STANDARD III: RESOURCES

C. Technology Resources

Technology resources are used to support student learning programs and services and to improve institutional effectiveness. Technology planning is integrated with institutional planning.

1. ***The institution assures that any technology support it provides is designed to meet the needs of learning, teaching, college-wide communications, research, and operational systems.***

Descriptive Summary

The college utilizes several committees to identify its technology needs. There are standing technology committees whose membership consists of faculty, staff, and administrators. The El Camino Technology Committee has two subcommittees: the Academic Technology Committee and an Administrative Technology Committee. The Technology Committee exercises overall direction, but the subcommittees have considerable autonomy to raise issues, conduct studies, and make recommendations. The Academic Technology Committee makes recommendations about technologies used by students and faculty in the instructional process. It sends its recommendations to the technology committee for discussion.[1] The Administrative Technology Committee makes recommendations about the district's Enterprise Resource Planning tool. The Technology Committee meets once a month during the academic year as do the two subcommittees. The committees prepare an annual update of the technology plan that integrates with the educational master plans and the facilities plans.[2] In 2007, the administration established the Technology Committee as a subcommittee of the Planning and Budget Committee. The Planning and Budget Committee now reviews recommendations from the Technology Committee and forwards them to the cabinet for final disposition.[3]

In addition to the technology committees, the individual academic divisions use their own technology committees to identify their technology needs during the annual instructional-equipment-library-materials-block-grant cycle. The Vice President of Academic Affairs reviews these requests in consultation with the Department of Information Technology Services.

In Fall 2006, a subcommittee of the Technology Committee drafted the technology plan update. This plan contained recommendations for 12 projects to be completed during 2007-2008.[4] The plan articulated the first end-to-end renovation of the El Camino College data infrastructure, as well as a substantial upgrade in the hardware supporting Datatel Colleague (the college's Enterprise Resource Planning tool), replacement of the ISDN/Centrex telephone system with an Internet Protocol (IP) telephony system, an upgrade of the academic computer laboratories, and an IP-based security system. In the spring of 2007, the administration approved the projects, at an estimated cost of $3,500,000.[5]

Technology planning at Compton Center through the technology committee process was interrupted at the time of the loss of accreditation and implementation of the partnership. Since

then, planning for and prioritizing technology needs was handled by means of close collaboration between the El Camino and Compton ITS staffs and Center ITS management with other center managers, in particular those of Facilities/Maintenance and Operations, Academic Affairs, and Student Services. Center managers identified needs and priorities in consultation with supervisor, staff, and faculty in their areas. The Center Technology Committee is being reactivated in Spring 2008.

The college maintains a close and collaborative relationship between Institutional Research (IR) and Information Technology Services (ITS). ITS ensures access to critical data sources for research, facilitates electronic manipulation and publication of data, and provides technical support when needed. Technological support of research is evaluated in three ways: 1) through information feedback directed both to ITS and IR, 2) through formal evaluation of ITS services, and 3) through formal evaluation of IR services.[6]

An example of how ITS and IR support each other's goals is the development of a decision-support data warehouse. The campus and IR needed a way to access a large amount of data easily and to be able to drill down to smaller units (e.g., division, department, course data). The existing software (Cognos) was not satisfactory, and ITS responded by investigating other options. Within one year, a new system (DecisionCentric) began to be developed. It had the advantages of the old system while providing much more access and facility for IR data reporting. ITS deployed the new system in Spring 2007.

In 2005, the college launched a comprehensive reconstruction of its website.[7] The college appointed a task force to work with the Office of Public Information to bring new functionality to this space.[8] The work occurred in conjunction with the rollout of OmniUpdate, a tool that enables staff and faculty to keep their web pages current, and MyECC, the college's new student portal.[9] The task force drafted the goals and objectives of the re-design effort.[10] The college utilized a series of focus groups composed of students, staff, and members of the community to gather feedback about the new site. MyECC provides links to a wide range of online student services including registering, adding and dropping classes, and paying for fees and parking stickers.[11] Since going live in Spring 2006, there has been a steady increase in the number of students using these online services. A comparison of the number of students using the site in the Fall 2006 registration period with the number of student using it in the Fall 2007 registration period shows a 30% increase.[12]

The college's academic technology committee participates in determining software and hardware needs. In 2006-2007, the committee prepared a prioritized inventory of ongoing academic software needs and presented it to the college technology committee.[13] The college created a special fund that renewed the licenses of all of the high priority needs.[14] The Department of Information Technology Services created a portal-based online database and calendar. The calendar prompts the Director of Information Technology Services when software and hardware licenses and agreements are about to expire.[15] The database shows all licenses and agreements of record.[16]

In Fall 2005, the Academic Technology Committee prepared and distributed a faculty survey designed to determine who among the faculty had the greatest need for newer laptops than those

that had been issued in 1999. The survey results indicated that a third of the full-time faculty wanted an upgraded laptop. The administration reviewed the situation and decided that there was an urgent need to migrate away from Windows 98, the operating system installed on most of the faculty laptops. Consequently, the district decided to retire these laptops and replace them with new laptops capable of running Windows XP Service Pack 2, the current college-supported operating system.[17, 18]

In 2006, the college conducted a comprehensive inventory of its academic computer laboratories that addressed issues related to increases over time in the number of labs, how the labs were deployed (type of student access, dedicated and general), the college's ability to keep the facilities current, how the labs contributed to the college's FTES, and the adequacy of technical support. The data resulted in a report of how the facilities were being used, the FTES generated, the utilization schedule, the age of the computers, the software being run, and the support staff workload. In its 2002 accreditation self study, the college reported 30 labs housing 1073 computers. At that time the college identified three types of labs: class-use labs that the divisions scheduled and which generated FTES; mixed-purpose labs, such as writing and reading labs, that supported instructional activities but did not generate FTES; and open-access labs intended for general access and student drop-in use. A comparison of the computer labs that were reported in 2002 with those that were documented in the 2006 inventory showed no real change in the number of locations (one room was divided). The number of computer stations increased by 69. However, the report also showed that the FTES-generating class-use labs were

Comparison of Computer Labs 2002 & 2006

Types of Academic Labs	**2002**		**2006**	
	Labs	**PCs**	**Labs**	**PCs**
Class Use Labs – Classroom with computers. Division scheduled, classes scheduled for a semester, generate FTES, instructor present.	17	511	17	563
Mixed Purpose Labs – support instructional activities, discipline specific, no FTES generated	11	393	12	399
Open Access Labs - Intended for student use on a drop-in basis to use the Internet, do research and complete out-of-class assignments, no FTES generated	2	169	2	180
Total	**30**	**1073**	**31**	**1142**

not being kept current. Of the 538 MS/Intel PCs, 417 were beyond their three-year warranty period. The report concluded that some divisions were creating additional special-purpose labs housing small clusters of computers. These labs are adjacent to classrooms. During regular class time, faculty send groups of students to these facilities as needed. The computers in these labs are generally newer than those installed in the class-use labs.[19] Overall, the 2006 inventory documented 47 computer labs and clusters housing a total of 1,492 computers, an increase of 16 "cluster" labs and 350 computers over the amount reported in 2002.

The inventory report was accompanied by a paper that summarized the college's previous efforts to support technology. The report concluded that technology funding could be best characterized as budget-driven haphazard attempts to "put out fires" rather than a consistent strategy to keep technology current. It made a series of recommendations leading to the creation of funding policies to keep all technology current.[20] The college used this information to review its existing computer labs and the process by which the divisions requested and/or created additional facilities. The report has become a benchmark for monitoring academic computer labs to ensure the most effective utilization of these technology resources.[21] The Planning and Budget Committee recommended moving technology hardware and software funding to the "institutional" section of the 2007-2008 budget where this and all future allocations could be protected.[22] This action may have ended the annual debate over how to keep technology current. All desktop and laptop computers are on a five-year warranty and replacement cycle.[23] All administrative and academic software is also budgeted with "institutional" funds. The Department of Information Technology Services is charged to administer both budgets so as to keep the technology sector current.[24]

The Department of Information Technology Services maintains several reporting mechanisms that monitor system performance. The ITS Services Report shows the performance of all network systems and documents issues which result in downtime for each individual server. The report also calculates a percentage of reliability for specified periods. These reports are available online in real time.[25] The department also maintains online helpdesk statistics that are searchable by data, group (staff, request type, and division), and request type (computer, A.V., phone and all). The helpdesk system tracks staff assignments, job status (open or closed), total hours to close, average hours spent, and average time to close. The department uses the helpdesk statistics to monitor persistent problems which may indicate hardware/software issues or the need for staff development training.[26]

Self Evaluation

The college is in compliance with the intent of this section of the standard. However, the decision to link technology planning with planning and budget is relatively recent, having occurred in Fall 2006. The college needs to continue working to integrate its technology planning with the planning and budget process. The relationship among the Technology Committee and its subcommittees is also recent. The college needs to work to make the relationship productive. This is particularly true of the relationship between the Technology Committee and the Academic Technology Committee. Beginning in Fall 2005, Information Technology Services and the Academic Technology Committee conducted a number of studies that provided information about technology in the academic sector, including a comprehensive academic software inventory and a survey of full-time faculty prior to the distribution of new laptop computers. Coordinating such information-gathering and analytical efforts between the Technology Committee and the Planning and Budgeting Committee needs to continue so the college has a more complete understanding of its technology infrastructure and how it impacts instruction and student learning outcomes.

Planning Agenda

1. The college will engage in an annual update of its technology plan and draft implementation plans that will include timelines, costs, and outcomes (IIIC.1).

a. Technology services, professional support, facilities, hardware, and software are designed to enhance the operation and effectiveness of the institution.

Descriptive Summary

The college technology committee and its two subcommittees on academic technology and administrative technology formulate plans and recommendations and forward them to the planning and budget committee for review and discussion. The Planning and Budget Committee forwards their recommendations to the Cabinet for final disposition.[27] ITS staff works with divisions and departments to prepare specifications for hardware and facilities. The forms for new PC requests and for PC upgrade requests are available on the college portal.[28, 29] Academic divisions and the Dean's Council discuss technology, and Facilities involves ITS in planning and constructing new facilities and renovating existing structures. Both worked together to publish a standards manual with sections on technology to guide architecture and construction firms.[30] ITS worked with the Academic Technology Committee to compile an inventory of academic software and to program an automated portal-based calendar that prompts management as renewal dates for licenses approaches.[31, 32]

The college continues to struggle with the burden of keeping its technology current. The 2002 self study admitted that even though the demand for technology was greater than the college could support, it was not really possible to limit technology growth. The college has considered several proposals over the years including an annual set-aside for technology renewal. During the Fall 2005 semester, the Department of Information Technology Services conducted a complete inventory of the academic computer labs and published the findings.[33] A year later, the department drafted a report on technology funding which reviewed four technology plans and two accreditation self studies.[34] In Fall 2006, the technology committee prepared a report recommending 12 projects for immediate implementation. The work included upgrading the data network and the district's ERP tools, replacing the district's aging telephone system with a Voice over Internet Protocol system, deploying a security system that utilizes Internet Protocol technology, establishing a document imaging system to help the district develop an increasingly paperless environment, and creating an online student advising and registration system that is tied to student education plans.[35] The Planning and Budget Committee and the Cabinet reviewed the plan. Ultimately, the district funded all 12 projects.[36]

The college offers an extensive schedule of distance learning classes. In Fall 2007, the college offered 66 courses with 87 sections offered as distance learning.[37]

In Fall 2006, the college convened a distance-learning task force to review course management tools and recommend alternatives to its contract with the California Virtual Campus (CVC) / BlackBoard which was due to expire in Fall 2007.[38] The task force worked with the college's Distance Education Advisory Committee (DEAC) to review alternatives. Several course management system vendors presented their software applications for consideration. Both faculty teaching online and interested faculty participated in the presentations.[39, 40, 41]

Ultimately, the college joined the ETUDES-NG consortium and began working with faculty to migrate their distance education courses from BlackBoard to the new ETUDES NG course management system. In Spring 2007, a small number of online faculty began using ETUDES and in Fall 2007, the college signed a full institutional agreement with the ETUDES consortium.[42, 43, 44] The college agreed to pay the consortium an annual fee to cover ETUDES training, conversion of courses, and central course hosting, which ETUDES provides to consortia members via Optimized Learning Inc.[45] The hosting service is redundant, scalable (system capacity is always 50% greater than demand at any point in time), secure, and backed-up regularly. Students and faculty access all ETUDES online courses through secure, individual logons, and passwords. All student records are protected and adhere to Family Education Rights and Privacy Act (FERPA) guidelines.[46]

Faculty who teach courses at a distance have access to on-campus technology including high speed (DS-3) internet access via CENIC.[47] Students enrolled in distance education courses have access to a full range of online student services, including application and enrollment, e-counseling, and e-reference library services. The LRC and Writing Center are working to reinstate online tutoring.[48, 49] The college provides open access computer labs for distance learning students who want to work on campus.[50] The courses are designed to function with dial-up access as well as high-speed DSL and cable modem connections. The college worked with the consortium to stop the practice of using the last five digits of student and faculty social security numbers in logon names.

The Learning Resources Unit houses a great deal of technology in the form of computers, microfilm machines, TV studios, and demonstration classrooms – all geared for the support of student learning in the Library, LRC, and satellite locations across the college. The college library provides students with access to 22 computers in the Reference Room and in the Library Demonstration Classroom. The Learning Resources Center also runs several computer labs including the open access Library Media Technology Center, TOP Lab, CAI Lab, Basic Skills Study Center, and the mixed-use MCS Reading Lab with a combined total of 395 computers, a number that will increase to 435 with the opening of the new Humanities Building and LRC expansion in Spring 2008. The library computers have access to the Internet and periodical databases useful for student research, and the LRC labs offer this access, plus access to other software programs essential for completing assignments. Finally, the library subscribes to many information databases to meet the research needs of students and faculty.[51, 52]

Self Evaluation

El Camino College meets this standard. The college has recently moved to strengthen its committee structure by tying the technology committees to the planning and budget committee. The college has also taken the initial steps towards regular funding of hardware and software licenses and a regular replacement cycle for PCs from the mandatory budget. This decision represents the college's acknowledgement that technology must be as good as a utility. However, the college reduced the initial fund of $900,000 for PC replacement by $450,000 during the budget development cycle in 2007-2008. The college has nearly 3,000 PCs, and to replace them on a five-year cycle requires an annual budget of $1 million.

The college is making the transition from being a leader in the California Virtual Campus (CVC) movement to being a member of the ETUDES-NG consortium. The Distance Education Task Force included the faculty in its deliberations as it looked for alternative course management tools and hosting solutions. Cost considerations motivated the decision to join the ETUDES-NG consortium. Lack of staff support may prevent the program from achieving the level of enrollment that the college would like to see. There is no full-time distance learning coordinator. Instead, the division offices are deciding which courses will be taught online and who will be recruited to teach them. The Distance Ed/Media Services Faculty Coordinator works with the Department of Information Technology Services to upload students and faculty into the ETUDES course rosters. Lack of adequate technical staff makes these tasks difficult and time consuming. The Distance Ed/Media Services Faculty Coordinator also attempts to provide "help desk" services to assist online students experiencing technology issues at the beginning of the semester.

While significant progress has been made in upgrading Compton Center technologies over the past few years, serious challenges still remain due to weaknesses in Center infrastructure, especially power and HVAC. Efforts continue to develop center-wide inventories of hardware and software and to increase server capacity, functionality, and security. In 2007-2008, Academic Affairs worked with ITS to replace obsolete audiovisual classroom equipment and to increase the number of Smart Classrooms on campus.

Planning Agendas

1. The Technology Committee in conjunction with the Department of Information Technology Services (ITS) will assist the college in maintaining accurate inventories of hardware and software (IIIC.1.a).
2. ITS will prepare an annual budget to show the funding obligation as accurately as possible (IIIC.1.a).
3. ITS will work with the academic deans to analyze the academic computer lab data as it is updated to maximize the utilization of the academic computer labs (IIIC.1.a).

b. The institution provides quality training in the effective application of its information technology to students and personnel.

Descriptive Summary

The Office of Staff Development conducts a comprehensive, ongoing schedule of technology training classes for faculty, staff, and administrators. The college employs a full-time staff member to perform this function.[53] Staff Development also conducts an annual faculty-and-staff-needs assessment. Survey results provide direction for future training sessions.[54, 55] The college gathers information about the technology-training needs of its students from several sources. The Distance Ed/Media Services Faculty Coordinator tracks calls from students who are experiencing problems with online instruction technology. The call volume is particularly heavy at the beginning of the semester. Admissions and Records hires help desk technicians who take calls from students having problems with the admissions and enrollments process.[56] All the academic divisions have integrated technology into the curriculum. Instructors monitor the ability of their students to use technology in the curriculum and recommend additional

training, usually by encouraging students to enroll in Computer Information System classes. In Fall 2006, Spring 2007, and Fall 2007, over 2,400 students enrolled in courses teaching the Windows operating system and the Office suite of applications.[57]

The Office of Staff Development provides technology training support for all interested faculty and staff. The office has a permanent director, support staff, and an instructional developer.[58] The staff development website offers links to a number of sites including a calendar of events, committees, conferences, flex FAQs and forms, the innovation center, instructional technology, professional development links, programs and training, the staff directory, a library of training materials, and web resources.[59] A few faculty members have used the staff/faculty survey results to develop special courses to assist help faculty retrofit their traditional courses and develop new course offerings.[60] A variety of other factors drive technology training needs, including the acquisition of new software, the upgrades of existing software, and the installation of new equipment such as document scanners and "smart" classroom lecterns. Divisions and departments identify special training needs for their work group clusters and respond with a "train-the-trainer" approach. The college provides these types of training experiences at both the Compton and El Camino campuses.[61]

All training class attendees complete an evaluation form. The results are generally very positive.[62] [63] The staff reviews suggestions for possible incorporation into future sessions. An open-lab schedule exists to accommodate follow-up sessions where needed.[64] However, it has been more difficult to assess long-term effectiveness of these training sessions because the results are usually very subtle, most readily observed by supervisors, and noted in employee evaluations or reported in student/faculty class evaluations.

The Special Resource Center works directly with students requiring adaptive services technology.[65] The college operates several writing and reading labs where students receive help with word processing their term papers. The library teaches classes on the technology of the internet and information retrieval throughout the semester.[66, 67] The library houses the learning resources center that helps students, faculty, and staff achieve their academic goals. The Library Media Technology Center is a computer commons that houses 165 computers, and the LRC operates another four computer facilities housing an additional 230 seats in the Learning Center, the Technical Arts building, and the Communications building. In these labs, user-support staff assist students with access to the internet and college-provided student email accounts as well as a variety of word processing, spreadsheet, presentation, and graphics programs.[68]

Self Evaluation

The college meets this section of the standard. It provides a variety of training opportunities for students and staff. The Staff Development office publishes monthly training bulletins and schedules. The college has scheduled special vendor-led orientation and training sessions for fiscal and purchasing-staff. In addition, staff enrolled in off-campus training in Datatel Colleague and Microsoft remote management software. However, one of the challenges posed by the EC-CEC partnership has been creating a common college culture in which the staff can perform successfully. The college has conducted training sessions on business practices and has temporarily transferred staff at both locations for more in-depth orientation to Datatel Colleague

ERP software. However, knowledge and experience gaps exist which have created data integrity issues. Some administrative offices, such as Administrative Services, have encouraged collaboration and assistance. Other units are functioning autonomously.[69, 70]

Planning Agenda

1. The college will review and update its administrative procedures. The results will be published in print and online (IIIC.1.b).

c. The institution systematically plans, acquires, maintains, and upgrades or replaces technology infrastructure and equipment to meet institutional needs.

The college administers its academic and administrative technology infrastructure centrally through the Department of Information Technology Services. All offices and most laboratories and classrooms are connected to a campus-wide data infrastructure. All students, faculty, and staff have access to email services, the internet, and the college's intranet portal. There are 47 academic computer laboratories and computer clusters housing over 1,600 connected devices. The college has deployed secure wireless service for students and staff at hot spots around the campus and is preparing to deploy universal service by Spring 2008.[71]

The college has utilized Datatel Colleague as its enterprise resource planning tool since 1999. In Fall 2005, the college launched a student portal and deployed Datatel's Web Advisor student services module.[72] Innovative Interfaces is El Camino College's library automation vender. The company deployed Millennium, a web-based browser, at the college in Fall 2005. All students, faculty, and staff have access to this technology. Endeavor Information Systems is Compton Center's library automation vendor. The company deployed Voyager, a web-based browser in 2004-2005. The two systems operate independently.

All of the college's data systems are deployed in a central campus location protected by card-access door locks and video surveillance. All systems are user logon and password protected. Users are required to change their passwords every 180 days. Virtual private network firewall databases control access from off campus. Students are virtually and physically isolated from the district's administrative systems. All vital network services are housed in servers that are redundant, auto-faulting detecting, self-correcting, and able to call out for help. The core network system is protected by a 250-kilowatt diesel generator capable of 24-hour, uninterrupted operation. Internal uninterruptible power supplies (UPA) protect network equipment from power surges and brownouts, and are programmed to shut down the servers in a predetermined sequence. All data systems are professionally backed up and stored at a secure off campus site that is located off the fault line.

At the beginning of the partnership with Compton Educational Center, the college integrated the two information technology services organizations and assigned responsibility for the combined operation to the director of the college's Information Technology Services unit. The center retained its connection to the internet via the Corporation for Education Network Initiatives in California (CENIC). The college installed three additional point-to-point T1 communications service lines. Two lines provide secure connections between the college and the center for

Colleague users and one line provides secure point-of-sales transactions between El Camino and Compton bookstore operations. The college's Enterprise Resource Planning (ERP) system is the sole data repository for student services, financial, and human resources data for all transactions that have occurred since the partnership began on August 22, 2006. The Center remains responsible for all data accumulated prior to that date.[73]

The college employs 31 professional staff and administrators to maintain and operate its technology infrastructure.[74, 75] The Information Technology Services Department is divided into three units: application support, network services, and technical services. Compton Center staff is integrated with the college. The lead Compton Center technician is an employee of the college reporting to the Director of Information Technology Services. There are six support staff similarly organized into application, network and technical services units. The college has integrated the two email systems with common address books and spam and virus protection, while retaining the individual identity of the college and the center. Separate password-protected listservs exist for each campus. The administration decides who can access the listservs.

Core network systems have appropriate reliability and redundancy. Servers and switches have auto-fault detection that identify problems, self correct, and call out for help. Staff have PDAs and other remote computer equipment to monitor system performance and to perform diagnostic and other repair tasks. In Fall 2006, the college installed a diesel electric generator capable of sustaining basic ERP, email, and internet services during a prolonged campus electrical outage. ITS has deployed virtual machine (VM) technology in order to eliminate single points of failure wherever possible. VM technology also conserves energy by allowing multiple applications to run on single servers.

Unfortunately, the edges of the data infrastructure lack redundancy, fault detection, and power backups. There are over 100 3COM-brand data switches that are not compatible with the Cisco brand core and intermediate data switches. This incompatibility prevents remote management of connected devices and complicates troubleshooting network problems. Because the redundant power supplies connected to these switches have failed, while the core network devices can remain up during an emergency, the edge switches are vulnerable to electrical service outages. The projects undertaken in Fall 2007 will remedy this incompatibility and vulnerability. The college will replace all non-Cisco switches by early Spring 2008.[76]

In 2006, the college began a major data infrastructure upgrade project as part of a general retrenching of its electrical, water, and steam conduit systems. When completed in 2009, the data infrastructure will consist of new fiber optic cable deployed in a ring around the outer edge of the campus. Major buildings will have non-duplicated redundant connections to the backbone thereby allowing for instantaneous data re-routing in the event that one of the main circuits is disrupted.[77] [78] [79] The System Office (Community College Chancellor's Office) is proposing that redundant connections be established between the community college campuses and CENIC, the system's state-funded Internet Service Provider.[80]

Self Evaluation

The college meets this standard.

The ITS departments at both campuses are housed in facilities that have HVAC and electricity problems. The college has installed in-room supplemental air conditioning systems at both locations. Nevertheless, the number of days with temperatures in excess of 130 degrees Fahrenheit in the Center's ITS facility have seriously damaged servers and data storage equipment. Service outages are becoming more frequent. The college is addressing these issues by installing temporary air conditioning systems at the two campuses. El Camino is working with the state to qualify The Compton Center for special funding to replace the air conditioning system with a higher capacity unit. The college's ITS facility is scheduled for a complete re-engineering of its HVAC systems. The college's diesel generator has the demonstrated capacity to keep ITS operational during power outages. The Compton Center has increased its level of security in the ITS facility by installing card key door locks similar to those being used at the college.

Planning Agenda

1. The college will work at both locations to replace aging and inadequate HVAC systems with modern, large-capacity equipment (IIIC.1.c).

d. The distribution and utilization of technology resources support the development, maintenance, and enhancement of its programs and services.

Descriptive Summary

The college relies on a planning structure that links technology planning to the planning and budgeting and the cabinet's review and decision-making processes. The Technology Committee meets at the beginning of the year to audit the previous year's plan and to discuss projects for the next year. Working groups of the Technology Committee prepare draft proposals and related budget recommendations. The Technology Committee reviews the proposals and prepares presentations for the Planning and Budget Committee. Once these proposals have been reviewed, the Planning and Budget Committee either refers them back to the Technology Committee or forwards them to the Cabinet for final disposition. Information Technology Services provides direct support to the Technology Committee and to the Planning and Budget Committee. The department maintains data about how technology resources are being used and what issues need to be addressed. Unit administrators review help desk data and monitor key performance indicators, such as time to complete trouble tickets and the number of open and closed tickets. The unit also maintains hardware and software inventories that are linked to online calendars capable of prompting action when renewal dates come due. In Spring 2008, the unit began migrating the academic computer labs to an active directory: now students are required to use their college-issued logon and password to gain access to lab computers. The system collects data about who is using lab workstations, why, where, and for how long. The college uses this data, along with FTES and the end of semester seat count, to determine how the labs are performing and whether their continued existence is justified.

In recent years, the college has deployed extensive security measures and system redundancies to protect its technology infrastructure from failure and unauthorized intrusion. Critical data

servers, such as the email and web servers, have redundant CPUs and power supplies. ITS staff monitor network performance and submit weekly performance reports to the administration.[81] High-volume storage area networks (SANs) protect critical data. High-speed data backup devices record nightly copies. The college has contracted for off-campus storage of weekly archival back-ups. The storage location is away from the earthquake fault lines which threaten the campus. ITS requires all Datatel Colleague users to reset their passwords every 180 days. The student and staff networks are physically and virtually separated. Students have no access to the staff network. The wireless network is attached to the student network and allows users to access only the internet and the college's portal-based services. ITS provides student users with logon names and passwords to the portal when they are admitted to the college. Because of storage limitations and the potential for serious network performance degradation, ITS does not save network logon files. However, it does save logon files to the portal.

In 2006, the college began constructing an underground trench for its electrical, steam, water, and data infrastructure. When completed in 2009, the data infrastructure will provide for two independent data pathways to each of the five most critical building locations on campus, thereby enabling quick rerouting in the event that one connection is disrupted.[82]

In 2006, the college participated in two security audits of its network infrastructure. HP/AT&T performed the first audit, and McAfee performed the second audit. Both audits tested the college's security arrangements to determine vulnerability to unauthorized outside penetration. The results indicated that all of the college systems were secure and properly monitored.[83] In Spring and Fall 2006, the college conducted a face-to-face data security survey and discovered that many administrative offices were storing sensitive data on floppy discs and other highly vulnerable media. In Fall 2007, the college acquired additional SAN storage capacity to accommodate these users.[84] ITS is systematically creating SAN storage locations for administrative users. The nightly backups include this data so that no user is more the 24 hours away from complete data restoration.

For over ten years, El Camino College has attempted to provide reliable funding for maintaining existing technology, replacing or upgrading aging technology, and training employees to maintain and make full use of college technology. Every technology plan and accreditation self-study published since 1995 has urged the administration to create and sustain a central fund for the regular renewal of technology hardware and software. Moreover, all these documents described the difficulty of providing funding adequate to maintain the technology infrastructure while accommodating the continual demand for more service. Throughout this entire period, there has been a recurring theme that up-to-date technology infrastructure is vitally important for administrative and academic activities. However, by its own admission, the administration has struggled to keep pace with cries for help and the demand for expanded services. Until recently, the goal of stable and reliable funding has been elusive owing to California's unpredictable budgeting swings and un-restrained growth in the number of connected computers.

During the Spring 2007 budget formulation cycle, the administration moved 1.8 million dollars from the discretionary budget to the mandatory budget to cover software and hardware maintenance, contracts and license renewals, and PC replacement. The Planning and Budget Committee discussed this action and endorsed the move. The Administration based the set-aside

on the cost of a five-year replacement cycle for PCs. The department of information technology services negotiated five-year parts and labor warranties with its PC vendor. This warranty plan is intended to reduce the maintenance liability to a level that can be sustained by the college's support staff. The college is implementing the first year of this replacement cycle in the 2007-2008 fiscal budget.[85, 86]

Information Technology Services has adopted a policy that all computers must adhere to a baseline defined by a uniform operating system and a common set of applications. The network infrastructure must support transmission control / internet protocol (TC/IP) standards, consist of uniform end-to-end data switches, and provide at least 100 MbBs to the desktop. This standard applies to academic as well as administrative PCs. The Technology and Academic Technology Committees participate in an ongoing discussion of infrastructure issues and how well the installed base meets the requirements of academic and administrative programs. Information Technology Services uses this feedback when considering system upgrades and expansion. Facilities and Planning Services incorporates feedback from all these bodies into its campus planning, as well as renovation and new construction projects. Information Technology Services has drafted an "Infrastructure Standards Book" to guide architects and contractors in planning and deploying new systems.[87]

The Distance Education Advisory Committee (DEAC) meets regularly with the Vice President of Academic Affairs to identify issues that effect program quality. These issues are reviewed by the division deans, the Academic Senate and the Information Technology Services for resolution.[88]

Information Technology Services reviews all technology requests to ensure that new purchases conform to current technology standards. Users can review the division's recommended hardware configurations and select options via the college website.[89] In Spring 2006, the college distributed new laptop computers to full-time faculty who wanted one. These computers were configured to connect to the campus data infrastructure both on and off campus. Faculty use these laptops to access email and the internet, and to run administrative and academic software. The college licensed the ETUDES-NG course management tool and made it available to faculty teaching online courses and faculty wishing to develop hybrid online course materials to supplement traditional course pedagogies.[90, 91, 92] The college has deployed several wireless hotspots which students use to access the internet, email, and distance learning courses. The URL is located at the bottom of an alphabetical list of student services on the student services homepage.[93]

Faculty and staff have the capability of entering help desk work requests from the college web site.[94] The college's help desk technicians also monitor technology issues raised by faculty and staff users and resolve many issues immediately over the telephone. In addition, the ETUDES Consortium provides help desk services and training sessions to faculty teaching online courses.[95] The Library Media Technology Center (LMTC) and the TOP and CAI Computer labs are open-access facilities providing students with access to networked computers that support the general curriculum as well as internet access to distance learning classes.[96]

Self Evaluation

The college does not fully comply with this section of the standard. The Planning and Budget Committee is reviewing technology plans and submitting recommendations to the Cabinet. However, technology planning did not formally connect with planning and budgeting until Fall 2007. The college needs to demonstrate that the technology planning process can be institutionalized successfully and the outcomes evaluated for their effectiveness in dealing with the college's administrative and academic needs. In addition, the college needs to formalize the process of determining how best to expand and manage its technology infrastructure along with establishing criteria that measure the success of these outcomes. There are no formal standards to determine when and under what circumstances upgrades will occur. There are no criteria for how to expand the college's technology infrastructure, and the college continues to struggle with staff support issues.

The college is attempting to provide students and faculty engaged in distance learning with effective technologies. Most faculty have reasonably up-to-date PCs. The great majority of academic computer labs have periods throughout the day that can be defined as "general access." However, the definition of "general access" varies. In some labs, only students enrolled in the curriculum taught in the labs can use the computers, and other labs are completely open to all students. The 245 PCs that comprise the LMTC, TOP, and CAI labs can be included in this latter category. Students can use the college's web site to find the locations of labs and their PCs and operating systems. However, these pages do not contain consistent information about how many seats are available and the hours of operation.[97, 98] The college is developing a campus wide wireless network that provides access to the internet via the college's portal. It provides all admitted students with logons and passwords to the portal.

Compton Center's Technology Committee is being reactivated in Spring 2008. The major function of this committee is to develop an updated technology plan for the Center that will integrate with master plans at the Center and El Camino.

Planning Agendas

1. The college will develop measures to evaluate the effectiveness of its academic and administrative technology systems (IIIC.1.d).
2. The college will develop a schedule and budget for upgrading computers with academic and administrative hardware (IIIC.1.d).
3. The college will complete the technology plan (IIIC.1.d).
4. The college will investigate online scheduling software that allows students to reserve time in the academic computer labs (IIIC.1.d).

2 Technology planning is integrated with institutional planning. The institution systematically assesses the effective use of technology resources and uses the results of evaluation as the basis for improvement.

Descriptive Summary

Administrative services units use various techniques and instruments to identify institutional needs. Departments have engaged in program review, staff and faculty surveys, and in Fall 2007 developed performance indicators for those service activities deemed to need improvement. The faculty, staff, and management surveys measure satisfaction on seven criteria: (1) provide services needed; (2) timeliness to requests; (3) responsiveness to requests; (4) communication and feedback on service provided; (5) customer service – helpful, professional, courteous; (6) completion and follow up on requests; and (7) overall performance. Divisions use the results to track performance improvement over time and to identify areas needing attention. Academic divisions review and revise local technology needs and plans in division technology committees.

The comprehensive master plan, the education master plan, and the facilities master plan provide a framework that gives direction to the technology plan. Finally, the annual comprehensive master plan and enrollment management retreats enable students, faculty, and staff to consider and discuss weaknesses, strengths, opportunities, and barriers. The Technology Committees use this information to guide their planning efforts. The Planning and Budget Committee recommendation that the administration set aside funds for software, hardware maintenance, and a regular PC replacement cycle occurred because the technology committees and the enrollment management retreat brought these issues forward.[99, 100, 101, 102, 103]

Self Evaluation

The college meets this segment of the standard.

[1] http://www.elcamino.edu/cmte_minutes/displaymin.asp?cal_id=91
[2] http://www.elcamino.edu/cmte_minutes/displaymin.asp?cal_id=82
[3] http://www.elcamino.edu/cmte_minutes/displaymin.asp?cal_id=1001
[4] Technology Plan Update 2006-2007
[5] Technology Plan Update 2006-2007 Executive Summary
[6] Administrative Services Program Review Survey Summary
[7] www.elcamino.edu
[8] http://www.elcamino.edu/cmte_minutes/displaymin.asp?cal_id=1117
[9] https://portal.elcamino.edu/portal/main.html
[10] Web Design Objectives and Design Parameters
[11] Student Portal
[12] Student Logins f06 & f07.doc
[13] Technology Committee Minutes 11-16-05
[14] Academic Software Prioritization 05-06
[15] Contract Tracker Notice
[16] Contract Tracker Detail
[17] Faculty Computer Survey
[18] Faculty Laptop Report
[19] Computer Lab Report
[20] Central Funding for Technology
[21] Room Book Page
[22] PBC Minutes 2007-2-15
[23] PBC Minutes 2007-3-15
[24] PBC Minutes 2007-8-16
[25] System Status Report
[26] Help Desk Statistics
[27] Technology Committee Structuring (9-21-07)
[28] New PC Equipment Request Form
[29] PC Upgrade Request Form
[30] Campus Standards
[31] Academic Software Inventory
[32] Portal Software Renewal Calendar
[33] Computer Lab Report
[34] Central Funding for Technology
[35] Technology Plan Update 2006-2007
[36] Technology Plan Update 2006-2007 Executive Summary
[37] http://www.elcamino.edu/admissions/schedule/DE-Fall07.pdf
[38] LMS CMS Evaluation Method Email
[39] DE Task Force Agenda 9-14-06
[40] Distance Education Task Force
[41] Distance Education Task Force 2-06
[42] CMS Email
[43] http://www.sakaiproject.org/sakai-map/
[44] ETUDES Membership Agreement

[45] ETUDES-NG_Services_ElCamino_2006-07
[46] http://www.optimizedlearn.com/
[47] http://www.cenic.org/
[48] http://www.elcamino.edu/library/distance-ed/index.asp
[49] http://www.elcamino.edu/library/distance-ed/usefullinks.asp
[50] http://www.elcamino.edu/library/lrc/index.asp
[51] http://www.elcamino.edu/library/lrc/index.asp
[52] http://www.elcamino.edu/library/library_ser/databaselist.asp
[53] Class Offerings 2005-2006
[54] El Camino College 2006 Computer Training Needs Assessment (Faculty)
[55] El Camino College 2006 Computer Training Needs Assessment (Staff)
[56] A&R Help Desk
[57] Technology Training for Students
[58] http://www.elcamino.edu/administration/staffdev/office.asp
[59] http://www.elcamino.edu/administration/staffdev/programs.asp
[60] El Camino Technology Training 2005-2006 Academic Year
[61] ECC / Compton Training
[62] Staff Development Evaluation Form
[63] Staff Development Program Evaluation Report
[64] http://www.elcamino.edu/administration/staffdev/innovation.asp
[65] A Student's Guide to the Special Resource Center
[66] http://www.elcamino.edu/academics/humanities/writingcenter/index.asp
[67] http://www.elcamino.edu/library/lrc/index.asp
[68] Learning Resources Center Handout
[69] ECC / Compton Training
[70] ECC / Compton Faculty Portal Orientation
[71] http://www.elcamino.edu/studentservices/wireless-access.asp
[72] https://portal.elcamino.edu/portal/main.html
[73] ECC Operation of Colleague
[74] ECC ITS Organization Chart
[75] Compton IT Organization Chart
[76] Technology Plan Update 2006-2007
[77] MAAS Meeting Report #65
[78] MAAS Meeting Report #72
[79] MAAS Meeting Report #128
[80] http://www.cccco.edu/SystemOffice/Divisions/TechResearchInfo/TelecomUnitHome/StrategicPlanning/tabid/1224/Default.aspx
[81] System Status Report
[82] MAAS Meeting Report #128
[83] 2006 Security Scan Results
[84] Staff Data Security Survey
[85] PBC Minutes 2007-02-15
[86] PBC Minutes 2007-03-15
[87] Campus Standards

[88] Distance Education Task Force Agenda
[89] http://www.elcamino.edu/administration/techservices/pcspecs.asp
[90] http://sakaiproject.org/index.php?option=com_wrapper&Itemid=588
[91] http://www.etudesproject.org/steering_committee.htm
[92] http://www.sakaiproject.org/sakai-map/
[93] http://www.elcamino.edu/studentservices/wireless-access.asp
[94] http://www.elcamino.edu/uportal/helpcenter/index.asp
[95] http://etudesproject.org/
[96] http://www.elcamino.edu/library/lrc/clabs/lmtc.asp
[97] http://www.elcamino.edu/current/labs.asp
[98] http://www.elcamino.edu/library/lrc/clabs/index.asp
[99] Final Technology Committee Draft
[100] Enrollment Management Retreat 4-27-07
[101] Combined 98-03 Survey
[102] PBC Minutes 2007-03-15
[103] PBC Minutes 2007-08-16