



# THE CAMPUS COMPUTING PROJECT

October, 1994

*The 1994 National Survey of Desktop Computing in Higher Education*

## Information Technology Moves Slowly into the Classroom

Despite great aspirations for the role of technology in education, only a small proportion of college courses and classes currently use information technology (IT) resources to enhance or supplement instruction. According to the 1994 National Survey of Desktop Computing in Higher Education, roughly one course in six (about 16 percent) use computer labs or classrooms and about 10 percent use computer-based simulations and exercises. About one-in-ten use instructional software developed by a publishing company or a commercial software developer. Although the use of electronic mail is growing rapidly on college campuses, very few courses — just one in twelve — use e-mail as a resource for instruction or communication between students and faculty. Finally, just four percent of college courses use either multimedia or CD-ROM-based instructional materials.

“Significant investments of time, training, and institutional dollars notwithstanding, the movement of IT into the classroom and college course over the past decade has been slow,” says Kenneth Green, director of

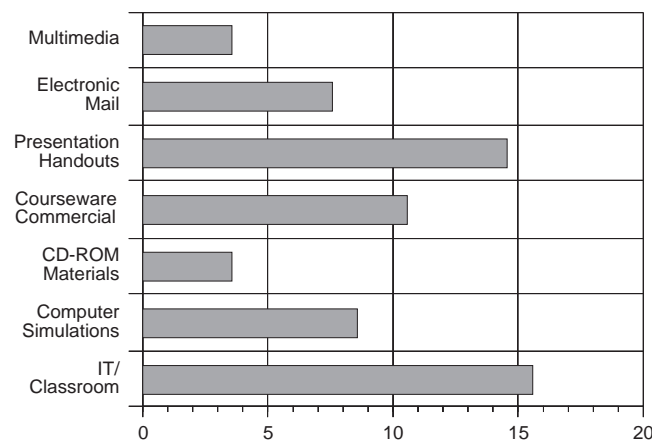
the survey and visiting scholar at the Claremont Graduate School in Claremont, CA. “The much discussed ‘technology revolution’ in higher education has really been the slow, gra-

dual movement of IT resources into courses and classes by faculty and students.”

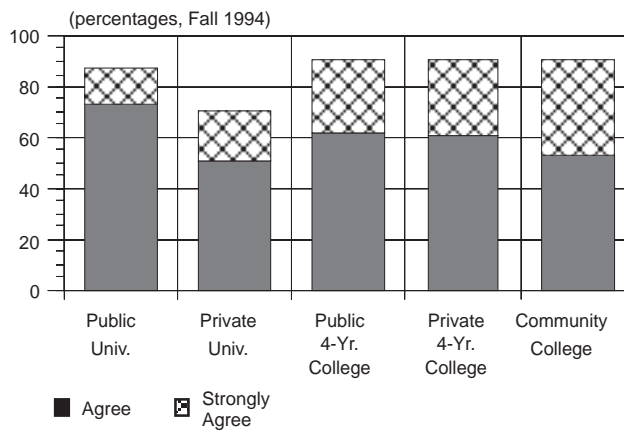
Although the survey data reveal little current use of CD-ROM materials, survey respondents, generally the academic computing officers at colleges and universities across the United States, believe that the Internet and CD-ROMs will serve as important new sources for instructional content in the coming years. Over 90 percent “agree” or “strongly agree” that “CD-ROMs will be an important source of content and instructional resources over the next two-three years.” Academic computing officials also view the Internet as an increasingly important source for instructional materials. The scale score for using “Internet resources for instruction” rose from 5.3 in 1993 to 5.7 in 1994 (scale: 1=not important and 7=very important).

But a close look at the responses reveals interesting differences across institutions. Research universities are somewhat less likely to “strongly agree” that CD’s will be an important source of instructional material. Rather, universities

**Information Technology in the Classroom**  
(percentage of classes using IT resources)



**CD-ROMs Will Be An Important Source of Instructional Content**  
(percentages, Fall 1994)



are more likely than others to view the Internet as the point of access to digital content that will be used in the classroom.

"Officials at all types of colleges also report that expanding or enhancing 'network access' remains a top priority," says Green. "But 'the network' is still *the* priority at research institutions, where the Internet facilitates both research and instruction." Demand for Internet access has increased dramatically this past year, as growing numbers of new Internet users, be they entering freshmen or faculty in disciplines not traditionally associated with technology, seek digital resources that are not otherwise available at their institutions.

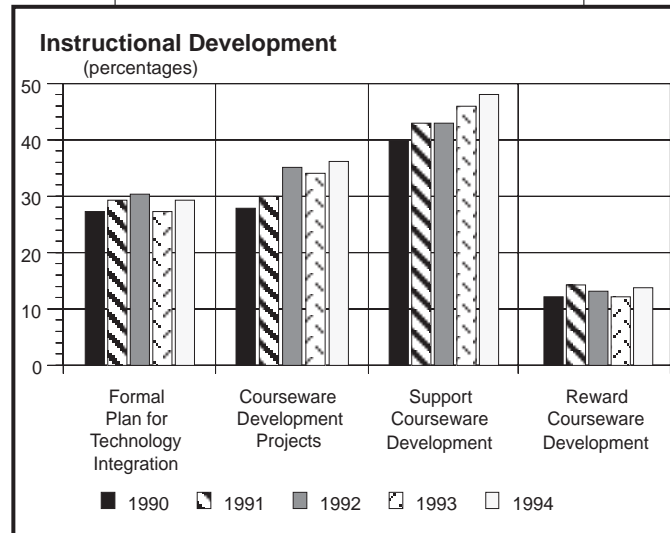
Yet even as campuses turn to both the Internet and to CD-ROMs, the long-term solution for most campuses will eventually be some future version of the Internet. "Publishers may prefer CD-ROMs because the discs can be sold like books," says Green. "But many campuses would prefer to license content and software and then distribute it at low or no cost to students and faculty through the network." Green believes that some kind of digital metering of the copyrighted content on the Internet, similar to the "pay-per-view" features of cable television service, will be integrated into the Internet and eventually accepted by campus users.

The 1994 survey shows little change in the proportion of campuses supporting or rewarding courseware development. Over a third (37 percent) of the institutions report one or more courseware development projects, up slightly from 1993. And again this year almost half the institutions report that they support faculty efforts to develop instructional resources. However, the proportion of campuses supporting instructional technology projects has shown little

growth over the five years of the survey. Equally important, according to Green, is that comparatively few campuses, just 15 percent, actually reward or provide incentives to

resources is strong, campuses are not making investments which will create these materials," says Green. "Certainly the financial problems affecting higher education these days account for part of the slow

growth in these investments. So do the competitive pressures among technology vendors, who in the past often provided significant support for development projects." Green also notes that courseware development is expensive and represents a risk for publishers attempting to explore a new, largely uncharted market for digital materials. Given strong demand, he expects new publishers to enter this market, while traditional book publishers will also create materials linked to their core textbooks. Yet Green says some in the publishing industry approach this issue with great caution: "While this is a natural extension for textbook publishers, many publishing executives are very concerned about development costs,



faculty for developing software or courseware. Also significant is that the percentage of institutions that do reward faculty efforts to develop digital course material has shown little change since 1990.

"These data suggest that while the demand for instructional technology

publishers will also create materials linked to their core textbooks. Yet Green says some in the publishing industry approach this issue with great caution: "While this is a natural extension for textbook publishers, many publishing executives are very concerned about development costs,

### THE CAMPUS COMPUTING SURVEY

The annual Campus Computing survey, begun at the University of Southern California in 1990, focuses on the use of information technology in higher education. The project's national studies draw on qualitative and quantitative data to help inform faculty, campus administrators, and others interested in the use of information technology in American colleges and universities. TTSP activities are supported by foundation grants and corporate sponsors.

The 1994 National Survey of Desktop Computing was supported, in part, by grants from the Spencer Foundation and the AT&T Foundation. Additional underwriting was provided the following corporate sponsors: Apple Computer, Inc., Wm. C. Brown Communications, Eastman Kodak Company, Follett Corp., Hewlett-Packard, Richard D. Irwin, Inc., IBM, Lotus Development Corp., Microsoft Corp., Mosby-Year Book, Inc., Simon and Schuster, Symantec Corp., and THE Journal.

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copyright issues, technological obsolescence, and the willingness of students to purchase these materials. All these factors pose major challenges for companies interested in providing digital content and instructional materials for the higher education market.”

### Budget Cuts

The 1994 data point to some relief from the budget cuts affecting academic computing in recent years, especially computing operations in public universities and four-year colleges. The proportion of campuses reporting budget cuts continues to decline, down to one in five this year, from 28 percent in 1993, and a peak of 36 percent in 1991. Community colleges are now most likely to report budget cuts at 25 percent. In contrast, the percentage of public universities reporting budget cuts for the 1994-95 academic year fell to 13 percent, down from 50 percent last year. Similarly, in public four-year colleges, only one-in-five reported budget cuts in computing this year, down from 27 percent in 1993. Just 8 percent of private universities report budget reductions for 1994-95, down from 30 percent last year. Among private four-year colleges, there was little change at 17 percent from 1993-94 to 1994-95. Finally, the proportion of campuses experiencing mid-year budget cuts also declined this past year, to 13 percent, down from 16 percent in 1993.

“This relief from the annual budget cuts comes at an important time,” says Green. He notes that while most academic computing units have not recovered the funds taken away in

past years, a stable budget, let alone a modest increase, can help to retain or even add staff, can replace aging and obsolete equipment, and can provide

from the first year peak of 49 percent in the 1990 survey). Approximately one-third (36 percent, up from 33 percent in 1990) report that they are developing a budget plan to “acquire and retire” computers. And this year one-fifth (21 percent) of the campuses report that they have a formal budget plan for computer equipment, up from 16 percent five years ago.

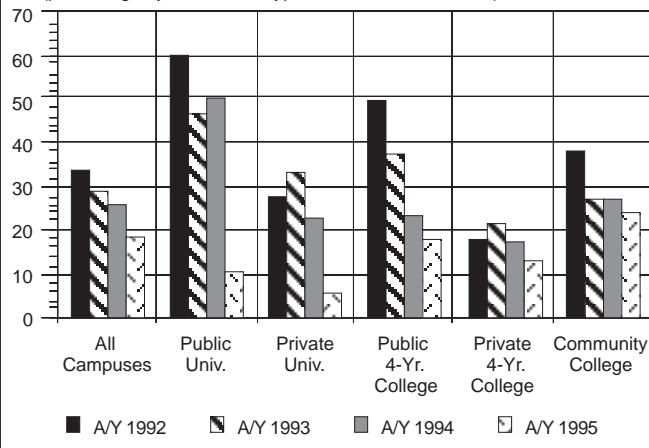
“These data suggest that there has been little real progress at most campuses in developing capitalization plans to ‘acquire and retire’ technology resources,” says Green. He notes that many campuses continue “ramp up” in to address technology needs: “Too many colleges and universities deal with their technology purchasing on an ad hoc basis. They find money rather than reserve funds. Campus officials know that the hardware lasts about 24-30

months and the software survives maybe 12 or 16 months before it has to be replaced.” But he adds that many institutions deal with the replacement on a problem-by-problem, lab-by-lab basis, operating without a replacement or funding plan. “Most of the purchasing seems opportunistic, rather than planned. It’s not a viable or reliable way to build a solid technology infrastructure.”

### Hardware Preferences

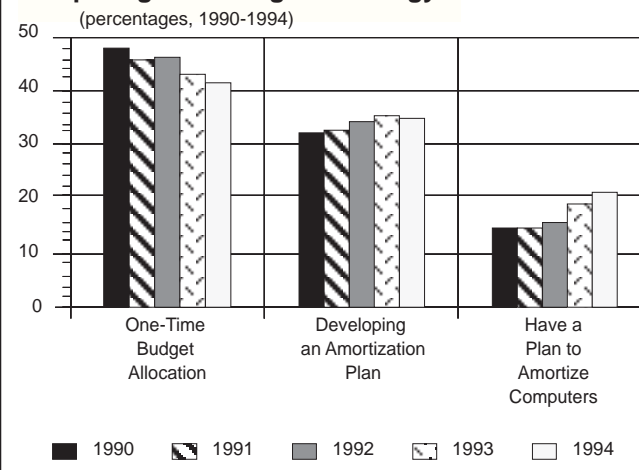
Campus respondents are warming up to the microprocessors that are heart of the next generation of desktop systems. The Intel ‘486- and Motorola chips that are the foundation of the current generation of IBM/compatible and Macintosh systems are viewed as “very important” to future computing activities by cam-

**Trends in Budget Cuts in Academic Computing**  
(percentage by institutional type, A/Y 1992 — A/Y 1995)



funds for investing in the campus network. Green comments that the survey data suggest most sectors expect to buy more equipment this year than last, a reflection of stable computing budgets.

**Acquiring & Retiring Technology**  
(percentages, 1990-1994)



As in past years most campuses continue to buy equipment without an institutional plan for amortizing the cost of computers and technology resources. Nationwide, over two-fifths of the institutions deal with computer purchases as a one-time budget allocation (42 percent, down

puses in all sectors. Not surprisingly, there is growing interest and enthusiasm for the Pentium and Power PC processors, as more of these products come to market and as competition among manufacturers helps to drive down prices. Among the "next generation" processors, only DEC's Alpha chip received a lower ranking from campuses respondents in 1994.

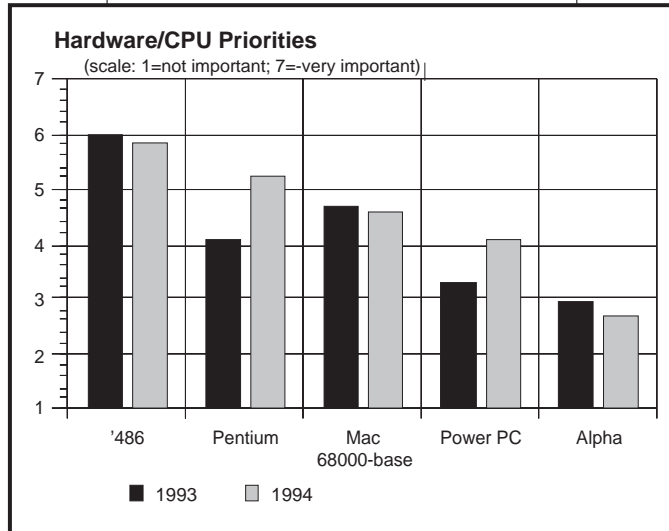
**Campus Networks**

Expanding campus networks remains the top strategic priority for institutions in all sectors, according to the 1994 survey data (scale score of 6.4, up from 6.3 in 1992 and 6.1 in 1991). Networking issues rank highest in public universities (scale score: 6.7), although the gap has narrowed across institutional segments in the past two years.

Over two-thirds (69 percent) of the institutions in the survey have a campus-wide network, up from 63 percent in 1992. This ranges from high

of 97 percent in private research universities to a low of 63 percent in community colleges. Fiber is the most common medium for the backbone: more than three-fourths of the four-

tionally, 23 percent report a campus Gopher, up from 14 percent in last year. Not surprisingly, Gopher activity is concentrated in research universities (84 percent for public research universities and 74 percent for private research universities).



year colleges and universities report a fiber backbone in 1994, compared to just 55 percent in community colleges.

Fully three-fourths (79 percent) of the campuses report Internet access, up from 66 percent in 1993. Addi-

The 1994 National Survey of Desktop Computing, developed by the Technology, Teaching, and Scholarship Project, was supported by grants from two foundations and nine corporate sponsors. The survey data are based on the responses some 800 two- and four-year public and private colleges and universities across the

United States. Participating campuses completed the survey during spring and summer, 1994. Copies of the report, *Campus Computing 1994*, are available from the Campus Computing for \$35 (postpaid, fourth class mail; use coupon below).

**Order Form: The Campus Computing Survey**

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