THREE

Faculty and Student Computing

Section three of the core data survey captured data about campus computing support in general terms of services and infrastructure; specific support for faculty in the use of technology in teaching and learning; and student computing policy and infrastructure. Because of the increasingly widespread use of and interest in course management systems, data about these systems are highlighted separately.

Campus Computing Support

Campus IT organizations provide common support services and infrastructure in support of the academic mission. It is this service environment that both allows students and faculty to do their work and supports the instructional mission of the campus.

The first dimension of this environment has to do with the availability of technological assistance on a campus. The help desk is critical in helping students and faculty overcome the hardware and software challenges that might interfere with their using technology in learning or research efforts. As seen in Table 3-1, the amount of support provided at different types of institutions varies, with significantly more assistance available at doctoral than other types of institutions and more at MA than BA or AA institutions.

While there is much discussion about the need for support on an around-the-clock basis, with support available 24 × 7, the CDS data tell us that this is not common practice, occurring at only about 7% of institutions that have help desks (with 5.4% of ALL institutions reporting that they do not have a help desk). There have been minor increases with regard to help desk availability in general, and 24 × 7 support in particular, since last year's survey.

A second dimension of campus support has to do with the availability of e-mail, specifically whether students are issued e-mail accounts for the purpose of receiving official campus communications. The ubiquity of e-mail access is important to understand, as this

Table 3-1
Help Desk Availability

	ALL*	DR	MA	BA	AA	OTHER
No help desk	5.4%	1.6%	2.3%	6.5%	14.7%	3.5%
Help desk with 24 × 7 support*	7.1%	17.6%	5.3%	3.8%	3.1%	5.6%
Mean hours/week help desk is available*	72.2	89.9	72.5	64.7	64.7	65.5
* *N* = 883						

Table 3-2
Percentage of Institutions That Issue E-Mail Accounts to All Students

	ALL	DR	MA	BA	AA	OTHER
Yes	90.5%	97.8%	95.4%	97.3%	65.6%	91.5%
No	9.5%	2.2%	4.6%	2.7%	34.4%	8.5%

Table 3-3
Policy on Offering Universal Student E-Mail

	ALL	DR	MA	BA	AA	OTHER
Never offered	5.6%	0.5%	1.9%	0.5%	25.2%	2.8%
Offered with no plans to discontinue	89.6%	95.6%	95.0%	96.2%	66.9%	89.4%
Offered but considering discontinuing	2.9%	3.8%	2.3%	2.2%	1.8%	4.9%
Already stopped offering	1.9%	0.0%	0.8%	1.1%	6.1%	2.8%

determines whether faculty and/or administrators can count on being able to reach all students in a particular class or all students on campus to inform them of policies, events, and so forth.

As seen in Table 3-2, the practice of providing all students an e-mail account is very common, reported by more than 90% of ALL respondents, and fairly consistent for all Carnegie groups except for AA colleges, where the percentage of respondents reporting this practice was much lower than the others (about 66%). This latter finding is probably due to the nature of these institutions, most of which are community colleges that serve diverse populations, almost all of whom are commuter students and who are not necessarily long-term attendees of the institution. There were no notable changes in these patterns since last year's survey.

Because of the number of students who already have e-mail accounts when they arrive on campus, some campuses have stopped offering universal e-mail accounts. The data in Table 3-3 help us understand what is happening with regard to such access, to interpret the data in the previous table, and to identify patterns in the different strategies used by different types of institutions.

Campus policies on providing universal student e-mail differ significantly across Carnegie classes, but overall nearly 90% of ALL respondents offer this access with no plans to discontinue it. Few DR, MA, or BA schools reported that universal student e-mail was never offered, and 95% or more of the respondents in these groups reported offering student e-mail with no plans to discontinue the practice.

The last dimension of general campus support is the extent to which technology is available in classrooms so that faculty and students can use electronic means for learning in their in-class experiences. The results appear in Table 3-4.

The percentage of campuses with classrooms equipped with wired Internet connectivity differed significantly as a function of Carnegie class, with MA, BA, and AA institutions all reporting significantly higher percentages of classrooms equipped with wired Internet connectivity than doctoral and OTHER institutions. One likely explanation for the smaller percentage of wired classrooms in doctoral institutions is that they usually have very large inventories of classrooms, so even though in absolute terms they probably have far more classrooms with this capability than other types of institutions, the percentage of such classrooms is smaller. Looking at the matched data set, we found that wired Internet connectivity increased slightly since last year's survey among all types of institutions.

While doctoral institutions reported a lower

Table 3-4
Mean Percentage of Classrooms Equipped with Various Technologies

	ALL	DR	MA	BA	AA	OTHER
Wired Internet connectivity	88.6%	84.2%	92.1%	93.3%	92.9%	76.8%
Wireless Internet connectivity	45.8%	51.7%	49.7%	42.5%	40.1%	41.6%
LCD projectors	57.2%	52.9%	60.4%	58.2%	57.4%	55.3%
Computers	46.8%	35.6%	49.5%	50.1%	54.1%	43.5%
Televisions	30.8%	21.0%	34.9%	34.5%	36.8%	24.4%
Smart boards	5.7%	4.7%	6.3%	4.2%	7.5%	5.7%
Document projectors/ systems/cameras	22.6%	22.3%	23.4%	19.2%	25.0%	23.2%
Clickers (personal response systems)	7.0%	8.0%	6.8%	7.9%	6.4%	4.8%

percentage of wired classrooms, this group also has the highest mean percentage of classrooms with wireless connectivity (about 52%). The mean percentage of classrooms equipped with wireless Internet connectivity increased more than 11% for ALL schools in the matched data set, with substantial increases occurring across all groups.

The mean percentage of classrooms equipped with LCD projectors was essentially the same irrespective of institutional type. Overall, looking at the matched data set, there was a significant increase (about 6%) over last year's results, while the 2004 survey percentage was 5% greater than 2003, so there is continued movement in this area.

The mean percentage of classrooms equipped with computers was significantly lower on doctoral campuses as compared to all other Carnegie groups, as was the percentage equipped with televisions. Looking at the matched data set, the mean percentage of classrooms equipped with computers also increased for the third year in a row, this year by about 5% for ALL institutions.

For the new classroom technology added to this year's survey, the mean percentage of classrooms equipped with individual response systems (clickers) for ALL respondents was 7%. No notable differences were found for deployment of this classroom technology across the Carnegie groups.

Faculty Support

If e-learning is going to become a reality in higher education, the extent of support provided for faculty to learn about and incorporate electronic capabilities into their courses will be a key factor in this transformation. Table 3-5 summarizes the data about a number of dimensions of faculty support, once again examining these across the Carnegie groups and showing differences associated with the nature of the campus.

Most types of support reported for faculty use of technology in teaching and learning differed significantly by Carnegie class. As was the case last year, doctoral institutions reported greater use than other groups of all but one practice, namely faculty training upon request, which was reported by the vast majority of ALL respondents and with no notable differences across Carnegie groups. BA colleges reported using a designated instructional technology center, a faculty teaching/excellence center that collaborates with the IT organization, and instructional designers who work with technologists much less often than did the other groups.

Offering faculty training upon request and offering faculty training through scheduled seminars were the two most common methods of assisting faculty reported on this year's survey, with nearly 95% and 90% respectively of ALL campuses using these two strategies. One new support method was added to the survey

Table 3-5
How Faculty Are Supported in the Use of Technology in Teaching and Learning

	ALL	DR	MA	BA	AA	OTHER
Designated instructional technology center	69.7%	83.5%	72.9%	55.4%	69.9%	64.1%
Faculty teaching/ excellence center that works with IT	53.9%	68.7%	57.3%	34.2%	55.8%	52.1%
Instructional designers who work with technologists	56.7%	76.9%	58.4%	34.8%	52.8%	60.6%
Instructional technologists who are discipline specialists	22.6%	35.2%	17.2%	21.7%	14.1%	27.5%
Student technology assistants who help faculty use technology	27.7%	41.8%	28.6%	32.6%	11.7%	19.7%
Intensive support for faculty using technology	55.8%	62.6%	59.9%	52.7%	53.4%	46.5%
Faculty training through scheduled seminars	89.2%	95.6%	91.6%	87.5%	90.8%	76.8%
Faculty training on request	94.6%	95.6%	98.5%	96.7%	93.3%	85.2%
Activities for faculty to share innovative ideas	74.7%	86.8%	80.9%	72.8%	66.3%	59.9%
Special grants/awards for faculty using technology	44.9%	61.5%	48.5%	37.0%	38.0%	35.2%

this year, that is, the use of student assistants to help faculty use technology. This new option was reported second least often, with the use of instructional technologists who are discipline specialists the least employed method. However, it is interesting to note a significant increase since last year in the use of such discipline specialists overall, with most of this increase attributable to doctoral institutions, 35.2% of whom reported this practice.

In comparing institutions in our matched data set for the nine methodologies for which we also had data last year, there was a statistically significant increase in the aggregate (ALL) level for six of the ways in which faculty are supported in the use of technology in teaching and learning, with small net increases in the use of faculty teaching/excellence centers and instructional designers. There was a significant decrease in the use of designated instructional technology centers since last year's survey.

Student Computing

The estimated percentage of students using their own computers on campus differed significantly as a function of Carnegie class, as shown in Table 3-6. Doctoral and BA institutions did not differ significantly from each other, but both groups had a higher percentage than the other groups. A notable finding is the significant increase overall in student ownership from 2004 to 2005 among institutions in our matched data set, with the mean increasing from 67% to over 72% and the median increasing from 80% last year to 85% for ALL respondents this year. There was a significant increase in reported student ownership for every Carnegie group within the subset of schools that completed both years' surveys.

While some of the differences in student computer ownership can probably be attributed to coursework demands that would require a computer, there may well be another

Table 3-6
Percentage of Students Reported to Be Using Their Own Computers

	ALL	DR	MA	BA	AA	OTHER
Mean	72.3%	84.8%	78.2%	85.3%	38.5%	67.5%
Median	85.0%	90.0%	85.0%	90.0%	35.0%	80.0%
Minimum	0.0%	10.0%	0.0%	2.0%	0.0%	0.0%
Maximum	100.0%	100.0%	100.0%	100.0%	95.0%	100.0%

Table 3-7
Average Percentage of Students Using Their Own Computers by Institutional Control

	ALL	DR	MA	BA	AA	OTHER
Private institutions	84.8%	92.4%	82.8%	87.4%	52.1%	69.8%
Public institutions	64.3%	81.0%	74.5%	72.6%	37.8%	69.3%

factor working here. When the percentage of student ownership is examined in terms of institutional control—that is, public versus private institutions—a very strong and statistically significant pattern emerges, as seen in Table 3-7. At private institutions, there is approximately a 20% greater level of student ownership than at public institutions for ALL institutions. If a student is attending a private institution, there is some correlation with his or her relative affluence, even when financial aid is factored out, and hence there is probably greater means to afford the technology compared to a student who is commuting from home to the nearby public institution. This finding, along with an assumption that a digital divide still persists on any campus, be it private or public, supports the premise that public access to computers needs to continue to be offered or some students will be disadvantaged in using technology effectively in the pursuit of their academic goals.

Campuses vary greatly as to their requirements and expectations regarding student access to technology, as shown in Table 3-8. Only about 10% of doctoral institutions do not have any requirements or recommendations about personal computers (down from 15% last year), whereas nearly 83% of AA colleges do not have such guidelines; intermediate percentages were observed among MA, BA, and OTHER institutions. Nearly 40% of doctoral institutions have policies requiring students in some departments to buy or lease a PC. The percentage of schools recommending PC buying or leasing for all students, but not requiring it, was highest for BA colleges, with more than half of these schools reporting such a policy. Nearly 44% of MA colleges and nearly 30% of doctoral schools reported this policy, which was virtually nonexistent among AA colleges (3.1%).

The practice of a campus providing all students with a personal computer is overall uncommon. It is rare at doctoral and MA institutions and nonexistent at AA colleges that responded to our survey. All students are provided a PC at about 6% of the BA colleges and OTHER schools responding to our survey. There were no significant changes in policies on student computer requirements since last year.

Another dimension of student computing addressed by the CDS survey was the level of support provided in the residence halls that house undergraduate students. As seen in Tables 3-9 and 3-10, more than 95% of BA, MA, and DR institutions reported providing high-speed network access in the residence halls, while only 69% of OTHER schools did so. Note, however, that more than 23% of respondents in this category reported not having residence halls. Only 14.1% of AA colleges reported offering this access, but this number is also distorted because about 82% of the schools in this group reported not having residence halls.

Table 3-8
Policies on Student Computer Requirements

	ALL	DR	MA	BA	AA	OTHER
All students are provided a PC	2.8%	0.5%	2.3%	6.0%	0.0%	5.6%
Students in general required to buy/lease PCs	3.5%	9.3%	1.9%	1.1%	0.6%	5.6%
Students in some departments required to buy/lease PCs	15.1%	39.6%	11.5%	2.7%	6.1%	16.9%
PC buy/lease recommended but not required for all students	31.9%	29.7%	43.9%	53.3%	3.1%	18.3%
PC buy/lease recommended but not required in some departments	7.2%	8.8%	7.6%	2.7%	6.7%	10.6%
No requirements or recommendations about PCs	37.4%	9.9%	29.8%	32.6%	82.8%	40.8%
Other	2.0%	2.2%	3.1%	1.6%	0.6%	2.1%

Table 3-9
High-Speed Network Connections Offered in Residence Halls

	ALL	DR	MA	BA	AA	OTHER
Yes	78.2%	99.5%	95.0%	97.3%	14.1%	69.0%
No	1.9%	0.0%	0.4%	0.0%	3.7%	7.7%
No residence halls	19.8%	0.5%	4.6%	2.7%	82.2%	23.2%

Table 3-10
High-Speed Network Connections Offered in Residence Halls for Institutions with Residence Halls

	ALL*	DR	MA	BA	AA	OTHER
Yes	97.6%	100.0%	99.6%	100.0%	79.3%	89.9%
No	2.4%	0.0%	0.4%	0.0%	20.7%	10.1%
* *N* = 748						

Nearly all schools offering high-speed network connectivity in residence halls, regardless of Carnegie class, use primarily Ethernet connections, and the speeds of connectivity reported are also consistent across school type, as seen in Tables 3-11 and 3-12.

In response to illegal file sharing and the undue attention that higher education has received in this regard, some institutions have begun to offer students a campus-negotiated service to provide online music and movies. For the second consecutive year, the CDS survey has included a question about this practice, and thus we are able this year to look for a trend. Overall, nearly 8% of respondents currently offer such a service, nearly double the percent who reported this practice last year, a statistically significant increase. Considering

Table 3-11
Primary Technology of Network Connections
for Institutions Offering High-Speed Connectivity in Residence Halls

	ALL*	DR	MA	BA	AA	OTHER
Ethernet	90.8%	92.3%	91.6%	94.4%	73.9%	83.7%
Cable modem	2.6%	1.7%	3.6%	0.6%	13.0%	3.1%
DSL	1.1%	1.1%	0.0%	0.6%	4.3%	4.1%
Wireless	4.9%	3.3%	4.4%	4.5%	8.7%	9.2%
Other	0.5%	1.7%	0.4%	0.0%	0.0%	0.0%
* *N* = 730						

Table 3-12
Speed of Residence-Hall Network Connections
for Institutions Offering High-Speed Connectivity in Residence Halls

	ALL*	DR	MA	BA	AA	OTHER
10 Mbps	15.5%	20.4%	14.1%	11.2%	8.7%	19.4%
10–11 Mbps	2.7%	2.8%	2.4%	2.8%	13.0%	1.0%
10/100 Mbps	45.1%	49.7%	47.8%	41.9%	39.1%	36.7%
100 Mbps	32.9%	24.3%	33.7%	40.2%	21.7%	35.7%
> 100 Mbps	3.8%	2.8%	2.0%	3.9%	17.4%	7.1%
* *N* = 730						

Table 3-13
Campus-Negotiated Service to Offer Access to Online Music and Movies

	ALL	DR	MA	BA	AA	OTHER
Already offered	7.6%	20.3%	6.5%	5.4%	1.8%	2.8%
Plan to offer	3.0%	4.4%	5.7%	1.1%	0.6%	1.4%
Considering	18.3%	30.8%	28.2%	16.3%	1.8%	5.6%
No plans	71.1%	44.5%	59.5%	77.2%	95.7%	90.1%

that the survey was conducted only two years after the first campus announced offering such a service, this is a rather significant data point. As shown in Table 3-13, nearly 30% of ALL campuses currently offer, plan to offer, or are considering this option. However, it is worth noting that a significantly greater percentage of doctoral institutions (which are often the largest campuses) are pursuing such a strategy, with about one-fifth of these schools already offering, and fewer than 45% of them with no plans to offer, such a service.

Course Management Systems

A final discussion about student and faculty computing relates to the use of course management systems. The analysis here focuses on use and patterns of deployment, while section five of this summary report addresses the actual systems in use.

As illustrated in Table 3-14, nearly 92% of ALL responding campuses reported supporting one or more course management systems (CMSs). Only 1.1% of ALL respondents have not deployed such a system and do not have plans to do so, with 1.2% planning to deploy a CMS but not having yet begun and about 5% currently reviewing options. Nearly 70% of ALL responding campuses currently support a single commercial CMS, with another 2.7% support-

Table 3-14
Course Management System Practices

	ALL	DR	MA	BA	AA	OTHER
Not deployed and no plans to deploy	1.1%	0.0%	0.4%	1.1%	1.8%	2.8%
Planning to deploy one CMS or more	1.2%	0.5%	0.7%	2.2%	0.6%	2.1%
Currently reviewing options	5.2%	5.4%	3.4%	8.7%	3.1%	6.2%
Support a single commercial CMS	69.5%	63.0%	78.7%	65.2%	77.9%	57.2%
Support more than one commercial CMS	7.1%	12.5%	6.0%	1.6%	7.4%	9.0%
Support a single homegrown CMS	2.7%	2.7%	2.2%	2.7%	1.2%	4.8%
Support more than one homegrown CMS	0.3%	0.5%	0.4%	0.0%	0.6%	0.0%
Support a single open source CMS	3.3%	0.0%	0.4%	13.0%	1.2%	2.8%
Support more than one open source CMS	0.1%	0.0%	0.0%	0.5%	0.0%	0.0%
Employ hybrid approach (commercial, homegrown, and/or open source)	8.6%	14.1%	7.1%	3.8%	5.5%	13.8%
Other	1.0%	1.1%	0.7%	1.1%	0.6%	1.4%

Table 3-15
Faculty Use of a Currently Deployed Course Management System

	ALL*	DR	MA	BA	AA	OTHER
Ubiquitous, employed for nearly all courses	24.5%	23.1%	21.6%	20.4%	24.0%	38.0%
Faculty use selectively	75.5%	76.9%	78.4%	79.6%	76.0%	62.0%
* $N = 873$						

ing a single homegrown system and 3.3% supporting a single open source CMS. About 7% reported supporting more than one commercial system. More doctoral than other types of institution reported supporting more than one commercial CMS or using a hybrid approach (some combination of homegrown, commercial, and/or open source systems). The percentage of schools that support a single commercial CMS remained constant among ALL institutions in the matched data set for the past two years.

Finally, we examined the nature and extent of faculty use of course management systems, as shown in Table 3-15. At the vast majority of campuses, faculty members use these systems selectively, with only about a quarter of the campuses that support such systems reporting that they are employed for all or nearly all courses. However, that percentage represents a significant increase over last year's survey, when only about 19% reported nearly ubiquitous use of their deployed CMS.