said they “believed they learned less from the online course than they would have from an on-campus one.”

Further Research
Possible uses of instructional technology both within and outside of the classroom will only increase as computer and Internet access expand and become ever more affordable. The Pew study found evidence of instructional technology students have experienced in their courses here at UMass. A further area of study could focus on what students think about the uses of instructional technology in their courses. Other directions for research include examining the value of these technologies in terms of student learning. How do faculty see these instructional technologies supporting teaching and learning? What are ways of measuring the effectiveness of technology in academic practice across disciplines?

The course-based technologies we asked students about fall into two categories: communication-enhancing technologies and instruction-enhancing technologies. Looking first at technologies related to enhancing student-faculty communication, Figure 1 shows that 88 percent of students reported using e-mail to communicate with a professor in at least one course, with nearly three-quarters (70%) reporting such use in two or more of their courses. A substantially smaller overall percentage of students (62%) reported using other Web-based technologies to communicate with a professor, with less than half (42%) citing such use in two or more of their courses. One-third (32%) of students, however, participated in a random sample of freshmen and sophomore students about the use of technology in their courses. The sample comprised 751 students of which responses from 457 students are reported here (a response rate of 61%). One set of questions focused on the number of courses students had in which instructional technologies, such as e-mail, course websites, the Internet, video, computer-generated displays, and computerized quiz and response systems. Students were also asked about their interest in online courses. The survey found:

- E-mail is commonly used for communication between professors and students.
- Course websites and required Internet research are also fairly common.
- Students tend to be exposed to course-based interactive technologies less frequently.
- Student interest in taking online courses is mixed; few have actually taken such a course.
- Students at UMass Amherst are more likely to take general education courses online rather than courses for their major.

Since the teacher-student communication aspect of Internet technology emerged so significantly, we may also want to explore issues of “best practices” in this area. Currently available in this connection is the new handbook for UMass faculty, Teaching and Learning Online: Communication, Community, and Assessment. This handbook addresses pedagogical and assessment considerations in structuring an online course (available at www.umass.edu/oapa/assessment/Teaching_and_Learning_Online_Handbook.pdf, or by calling our office at 413-545-2564).

Introduction
In virtually every field of academic and professional practice, instructional technology is commanding increased attention. At UMass Amherst, as at universities across the country, traditional classroom practices are being redefined to include an array of instructional practices that are supported by or dependent upon computer, video, and/or Internet technology. A study by the Pew Internet and American Life Project (www.pewinternet.org) found that “nearly four-fifths of college students (79%) agreed that Internet use has had a positive impact on their college academic experience,” and “most students feel their relationships with their professors have been positively affected by e-mail and Internet communication in general.”

In this Assessment Bulletin we explore the extent to which students are being exposed to technology in the classroom and their interest in taking courses online. The results of this survey of first- and second-year undergraduates yield a snapshot of students’ experiences with course-based technology on the Amherst campus, and suggest directions for further study.

The Survey
In the spring of 2002, OAPA asked Project Pulse (SAREO) to survey students at UMass Amherst freshmen and sophomores about their exposure to course-based instructional technologies, including e-mail, course websites, the Internet, video, computer-generated displays, and computerized quiz and response systems. Students were also asked about their interest in online courses. The survey found:

- E-mail is commonly used for communication between professors and students.
- Course websites and required Internet research are also fairly common.
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students' experience with course websites, video, and Internet research, disciplinary differences did emerge. The most consistent difference is that students in the College of Humanities and Fine Arts tended to have experienced these technologies less in their courses than students in other majors. In addition, students in the Sciences and Engineering tended to have had less exposure to video and required Internet research, and students in Behavioral Sciences reported somewhat less exposure to course websites.

Students are less likely to have experienced the two more directly interactive instructional technologies. Half (54%) of the respondents have used an online quiz and review system for class (such as “OWL” or “DUCK”), with one-third (31%) having used it for only one class. Very few (14%) have used a Personal Response System or other electronic technology to respond to questions in class, with most students (12%) reporting such use in only one class. Students in science-related majors were more likely to report exposure to classroom-based, computerized quiz and response systems than students in other majors.

Finally, we look at students’ interest in taking courses online. Although only 1% of the students surveyed had taken a UMass online course, more than half (54%) expressed interest in taking one. Significant differences in interest emerged, however, depending upon the type of course. As shown in Figure 3, students overwhelmingly (78%) preferred to take their major courses in a traditional, classroom-based format. While the majority of students also prefer to take general education courses in a traditional format (51%), there is more openness to taking these courses online (13%) saying they would prefer an online
course, and 37% saying they had no preference). A similar pattern is found when we asked students about the likelihood of their actually taking an online course (Figure 4). Here, half (52%) of students were at least somewhat likely to take a general education course online, but fewer (29%) were at least somewhat likely to take a major course online. Students in the College of Humanities and Fine Arts were less likely to express interest in taking a course online.

Discussion
At UMass Amherst, course-based use of computer and Internet technology, especially e-mail, for communication between professors or to have an OIT account, both of which allow for the best use of technology-based, course-management programs such as WebCT. There is also a learning curve to negotiate for faculty and students alike in mastering the capabilities of WebCT and other courseware for meaningful class-based communication.

Within the classroom another distinction in uses of instructional technology emerges. Students report relatively common use of more traditional technology, such as video, across the range of their courses. Many fewer students, however, have reported exposure to computer-dependent displays and Personal Response Systems in the classroom. Students who have experienced the newer technologies are generally majoring in science-related disciplines, which have tended to take the lead in the development and use of these technologies in courses.

These differences in use may resolve as more classrooms on campus are wired for the newer forms of instructional technology and faculty access to and training in them become more widespread. For example, UMass Amherst recently received grant funding from the Davis Educational Foundation for The Large-Lecture Course Redesign Project. This 18-month project has drawn faculty participants from across the disciplines (psychology, resource economics, art history, economics, and finance and operations management). The goal is to redesign large-lecture courses (200+ students per section) to take advantage of the range of instructional technologies available. The project will examine how the technology has affected, and ideally improved, the teaching and learning experience in such classes for faculty and students alike (see www.umass.edu/redesign-