engineering students having the highest preference for technology in the classroom (67.8 percent), followed by business students (64.3 percent).

We also found minor gender differences in preference for the use of technology in the classroom (see Figure 2).

When analyzing students' preferences for classes using technology, a student's GPA was not a significant factor. Students with lower GPAs preferred classes using technology equally with those students with higher GPAs, with the exception of students with the highest grade point averages (3.51–4.00), who modestly preferred less technology in the classroom.

Students were asked how technology affected various classroom activities. The highest scoring affect was "helped me to better communicate with the instructor," with a mean of 3.85 (Table 4).[11] Other responses with a mean over 3.60 included "resulted in prompt feedback from the instructor," "helped me communicate and collaborate with my classmates," and "I primarily use information technology in courses to improve the presentation of my work." The highest scores were given to improved communications, followed by factors related to the management of classroom activities. Lower impact activities had to do with comprehension of classroom materials (complex concepts). Time-on-task and grading outcomes

Figure 2. Student Preference for Use of IT in Classes by Gender



were shown to be more neutral from the perspective of the respondents, with means as low as 3.04.

Engineering and business majors indicated that classroom technology did better their understanding of complex concepts and provided more opportunities for practice and reinforcement. Seniors provided overall higher scores than freshmen.

Interestingly, students do not feel that use of information technology in classes greatly increases the amount of time engaged with course activities (3.22 mean).[12] This is in direct contrast to faculty perceptions reported in an earlier study, where 65 percent of faculty reported they perceived that students spend more time engaged with course materials.[13]

Perceived Benefits

We asked students about the perceived benefits of using technology in the classroom (see Figure 3). The most cited benefit was convenience (48.5 percent). In the survey's open-ended comments, 134 students voluntarily identified convenience as one of the primary benefits of using information technology in classes. When

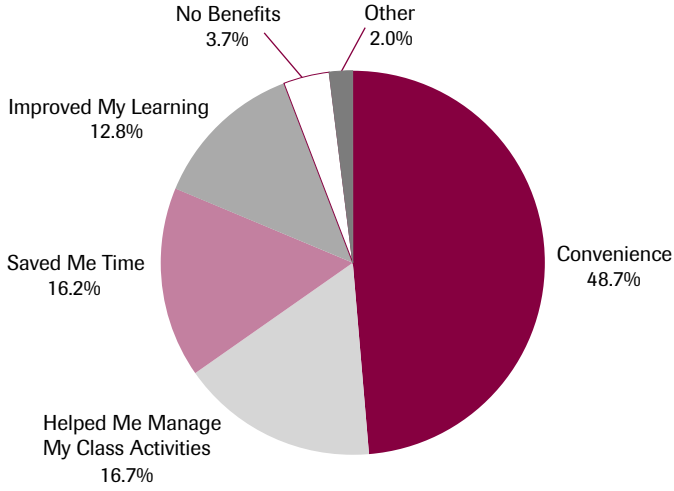
Table 4. Effect of IT on Class Activities (*N*=4,374)

Activity	Mean*
The use of information technology in classes has helped me to better communicate with the instructor.	3.85
The use of information technology in courses has resulted in prompt feedback from the instructor.	3.84
The use of information technology in courses has helped me communicate and collaborate with my classmates.	3.64
I primarily use information technology in courses to improve the presentation of my work.	3.61
The use of information technology in courses provides more opportunities for practice and reinforcement.	3.58
The use of technology in my classes met my expectations.	3.54
Classes that use information technology allow me to take greater control of my class activities.	3.45
The use of information technology in classes has helped me better understand complex or abstract concepts.	3.38
The instructors' use of technology in my classes has increased my interest in the subject matter.	3.25
Classes that use information technology are more likely to focus on real-world tasks and examples.	3.23
I spend more time engaged in course activities in those courses that require me to use technology.	3.22
I get better grades in courses that use information technology.	3.19
Faculty members need to give us more in-class training for information technology used in the class.	3.04

**Scale: 1 = strongly disagree to 5 = strongly agree*

convenience was combined with saving time, the percentage increased to 64.6 percent. Only 12.7 percent said the most valuable benefit was improved learning; 3.7 percent perceived no benefit whatsoever. Note that students could only select one response, so more than 12.7 percent may have felt learning was improved, but

Figure 3. Student Perceptions of Benefits from Using IT in the Classroom



it was not ranked highest. These findings compare favorably with a study done by Douglas Havelka at the University of Miami in Oxford, Ohio, who identified the top six benefits of the current implementation of IT as

- improving work efficiency,
- affecting the way people behave,
- improving communications,
- making life more convenient,
- saving time, and
- improving learning ability.[14]

Colleges and universities have significant investments in technology. Students see these investments as contributing primarily to convenience and facilitating communications. We have made life much easier for students in the administrative area. The jury is out on its impact on learning and the learning experience.

Many students acknowledge that technology has improved learning; we suspect this occurs where there is a deliberate institutional or faculty strategy to improve the learning experience. Software applications such as PowerPoint and Excel are tools, as is a classroom management system. But by themselves they do not contribute to an improved learning experience. It is incumbent upon the faculty member to understand the promise and performance of these tools in support of

improved learning and to use them accordingly. Our data suggest that we are at best at the cusp of technologies being employed to improve learning.

Course Management Systems

The percentage of students who have used a course management system has increased dramatically since they were first introduced. More than 83 percent of the students reported having used a course management system. Seniors (90.1 percent) were more likely to have taken a class that used a course management system than freshmen (78.5 percent).

Overall Experience with Course Management Systems

Of the students who had used a course management system, 76.1 percent were positive or very positive; 17.3 percent were neutral; and only 6.6 percent were negative or very negative (see Figure 4). Females (mean of 3.93) liked course management systems slightly better than males (mean of 3.74).[15]

Course Management System Features Used

Course management systems offer a number of features in support of learning and course administration. See Table 5.

Impact of Course Management System Use

Students were asked whether they perceived that a particular tool within a course management system improved learning, whether it improved class management, or whether it improved both learning and class management. Students were also given the option of reporting whether a tool had no effect on either learning or class management, or whether it had a negative effect. Classroom management (convenience) scored highest, followed by improved learning. Negative perceptions were minimal.

The interactive features least used by faculty were the features that students indicated contributed the most to their learning. The students were especially positive about sharing materials with students (38.5 percent), faculty feedback on assignments (32 percent), and online readings (24.9 percent).

Features considered to improve class management included track grades (45.7 percent), online quizzes (38.5 percent), online readings (29.1 percent), and sample exams online (21.2 percent). All other features received less than a 20 percent response.

Figure 4. Students' Overall Experience Using a Course Management System

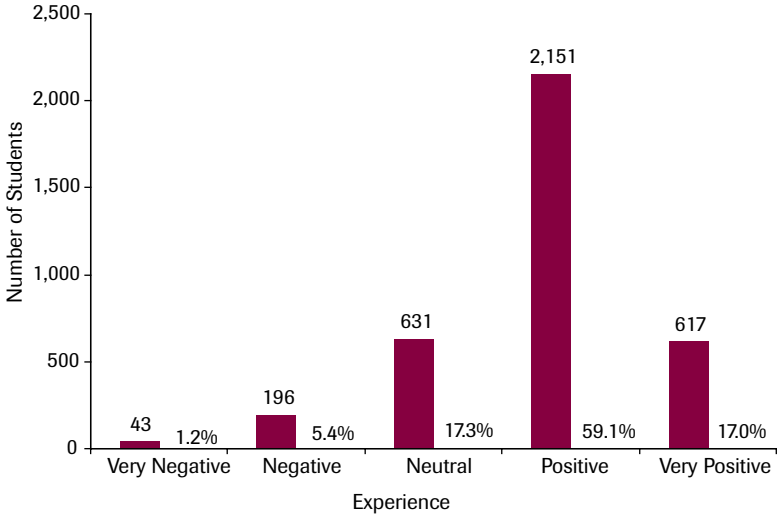


Table 5. Student Use of Course Management System Features

Use of Features	Percentage
Use a syllabus feature	95.0%
Read online	94.8%
Track grades	89.4%
Take sample exams	88.8%
Submit assignments	78.5%
Discuss online	74.2%
Share materials with students	73.4%
Obtain faculty feedback	71.8%
Take online quizzes	70.0%

When combining the percentage of students who said that the course management system improved both learning and class management, sharing materials with students was ranked highest (52.8 percent); tracking grades was second (47.9 percent). Fully 80.3 percent said that tracking grades improved their ability to manage their classroom activities as well, when combining the percentage of students who said that the course management system improved class management and both improved class management and learning.

Course Management System Improvement Needed

In the qualitative interviews, students indicated a need for a more consistent approach to course management system use. Also, students and faculty commented on the need for training. In a separate study, 12 percent of the faculty indicated that they would increase their use of the course management system if more training were made available.[16] A University of Minnesota, Twin Cities, student recommended, "With so many courses now using a course management system, there is a need to have an introductory class on using a course management system at the freshmen or sophomore level." Some students, however, noted in interviews that such training was unnecessary.

Potential of Course Management Systems

Course management systems and their implementation are a work in progress. They promise to significantly reduce the restrictions of time and space on learning for students and faculty, in much the same way their predecessor enterprise administrative systems did for student administrative services. Used properly, they have the potential to greatly improve student access to information and to communicate with their instructors, enhance the quality of learning, and increase learning productivity.

Course management systems can enhance learning quality by enabling instructors to convey information more effectively, helping instructors meet the needs of students with varied learning styles, as well as enriching the interactions students have with each other and with their instructors. That is the promise. However, the students in this study called our attention to performance by noting an uneven diffusion of innovation using this technology. This may be due, in part, to faculty or student skill. It may also be due to a lack of institutional recognition of innovation, especially as the successful use of course management systems affects or does not affect faculty tenure, promotion, and merit decisions.

From Convenience to Learning Revolution

We expected to find that Net Generation students would demand greater use of technology in teaching and learning in the classroom. They did not. What we found was a moderate preference for technology.

We expected that it would be increasingly necessary for faculty to use technology in order to appeal to 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 the classroom.

We expected students to already possess good IT skills in support of learning. What we found was that many necessary skills had to be learned at the college or university and that the motivation for doing so was very much tied to the requirements of the curriculum. Similarly, the students in our survey had not gained the necessary skills to use technology in support of academic work outside the classroom. We found a significant need for further training in the use of information technology in support of learning and problem-solving skills.

Course management systems were used most by both faculty and students for communication of information and administrative activities and much less in support of learning.

The consequences of these findings are significant. Some complacency may have occurred because of the belief that Net Gen students require less training with technology. Student and faculty use of instructional technology is more limited than is often portrayed. Students appear to be slower developing adequate skills in using information technology in support of their academic activities, which limits technology's current value to the institution. Higher education's investment in learning technology may be paying less than optimal returns because students and faculty often lack the appropriate skills or motivation to use it effectively. Colleges and universities appear not to be reaching enough students and faculty with technology education and training.

Our findings are much like an audit—a snapshot in time or an early picture of a process that has great potential to support learning and is most promising. We were both surprised and disappointed by what we learned. We attribute much of what we saw to growing pains.[17] We saw enough good practice and favorable, if not enthusiastic, commentary from the students to know that the potential of technology in the classroom is enormous.

In 1997, Michael Hooker proclaimed, "higher education is on the brink of a revolution." Hooker went on to note that two of the greatest challenges our institutions face are those of "harnessing the power of digital technology and responding to the information revolution."[18] Hooker and many others, however, did not anticipate the likelihood that higher education's learning revolution would be a journey of a thousand miles rather than a discrete event. Indeed, a study of learning's last great revolution—the invention of moveable type—reveals, too, a revolution conducted over centuries leading to the emergence of a publishing industry, intellectual property rights law, the augmentation of customized lectures with textbooks, and so forth.

In the eight years since Hooker's proclamation, information technology has continued its inexorable penetration into myriad aspects of work, education, and recreation, including activities that our students and faculty hold dear. During this time, the videogame industry surpassed the motion picture industry in revenues, the University of Phoenix opened the University of Phoenix Online, many notable virtual university efforts came and went, and course management systems became a common element of higher education's base of enterprise applications. Also, the use of information technologies in classrooms and dormitories became widespread, and the research persuaded us that there were no significant differences in the learning outcomes from courses mediated by information technologies and those that were not. Finally, student access to computing and narrowband networking has become nearly ubiquitous, and access to broadband networking and online information resources is increasingly commonplace.

Both the ECAR study on faculty use of course management systems and this study of student experiences with information technology concluded that, while information technology is indeed making important inroads into classroom and learning activities, to date the effects are largely in the convenience of postsecondary teaching and learning and do not yet constitute a "learning revolution." This should not surprise us. The invention of moveable type enhanced, nearly immediately, access to published information and reduced the time needed to produce new publications. This invention did not itself change literacy levels, teaching styles, learning styles, or other key markers of a learning revolution. These changes, while catalyzed by the new technology, depended on slower social changes to institutions. I believe that is what we are witnessing in higher education today.

Acknowledgments

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9. Ibid., p. 30.
10. Mary Jane Smetanka, "Millennial Students," Minneapolis–St. Paul *Star Tribune,* May 7, 2004, p. A19.
11. The scale for this question was 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

12. The scale for this question was 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.
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