

ACADEMIC INITIATIVES

A major intended outcome of the Integrated Technology Strategy (ITS) is to facilitate the use of information technology in the service of Excellence in Learning and Teaching. Of the original 11 ITS initiatives, four focus directly on the creation, collection, and distribution of technology-mediated instructional resources for use in on-campus and off-campus education. In the “first wave” of initiatives, priority for funding was given to projects thought to have a) the greatest immediate benefit to instructional programs, b) the highest likelihood of engaging CSU faculty to work collaboratively, and c) the strongest potential for demonstrating the cost-effectiveness of using advanced networking technologies to help contain growth in costs associated with expanding enrollments. The four academic initiatives are Library Resource Sharing, Multimedia Repository, Distributed Learning and Teaching, and Campus Centers for Instructional Technology Development.

Library Resource Sharing

The upward spiral in the cost of books and periodicals had been a drain on campus resources and a threat to academic program quality maintenance for years prior to the campus presidents’ decision to adopt the CSU Integrated Technology Strategy. The benefits of distributing the purchase of books among campuses and sharing them via interlibrary loan were offset by unacceptable time delays and rising costs of handling remote borrowing requests. Moreover, students and faculty increasingly prefer electronic access to publications and data sources over print materials. The decision was made to address this common problem by exploiting emerging network technologies and cooperative resource acquisition.

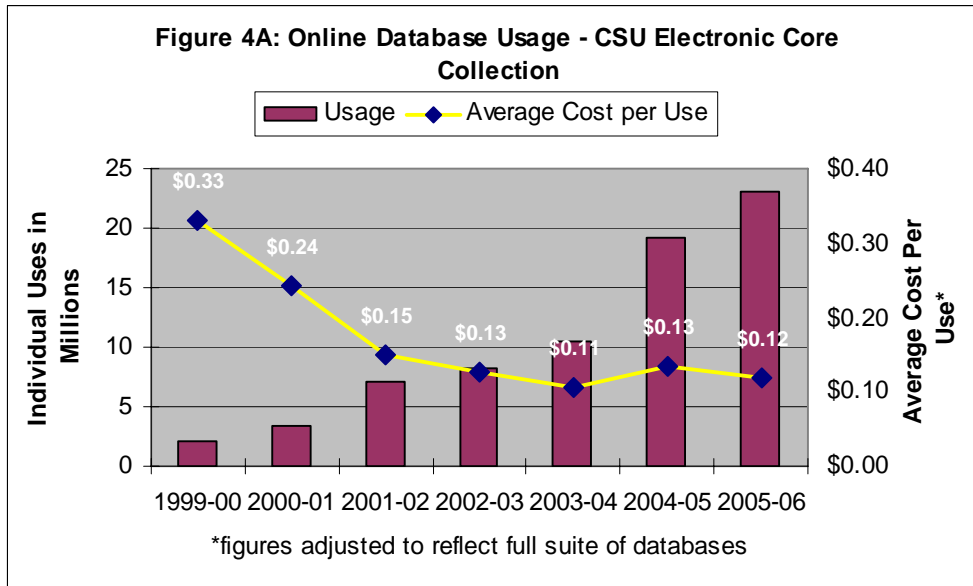
Cooperative Library Resource Acquisition and Sharing

CSU library directors responded to the challenges and trends described above by agreeing to collaborate in the purchase of high demand library resources and to share them electronically. The office of Electronic Information Resources (SEIR) at the Chancellor’s Office provides the body and structure of a successful cooperative program guiding the evaluation and selection of learning materials that benefit all of the libraries in the CSU system. The cooperative program succeeds by leveraging the collective buying power of CSU libraries to obtain maximum value for its dollars, by reducing the duplication of effort in the negotiation and acquisition process, and by raising the strategic profile of library activities and programs.

The Electronic Core Collection (ECC), the outcome of this collaborative approach, is a collection of online bibliographic and full-text information resources selected to support common core curricula. Core curricula are defined as those offered by at least two-thirds of the 23 CSU campuses. Since it became operational in 1997, the number and variety of information resources made available through the ECC have grown from four resources to a collection that in 2005-2006 comprised over 20 databases and more than 25,000 full text titles. These online resources are used by students and faculty in the Arts and Humanities, Life and Physical Sciences, Social Sciences, and Professional Programs (including Engineering, Computer Sciences, Nursing, Education, and Business and Public Administration).

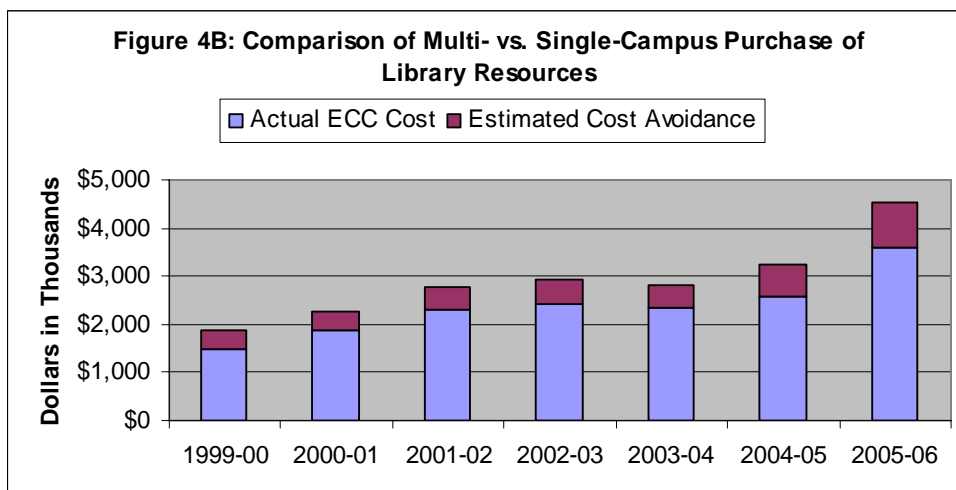
Figure 4A illustrates the benefits to CSU students and to CSU campuses that have been achieved through the collaborative purchase of electronic information resources. The dramatic growth of this program is due mainly to the rapid development of the Internet as a vehicle for content delivery and access point for information, and to the dual economic pressures of tight library budgets and rising prices of information resources. Since the FY 1999-2000 report, the cost per usage for the ECC databases examined in this study has declined overall by more than half. However, the average cost per use has been flat for the past three years due to the “front-loading” of costs for new electronic resources.

Several factors account for the growth in usage. These include removal of physical constraints (e.g., library opening hours, client location), increased availability of library materials brought about through “anytime, anywhere” electronic access, ease of use and enhanced search capabilities, increased awareness that such resources exist, and successful training of patrons by library staff. The enhancement and growth of available electronic collections and greater ease of access to licensed content; together with increased awareness of the existence of such resources and the successful training of patrons by library staff, have contributed to accelerate demand for and use of ECC resources.



The margin of use continues to outpace the rate of cost increase for core electronic resources. Total usage of resources available through the Electronic Core Collection increased by 20 percent during the 2005-06 fiscal year, resulting in a decline of 11 percent in overall cost per usage. In prior years, cost-per-use figures were reported for the subset of ECC databases for which the vendors provided accurate and definable data. Due to improvements over the course of the last two years in the standardization and reporting of usage data by vendors, the data for the most recent two years in Figure 4A are adjusted to include the full suite of ECC databases.

Figure 4B shows the total actual costs of the ECC and the cost avoidance achieved through collaborative purchasing. Cost avoidance as here defined is the difference between what campuses actually paid and what they would have paid had they purchased the resources separately. All program administration costs are included in the “actual ECC costs”. The amount of annual cost avoidance has remained stable at between one-third and one-half million dollars annually. For FY 2005-2006, the cost avoidance attributable to the ECC program is estimated to be about one third higher than last year, just over \$900,000.



High volume use of electronic library resources is confirmed by the responses of faculty and students in surveys conducted since 2000. In these surveys between 85 and 90 percent of faculty and between 80 and 85 percent of students reported using online information resources such as databases, catalogs, and electronic journals. They rated the level of satisfaction with the quality, quantity, and ease of use of those resources as fairly high (i.e., mean scores between seven and eight on a zero-to-ten scale).

Unified Information Access System (UIAS)

The Unified Information Access System [UIAS] is designed to complement the California State University libraries' collections of owned print/microfilm and licensed electronic content. Students and faculty members can discover information that may suit a need and then, when an article, paper, report or book has been identified, retrieve these information items as quickly and as easily as possible.

The UIAS has introduced new tools designed to simplify the discovery and delivery of information resources such as *Metalib* and SFX. *Metalib* is a user interface that enables simultaneous searching of multiple information resources. It is designed specifically for an academic environment to reduce the amount of time students and faculty spend locating journal articles, reports, papers, and books for research projects. SFX works with *Metalib* and proprietary cataloging applications to identify the appropriate copy. (An "appropriate copy" is a publication already owned or licensed by a university library for use by members of that campus community.)

Remote Borrowing of Journal Articles

First implemented in 2002, the SFX OpenURL Link Resolver maintains a database of journals and books and other resources that all CSU libraries own or have licensed for use. SFX instantly can identify whether or not a desired journal article is available. Where an appropriate copy is not available, SFX offers an easy way for users to request a copy of the article from another CSU, UC or other library. In the three years since SFX became available, interlibrary loan requests for journal articles increased by 20 percent largely because of the ease with which users are able to create complete and accurate interlibrary loan requests for journal articles.

In the academic year ending in June 2005, the SFX system delivered over 4.5 million menus where CSU students and faculty could find hypertext links to the electronic or print version of a desired periodical publication. Over half of these queries (2.35 million) resulted in actual retrieval of information available through the electronic and print collections physically located in or licensed through CSU libraries and beyond. The sheer volume of use testifies to the value that the SFX services offers to CSU students and faculty.

Remote Borrowing of Print Materials

Interlibrary loan is the established mechanism for acquiring temporary use of print materials not available in local libraries. Increasing demand and rising costs have made it progressively more difficult for CSU campuses to sustain these services. One goal of the UIAS project is to employ information and telecommunications technologies to reduce the cost and accelerate the speed of borrowing requests.

Figure 4C profiles changes in the number of remote borrowing transactions handled by CSU libraries over the past six years. It also shows the percentage of all transactions mediated and automated. During this period, the percentage of transactions handled by automated systems has grown from a fourth to over a third of all remote borrowing requests.

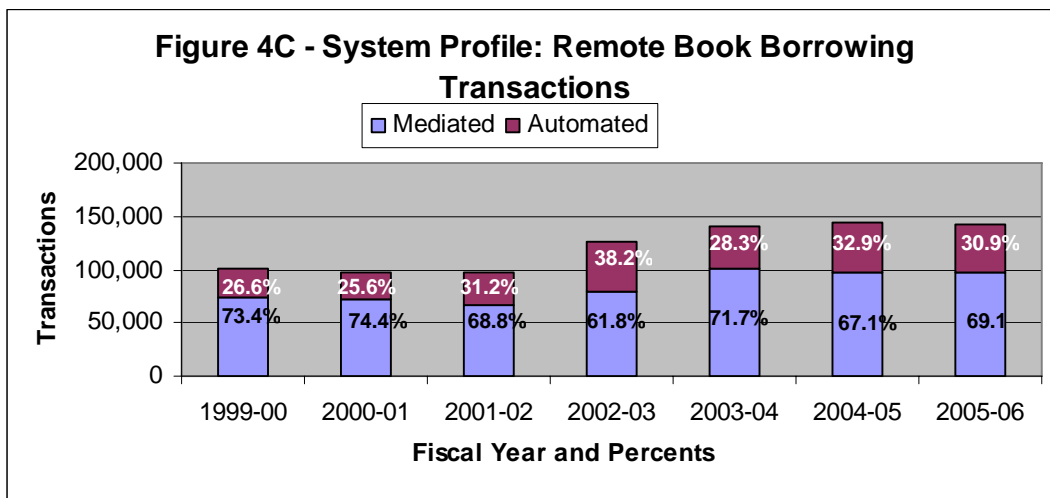
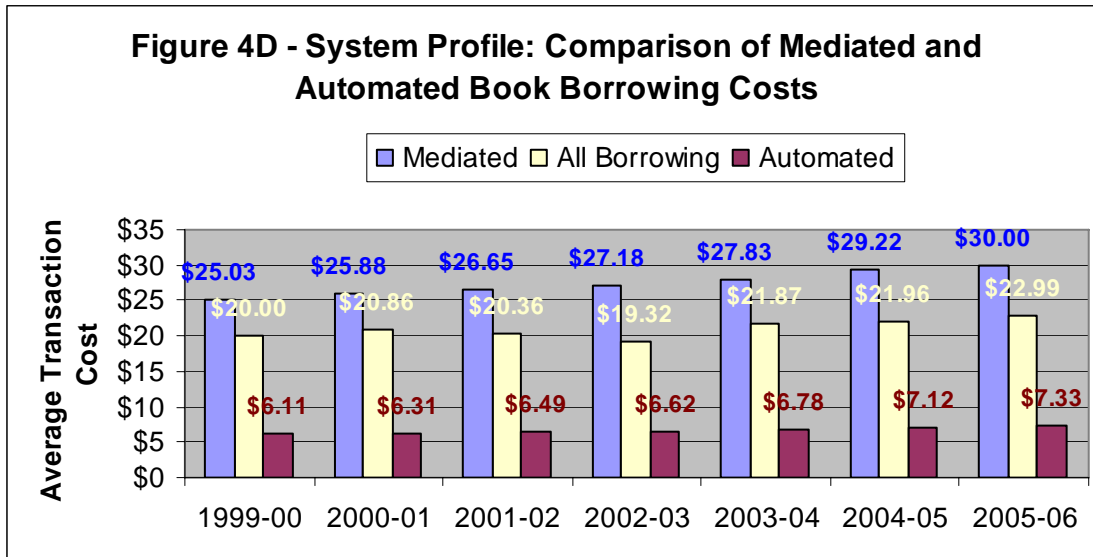
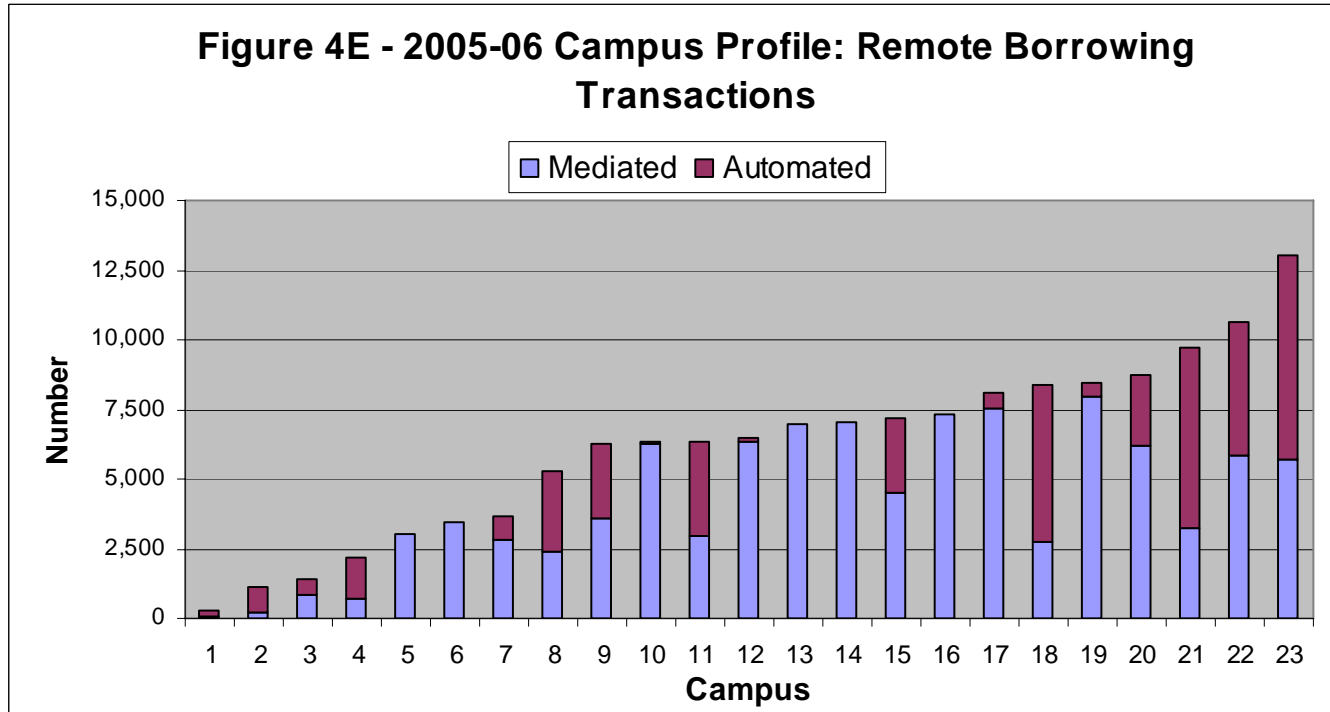


Figure 4D shows the impact of automating borrowing transactions on the cost of providing interlibrary loan services. The average cost of processing such requests varies with the ratio of automated to mediated transactions: the greater the proportion of automated transactions, the lower the average cost for interlibrary loans. The rise in average cost per transaction over the years reflects general inflationary trends.



Campuses vary greatly in the volume of remote borrowing that occurs and in the percentage of such requests that are handled by automated systems, as depicted in Figure 4E.



The Student Information Competence Project

Since the mid-1990s, the CSU has sought to define and promote the development of students' ability to use digital information processing and communication tools that have become the standard means of accomplishing work in the

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knowledge economy. Previous editions of *Measures of Success* have highlighted steps the CSU has taken to develop instructional tools and strategies that campuses can use to measure and to develop these competencies.

In 2003–04 the CSU took the lead in forming a partnership with the Educational Testing Service (ETS) and several other colleges and universities to develop a Web-based tool that assesses information and communication technology (ICT) literacy. Participating institutions include UCLA, the University of Washington, and the University of Texas System. ICT proficiency is the ability to use digital technology, communication tools, and/or networks appropriately. It includes the ability to define, access, evaluate, integrate, manage, create, and communicate information ethically and responsibly.

The first large-scale administration of the assessment tool occurred in spring 2005. More than 3,300 CSU students participated, and the results, while preliminary, strongly suggest that much work needs to be done to improve skill levels for success in the university and in the workplace. The testing instrument is still being refined and the final version will be available in early 2006.

In the 2006 Campus Computing Survey respondents were asked if their campus had a computer instruction, computer competency, technology literacy, or information literacy requirement for all undergraduates. The survey showed that 47 percent of CSU campuses had such a requirement compared to 53 percent among public Master's I institutions nationally.

In 2005-2006 eighteen grants were awarded to CSU campus faculty and librarians to explore the use of the Information and Communication Technology Literacy Assessment as a tool for assessing entering students' information and technology literacy and for integrating information literacy into first-year experience programs. The campus grants totaled \$258,000 and were awarded to successful respondents to a system wide request for proposals issued in March. Several of the funded projects will involve longitudinal assessment studies to be conducted over a two-year period. A listing of the projects can be found at <http://www.calstate.edu/ls/infocomm.shtml>.

Multimedia Repository

The goal of the Multimedia Repository Initiative is to provide electronic access to instructional resources not normally available in the academic market. The initiative focuses on the conversion into digital form of images, audio, and video materials, and on the storage of interactive learning tools that use computing technologies to model complex processes.

For many years, individual CSU campuses and the CSU system have provided financial support for special projects designed to improve learning and teaching in various disciplinary fields. One consequence of these many projects is the accumulation of large collections of non-proprietary instructional materials accessible only to the faculty and students on the campuses where the project activity occurred. Impediments to shared use of these resources include the high costs of duplicating, warehousing, distributing, and (in some cases) updating them. Ignorance of the existence of the resources and the technical incompatibility of equipment and software are major barriers to resource sharing among colleagues and across campuses. Finally, even if such collections could be distributed at a reasonable cost, there would be little demand for them absent an understanding of how to use them effectively.

The emergence of digital technologies and the ubiquitous availability of high-speed telecommunications networks offer practical, affordable ways to remove these barriers. Once images, video, and audio recordings are converted into digital form, resources not restricted by copyright protection can be shared and used at low cost by anyone connected to a high-speed network. The ITS Multimedia Repository Initiative was launched to make non-proprietary multimedia resources available to the broader CSU community.

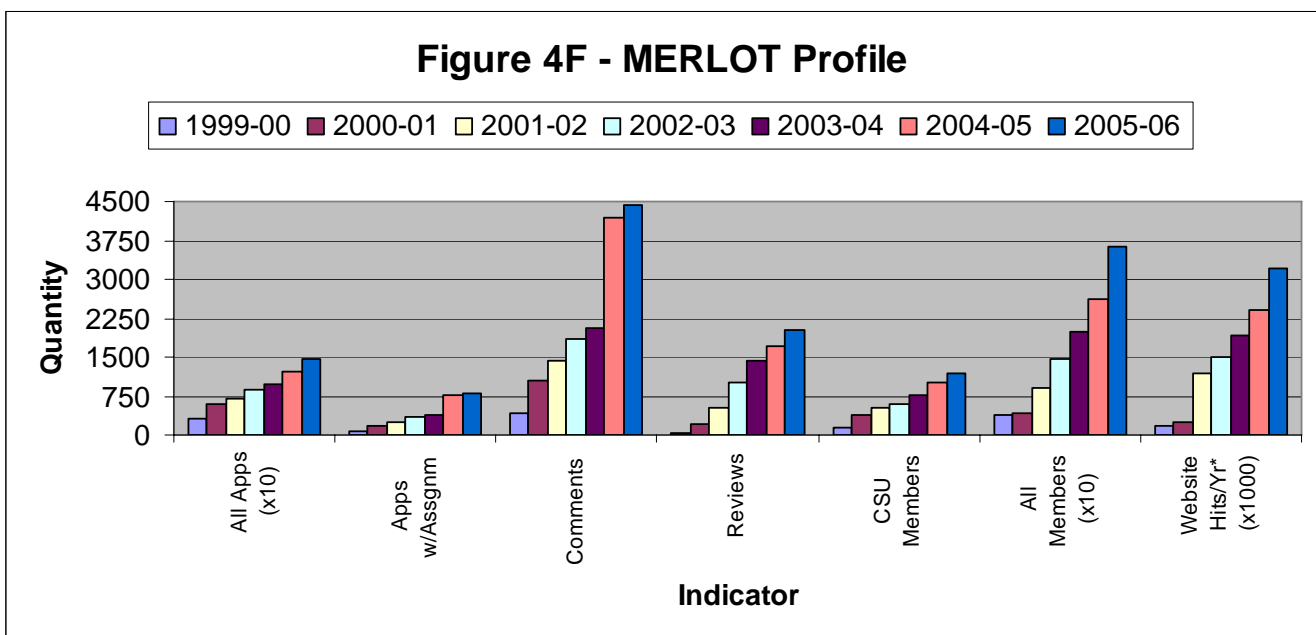
With ITS support, the CSU Center for Distributed Learning (CDL) was established on the Sonoma campus in March 1997. Its mission is to create, store, and distribute Web-based multimedia instructional materials and information of academic value to CSU faculty and students. The CDL has supported two projects in support of the distribution portion of its mission: the Multimedia Educational Resource for Learning and Online Teaching (MERLOT) and the IMAGE project.

Multimedia Educational Resource for Learning and Online Teaching (MERLOT)

MERLOT (www.merlot.org) has grown in quantity and quality in each of the six years since the first *Measures of Success* report was published in November 2000 (Figure 4F). The number of learning applications available by the end of FY 2004–05 was 12,108, exceeding the 10,000 targeted for 2008. In 1999, the number of learning applications with sample student assignments was targeted to reach 500 by 2002. By the end of FY 2004–05, that target had been exceeded by half (780). As the chart below shows, the quantity of user comments and faculty reviews also continues to increase. Comments and reviews provide pedagogical assistance similar to sample assignments.

Individual memberships in the MERLOT community increased to more than 36,000 in 2005-06, a 38 percent gain percent over the previous year. CSU membership increased from 1,009 to 1,197(19% increase). The number of unique CSU users of MERLOT increased 31%. MERLOT Website hits, a good indicator of interest in the repository, almost doubled from the previous year, reaching an average of 3.2 million in 2005-06.

Currently, 23 institutions and systems of higher education are paying members of the MERLOT project. Alliances established with more than a dozen professional and disciplinary organizations serve to increase the quantity and quality of materials available to faculty and students. MERLOT has established partnerships with commercial organizations to support its programs and to strengthen its financial base. MERLOT services can now be integrating into all major Learning Management Systems (e.g. Blackboard, WebCT, Desire2Learn, Angel, Moodle, Epsilon), making access to online learning materials even easier for faculty and students. Technical innovations facilitate efforts to enlarge and improve the repository. MERLOT now has the capability to search international digital libraries of learning objects from Japan, Australia, Canada, and the European Union (see <http://fedsearch.merlot.org/search.jsp>), digital libraries from professional societies (IEEE Computer Society, American Association for Physics Teacher) and from other institutions (University of North Carolina’s Professional Development Center). Collectively, this global consortium brings about 100,000 online learning resources to the fingertips of CSU faculty, staff, and students.



* The definition of Website "hits" and "visits" has changed over the years, as have the technical means for tracking them. The data presented here are a best effort to indicate changes in the volume of requests for information from the MERLOT Website.

MERLOT Faculty Development Activities

Creation of more effective and less costly means to develop faculty skills for using online curricular resources effectively is a critical factor in realizing the benefits of these collections. MERLOT supports a three-tiered professional development program for faculty:

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- Tier one: Campus faculty development personnel receive training on strategies for teaching faculty how to use MERLOT resources. The goal of this “train-the-trainer” approach is to produce local and sustained support for faculty development within campus cultures.
- Tier two: Professional development programs are delivered directly to faculty at the MERLOT International Conference as well as national and regional conferences sponsored by discipline-based professional societies.
- Tier three: Both faculty and faculty development personnel use MERLOT’s digital library of materials on how to teach with technology to develop and deliver self-directed or formal professional development programs.

In addition to these faculty development initiatives, MERLOT sponsors a professional recognition program. To recognize outstanding authoring of online learning resources, MERLOT provides the Editor’s Choice and Classics Awards. To recognize faculty’s contributions to developing and evaluating the shared collection of online resource, MERLOT provides the Volunteer of the Year Awards, the Distinguished Service Award, and new Community Contributors program which reinforces increasing participation in building MERLOT’s collection. MERLOT also maintains a Website and a set of management tools (“Personal Collections”) through which faculty can build electronic portfolios of learning objects together with information about how to use them.

The community of MERLOT users continues to expand. Formal alliances exist with nationally recognized faculty development organizations such as the EDUCAUSE Learning Initiative, the TLT (Teaching and Learning with Technology) group, the New Media Consortium, and the Carnegie Foundation for the Advancement of Teaching.

The IMAGE Project

The IMAGE project (<http://image.calstate.edu>) provides online access to digitized collections of copyright-cleared images for CSU faculty, students, and staff. With the addition of 9,000 new images this year, IMAGE provides electronic access to a total of over 54,000 images of art, architecture, science, technology, and culture images from around the globe. IMAGE now draws contributions from outside the CSU, with over 4,500 images donated from other universities or individuals. Over 530 portfolios of images with accompanying data enhance access to, and the instructional value of, visual resources in fields such as geography, science and technology, history, music, dance, and commerce. This year, 24 portfolios specifically designed to California Educational Standards were added. Over 200 faculty have requested accounts in order to create their own portfolios and to contribute images to the collection. Use of images in the collection increased significantly again this year, with a peak of over 21,000 unique users and 1.2 million hits in one month.

In 2005-06 the IMAGE Project team made presentations within the CSU and at conferences of professional association to raise awareness of the availability of the repository among faculty and staff, and to develop support materials to assist faculty and staff in effectively utilizing the IMAGE database.

A library intern program initiated by the Image Project Director the previous year was continued, with 18 library school interns placed at 5 campuses to support image processing, cataloging, and usage.

As a further step toward expanding access to learning resources, the IMAGE Project in 2005-06 collaborated with two other national projects to provide tools to faculty for presenting and authoring materials that use images. Almagest is an open-source image presentation program and Pachyderm is an open-source interactive-media authoring tool. IMAGE project staff provided expertise to these projects on the use of images in the teaching-learning process, and also provided a subset of images to these projects as a way to seed their usage. They also collaborated to create linkages between these projects that would make the full IMAGE database available to CSU users.

Digital Marketplace Initiative

As noted the university has a growing need to acquire, share, market, and distribute commercial and non-commercial digital learning content and resources within the institutional environment. While MERLOT focuses on non-commercial resources, the goal of the Digital Marketplace (DMP) initiative is to enable the cost-effective distribution of commercial network-based digital goods and resources in support of CSU academic programs.

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The objectives of the DMP are to:

- act as a collaborative function to provide leverage with vendors for campus academic technology products and services, resulting in reduced costs through volume purchases.
- provide a one-stop, web-based service for the selection, contribution, sharing, approval, procurement and distribution of no-cost and cost-based academic technology products and services.
- manage the digital rights and use of academic technologies reliably and securely.

Throughout 2005-06 work has progressed on technical requirements and collaboration with publishers.

Distributed Learning and Teaching

The Distributed Learning and Teaching Initiative shares the goal of providing affordable access to high-quality instructional resources with the academic initiatives described above. It focuses on the collaborative development and use of technology-mediated teaching and learning applications that promote active learning and that can be employed in “distributed learning environments.”

The term “distributed learning” refers to instruction that connects teachers and learners, usually via the Internet, with each other and with resources physically located at multiple sites. “Distributed learning” differs from “distance education” as traditionally understood. The former places greater reliance on asynchronous interactions through use of the Internet and Web technologies, the latter emphasizes televised instruction or in-person instruction at off-campus sites.

Distributed learning techniques and technologies are currently most often employed as extensions to or partial replacements for traditional instruction: i.e., some portion of the instructional activity for a class takes place over the Internet rather than in a classroom. A combination of traditional, scheduled, face-to-face instruction and some portion of class work conducted online is often referred to as a “hybrid” or “blended” instructional model. Courses taught completely online i.e., with no or very limited face-to-face contact between students and instructors and among peers are uncommon in the CSU. The number of both “hybrid” and wholly online courses offered by CSU campuses is growing, however, and some degree programs are now offered only online. Information about the amount of online and televised learning occurring in the CSU can be found in the section of this report focusing on Master Plan Goals.

Effective application of distributed learning techniques is strategically important to the CSU because of its potential to expand the capacity of existing physical instructional facilities. If a class that normally uses a classroom three times a week meets in the room only two times, or not at all, that space can be reassigned for other uses. In the 2006 survey two CSU campuses reported taking the first steps toward retrieving classroom space made available as a result of hybrid instruction.

Distributed Learning and Teaching was incorporated into the first wave of ITS initiatives to create precisely the kind of enriching, engaging learning activities that are needed to build faculty support for online instruction. Responsibility for implementing the initiative was assigned to the CSU Center for Distributed Learning (CDL). The main focus is on the development of computer-based applications that require the active engagement of students of the kind that occurs in laboratory settings. In addition to producing virtual laboratory simulations, the CDL supports programs and activities to expand the community of simulation users and to build local campus capacity for developing technology-mediated instructional materials.

Web-Based Laboratory Simulations

To date, CSU faculty working together with CDL support have produced seventeen Web-based virtual laboratory simulations applicable for instructional use in 18 curricular fields. No new simulation development activities occurred in 2005-06 due to a refocusing of resources in support of projects within the current Academic Technology Initiatives.

Experiments using these online laboratories are similar to those conducted in physical laboratories in an essential respect: the outcome of the experiment depends entirely upon the input of the person conducting it. These simulations enable the user to visualize consequences—generational changes, for example—in a way not often possible in traditional laboratories. The complexity of the modeling employed in the CDL laboratory simulations is powerful

enough to support experiments ranging from the introductory to the graduate level. Detailed information about applications as well as other programs and activities sponsored by the CDL can be viewed on the CDL Website: <http://www.cdl.edu>.

Figure 4G summarizes changes in the use of a sample set of laboratory simulations. The frequency of individual virtual laboratory uses appears to have leveled off from the level reported for 2001–2002. The volume of actual use is masked, however, by institutional subscriptions (for entire series of applications) or site licenses (for multiple application use), which permit multiple uses not monitored by the tracking system. In addition, the availability of broadband network connection to the home enables students to run simulations from off campus, thus contributing to reductions in the number of uses associated with specific campuses.

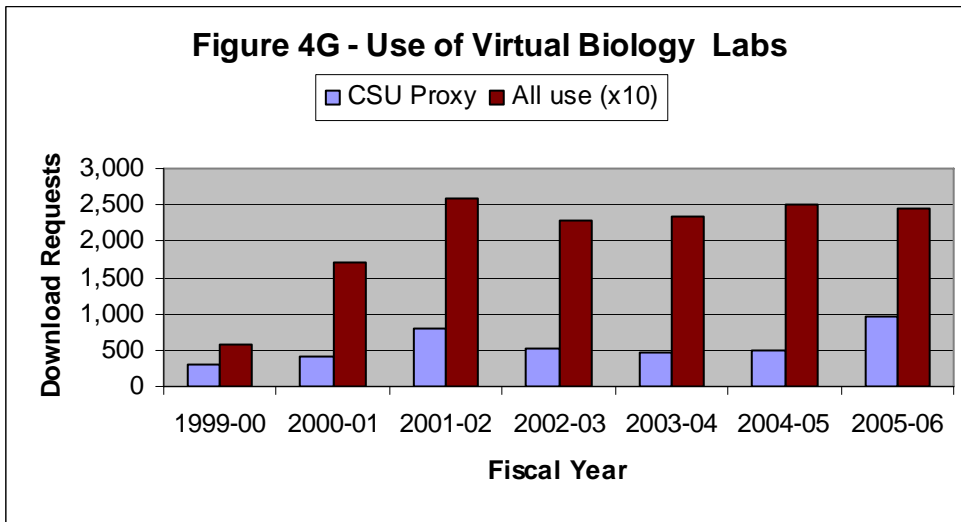
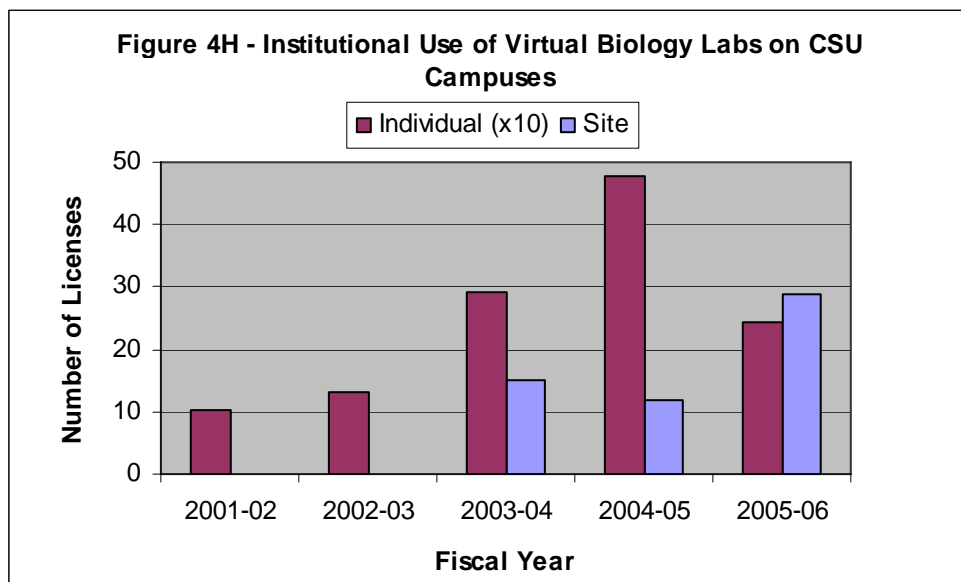


Figure 4H shows changes in the institutional use of a sample laboratory simulation on CSU campuses. Increases in the purchase of individual and site licenses by institutions indicate growing recognition of the pedagogical effectiveness, as well as the cost effectiveness, of Web-based computer simulations. Site licenses enable any number of individuals to run multiple simulations. The decline in individual licenses is thus offset by the sharp increase in number of site licenses.



Web-Based Authoring Tools

As an additional strategy for making Web-based learning content available, CDL has undertaken development of Web-based authoring tools to support faculty in creating media-rich, interactive learning materials that are delivered over the Web. The Video Oriented Instructional Lesson Authoring tool (VOILA) was developed for the LightBridge teacher education project: <http://lightbridge.sonoma.edu>. It has been used to develop over 40 Web-accessible examples of classroom practice.

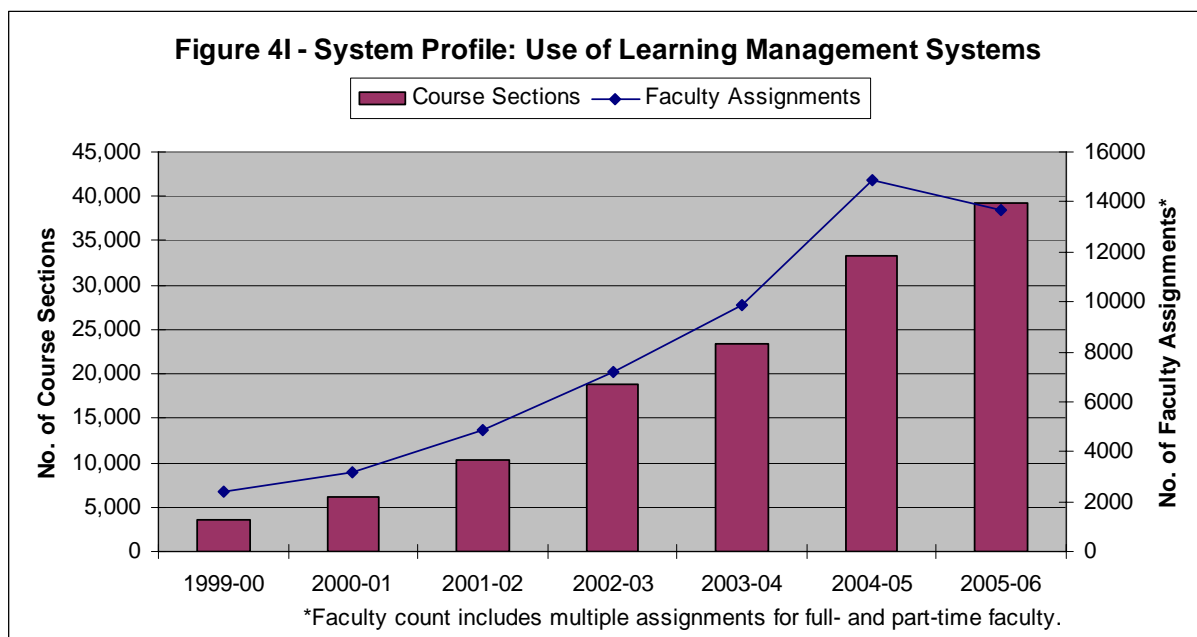
This year, CDL completed the first release of the Pachyderm 2.0 open-source authoring tool <<http://www.pachyderm.cdl.edu>>. Created in collaboration with five other higher education institutions and five museums, and supported by a grant from the Institute of Museums and Library Services (IMLS), Pachyderm 2.0 provides easy to use web based authoring for faculty and students. This Web-form authoring environment simplifies creation of Web content for non-technical faculty and students. Pachyderm’s templates provide sound information design, navigation, and interaction design to support authors in creating effective web-delivered rich-media content; its asset repository allows authors to build a collection of digital assets and to share those assets with other others. CDL will be making Pachyderm 2.0 available to CSU faculty and campuses in 2006-2007.

Web-Based and Web-Assisted Instruction in the CSU

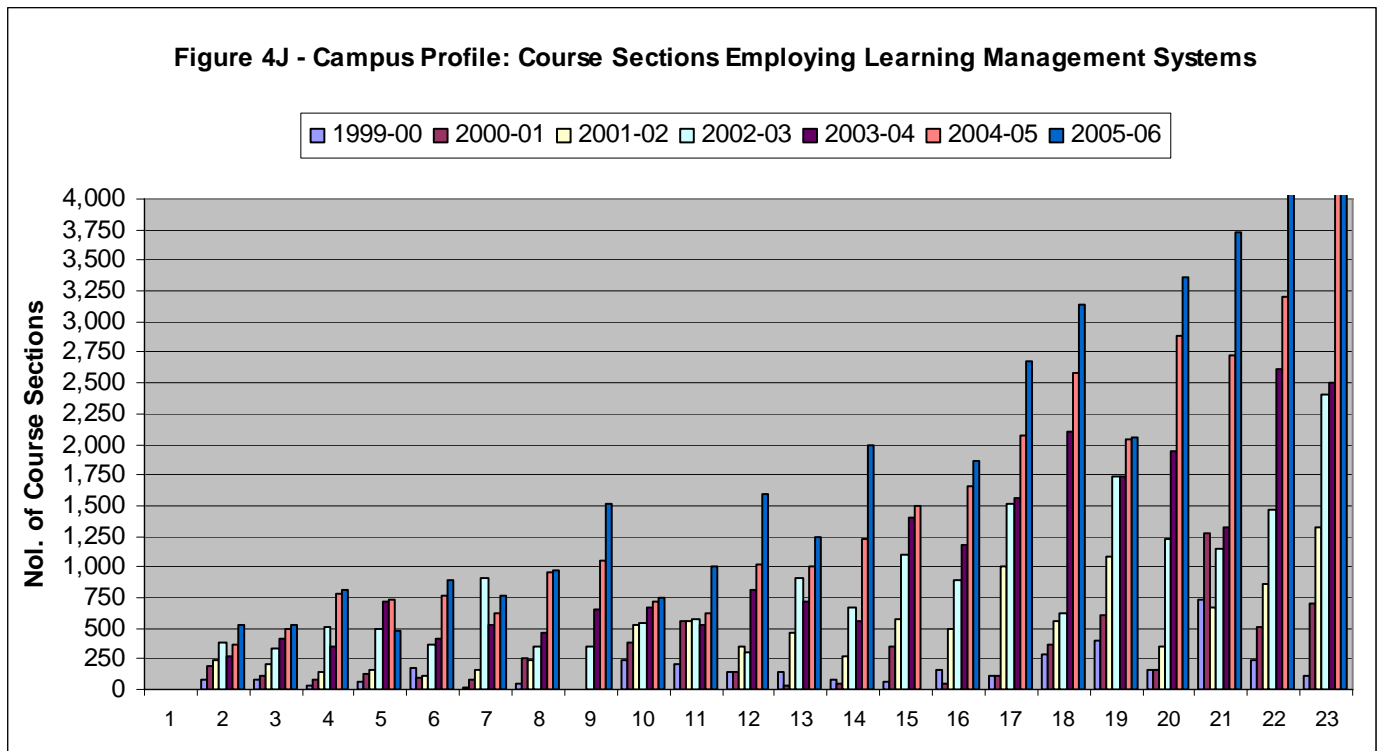
Interactive laboratory simulations provide content and a student-centered approach to learning. They represent the cutting edge of instructional technology, although their use constitutes a small fraction of Web-based learning activity in general. The most commonly used application is a learning management system (LMS) designed to facilitate conventional teaching and learning in the Web environment. In this year’s survey campuses report increasing interest in the instructional use of electronic portfolios (ePortfolios) and Web conferencing.

Learning Management Systems

Learning management systems provide Web tools for connecting students to content sources of various kinds, supporting communication between members of a class, delivering and publishing student work (in various media), and testing and counseling. Figure 4I depicts the frequency of use of LMS on CSU campuses. The number of classes (course sections) supported by Web-based LMS in the CSU grew from 2.8 percent of all course sections offered in 1999–2000 to almost 30 percent in 2005-06. The apparent decline in the number of faculty assignments in 2005-06 may reflect an increase in student-faculty ratio, but may also be in whole or in part a result of changes in the way these information systems report usage data.



On some CSU campuses, a learning management system is employed for every course section. Figure 4J illustrates changes in the number of course sections offered by the individual campuses that employ learning management systems. Individual campus patterns closely parallel the system trend displayed above.



The growing adoption of learning management systems is an indicator of faculty interest in Web and Internet technologies. According to the 2006 biennial faculty survey, over half of the classes faculty have taught in the past two years employ a learning management system. Asked how satisfied they were with use of the LMS for teaching and learning purposes, 2,226 faculty respondents gave it a mean rating of 6.52 on a zero-to-ten scale where zero equals not at all satisfied and ten equals completely satisfied. (Since questions about LMS were not asked in previous surveys, no longitudinal data are available.)

LMS license and support was identified in the CSU funding gap study as one of the core academic technology needs. The study found that the CSU has a one-time shortfall of \$1.4 million and an annual gap of \$2.7 million in this important category. In 2005 the California State University embarked on a process of strategic planning for LMS such as Blackboard, WebCT, Moodle and Sakai. The process was designed to help CSU campuses to work together to map and plan for the future of e-learning in the CSU. The goals of the strategic planning process are twofold: to develop a shared vision of LMS use within the CSU and opportunities for collaboration in meeting that vision and to support campus strategic planning efforts in providing the infrastructure and services to support e-learning.

Under the strategic planning process progress has been made in facilitating and increasing campus collaboration especially in the areas around vendor management, integration of the LMS with other enterprise systems (such as the Student Information System) and in ensuring that LMSs conform to accessibility standards.

Website: http://www.calstate.edu/ats/elearning_framework/lms.shtml

ePortfolios

Added to the campus technology survey this year were questions about electronic portfolios and web conferencing. Fourteen campuses said that they supported the use of ePortfolios, primarily in support of teaching and learning or academic advisement. On three campuses the electronic portfolio application has been integrated with a learning management system.

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The description of ePortfolios below is helpful for understanding the rapid expansion of their use in educational institutions:

An e-Portfolio is a digitized collection of artifacts including demonstrations, resources, and accomplishments that represent an individual, group, or institution. This collection can be comprised of text based, graphic, multimedia elements archived on a Web site or on electronic media such as CD-ROM or DVD. It may be contained in, or part of, an electronic database such as a CMS/LMS or student information system. An e-Portfolio is more than a simple collection, it can also serve as an administrative tool to manage and organize work created with different applications and tools. A key component of e-Portfolio systems is to encourage personal reflection and often to involve the exchange of ideas and feedback. (John Ittleson and George Lorenzo in a paper for Educause)

Web Conferencing

As broadband connection to the Internet becomes the norm, it is increasingly easy to see as well as talk to others at locations of their individual choice. In marked contrast to videoconferencing with its exacting demands for special facilities, technical support and its high line charges, Web conferencing technology allows typical Internet users to meet virtually from anyplace with a broadband connection. Wikipedia offers the following description:

“In a web conference, each participant sits at his or her own computer, and is connected to other participants via the internet. The most basic feature of a web conference is screen sharing, whereby conference participants see whatever is on the presenter's screen. Usually this is accompanied by voice communication, either through a traditional telephone conference, or through Voice over Internet Protocol, although sometimes text chat is used in place of voice.”

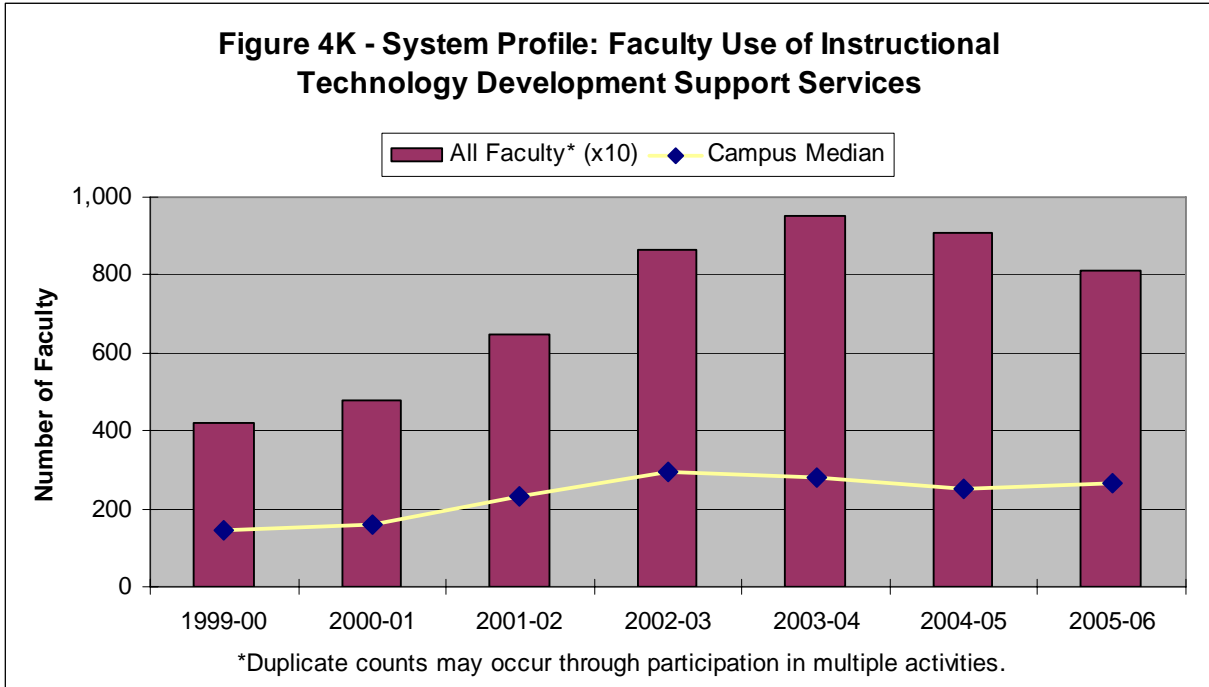
The advantages of virtual meeting capability to facilitate collaborative learning and research are obvious. The role of web conferencing in teaching and learning will no doubt become routine in future years, as has occurred with many other information technology applications. When the first faculty technology survey in this series was administered six years ago, for example, about six out of ten faculty required students to use computers in connection with their coursework. According to the 2006 survey, nine out of ten, across all disciplinary fields, now do so. Eight out of ten faculty now require students to use email, up 20 percent since 2000. Required use of presentation software is up 30 percent. Appendix C presents a summary of the results of the 2006 faculty technology survey and highlights trends in faculty required use of computing and network technologies and applications.

Campus Centers for Instructional Technology Development

Decisions about what to teach and how to teach it are the prerogative of faculty members. Acceptance of distributed learning technologies depends on their adoption by faculty. The Integrated Technology Strategy encouraged each campus to establish a service or center where faculty can learn about the latest uses of instructional technology in their fields and work together with their colleagues and technical staff to produce learning materials for local use. The systemwide Center for Distributed Learning was charged with supporting this effort by demonstrating best practices in the use of new technologies and by serving as a professional development resource for all of the campuses in the system.

In the 2006 survey, 21 CSU campuses reported that they have central instructional technology development centers to assist faculty in creating and using technology-mediated teaching and learning resources. In 1999–2000, only five campuses had such centers. Thirteen campuses had both a campus-wide center and one or more divisional centers in 2005-06. Almost all of the campuses continue to provide incentives to individual faculty in the form of release time or compensation for time spent in excess of their normal workload.

Figure 4K shows continuing strong faculty interest in the instructional technology services available through these centers. Demand for instructional technology development services varies greatly across the campuses, from less than 20 participants (or participations, allowing for duplicative counts) per year at the low end to over 1000 at the high end.



Campus investments in the development of technology-mediated instructional materials are of two types: personnel support, as reflected in the number of full-time equivalent positions for faculty and staff, and direct support, or dollars expended to purchase materials and services.

Figure 4L profiles the median level of campus support for instructional technology development as reflected in the assignment of personnel positions. As one would expect, the variation in the level of faculty participation noted above is mirrored in great differences in the number of personnel positions campuses invested to support faculty engagement in instructional technology activities. Five campuses report that they assigned no faculty positions to these efforts in 2005-06, while two campuses dedicated more than ten.

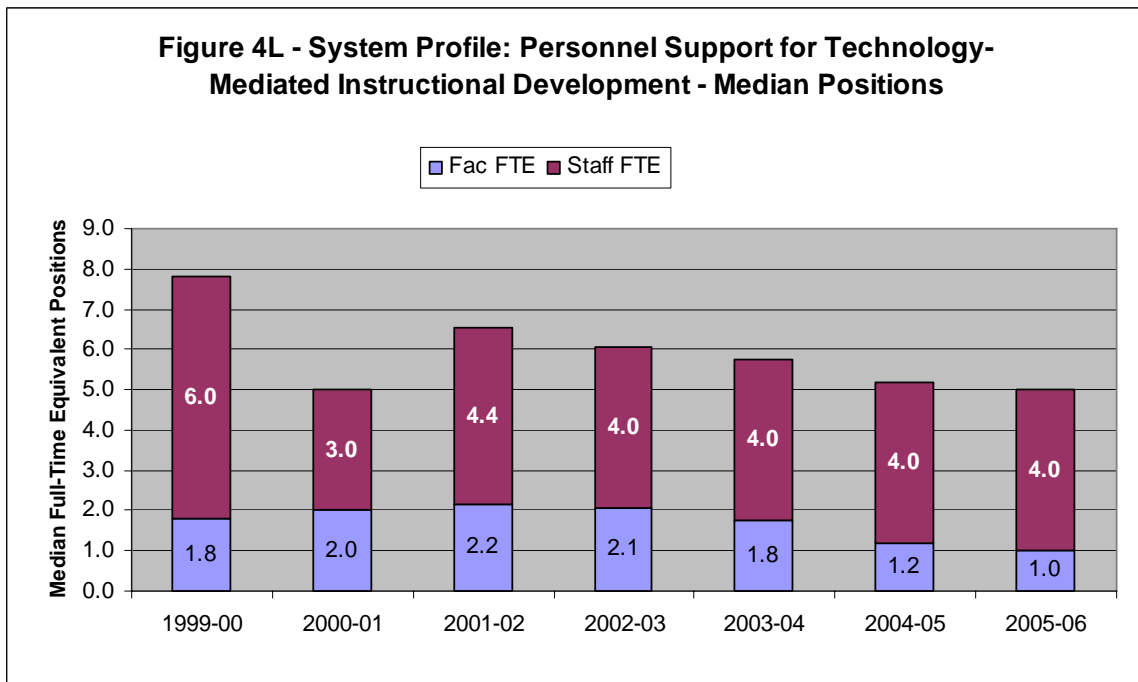
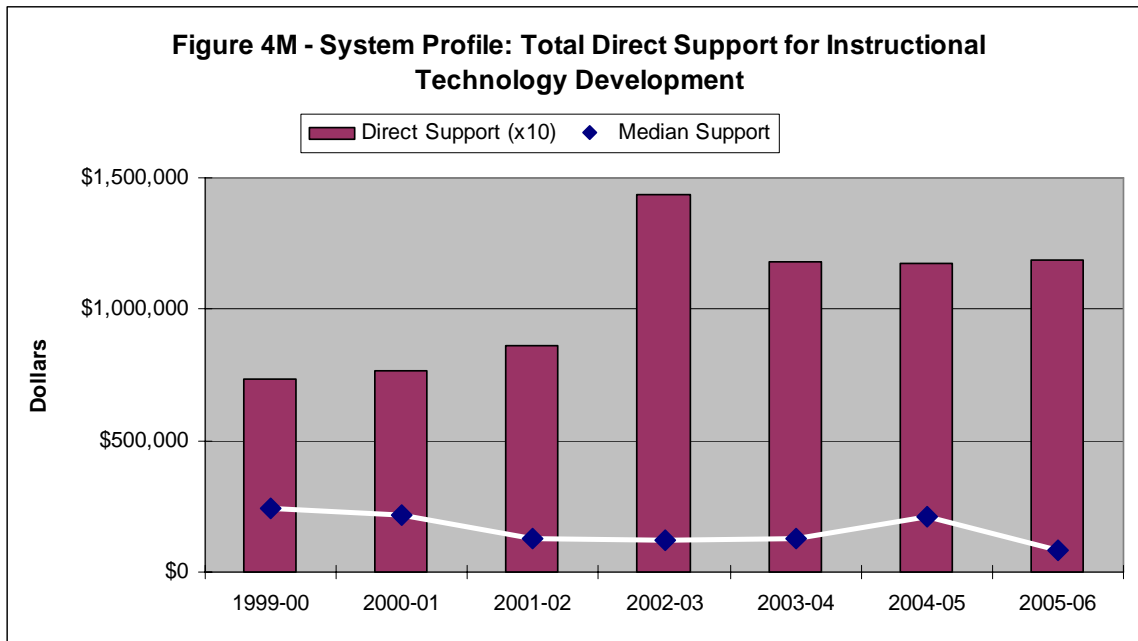


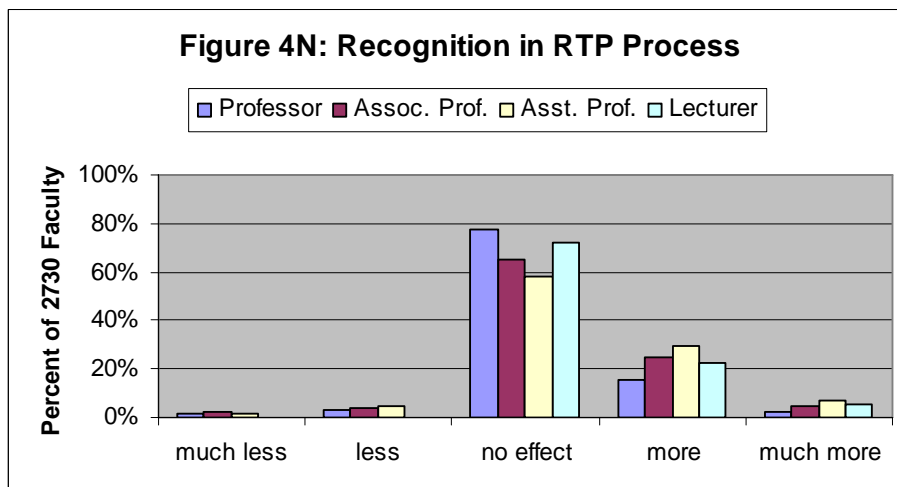
Figure 4M shows changes in the level of direct support for instructional technology development. Strategies for funding instructional technology development vary greatly among campuses. Some rely extensively on services provided by staff and/or student assistants. Others focus on enabling faculty to devote more time to such activities. Dollars received from non-state sources are a major factor governing the total level of center support. The wide gap between total spending and the median is often attributable to the receipt by a single campus of a very large grant of non-state funds.



Faculty Motivations and Barriers

According to the 2006 survey, the vast majority of CSU faculty (80 percent or more) believes that information technology has a positive effect on the instructional process. Only in the area of academic fraud is the impact viewed as negative.

Seventy-five percent of all full-time faculty said that recognition of their involvement with technology for purposes of retention, tenure or promotion has little or no effect on decisions about such involvement. Not surprisingly, RTP considerations were of least interest to professors and lecturers, but only of marginally greater interest to associate and assistant professors (Figure 4N). In addition, efforts of the academic department or administration to promote or restrict the use of technology also have little motivating effect.



MOS VIII: Academic Initiatives

Six out of ten faculty said the time required to learn new technologies is not a barrier to using new technologies. The time-saving benefits of technology and perceptions of improved quality in learning outcomes were cited by about half of the respondents as making the choice to use technology “more likely” and one out of five said these factors would make the choice “much more likely”.

Easy access to technology-enhanced facilities (such as “smart classroom”) made the choice of using technology “more likely” for almost half of the respondents and “much more likely” for more than a quarter. Six of ten faculty said that availability of technical support to facilitate use of technology would make them “more likely” or “much more likely” to use technology in their teaching. Four out of ten said access to help from persons with expertise in creating technology-mediated instructional resources and environments would be a positive motivating factor. Six out of ten respondents said that requests from their students or the positive experience of colleagues would make them “more likely” or “much more likely” to use technology.

National Comparisons

The Educause Core Data Service (CDS) survey asked participating institutions to describe the nature of campus support for faculty use of technology in teaching and learning. According to the 2006 CDS survey, CSU campuses consistently fall behind comparable institutions nationally on deployment of most types of classroom technology such as wireless internet connectivity, LCD projectors, computers, smart boards, and cameras. However, CSU campuses are generally even with national norms in the deployment of various learning technologies such as learning management systems, e-learning, e-portfolios, hybrid courses, blogs, and wikis. The CSU is ahead in the use of learning objects and in information literacy requirements. Other comparative evidence on these issues can be found in the annual Campus Computing Survey. In 2005/06, the CSU was well ahead of comparative institutions (i.e., Carnegie Public Masters I) in workstation refresh cycles for faculty and staff. On the other hand, CSU campuses are slightly less likely to have strategic plans for IT and much less likely to have formal plans for integrating technology into the curriculum.

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