

## **INFORMATION TECHNOLOGY**

*As a CSU pilot campus of assured student access to computing, Humboldt is moving purposefully toward the integration of technology mediated instruction within the curriculum. Information technology will be used to enhance teaching and learning and not to supplant the humanistic qualities of our community of scholars and learners.*

### **Using Information Technology to Support and Enhance Learning**

The mission of Humboldt State University is to provide an environment where learning is the highest priority. The appropriate use of information technology is an important component in Humboldt's strategic plan for fulfilling its mission.

#### *Strengths*

Humboldt State University's greatest strength is its students. In "An Analysis of Student Responses to the College Student Experiences Questionnaire," (Fall 1995) C. Robert Pace reported that "the special character of HSU emerges as a blend of virtues from highly selective liberal arts colleges and doctoral granting universities." Our "liberal arts" students take more "science" and our science students take more liberal arts than typical at our cohort comprehensive universities. One of the results is that our students are comfortable with the use of and effective in the application of technology in their studies. This is borne out by the 1993 Student Needs and Priorities Survey (SNAPS) as reported by Dr. Paul Crosbie in "The Forest for the Trees," (1994). HSU students ranked first or second in terms of frequency of use in 10 of 12 computing domains (word processing, electronic mail, spreadsheets, graphics, library, etc.) among the students in the California State University. Further, they ranked first in terms of interest in using computers in the future in 10 out of the 12 domains and second in the remaining 2 domains. Our students have expressed their interest in an even more concrete forms, becoming the only student body in the CSU to approve a student technology fee (Fall 1995) and having the highest enrollment rate in the CSU to the SprintLink Internet subscription services.

Of equal importance to the strength of our students is the quality of Humboldt State University's faculty. Our faculty are dedicated to being the best teachers possible first and foremost. They know that the most successful students are those who are active learners. Integrating technology mediated instruction within the curriculum is proving to be one of the most effective methodologies for moving from a "teacher-oriented" environment to a "learner-oriented" environment that results in not just more successful students but also the development of life-long learners able to compete and thrive in today's global village. Evidence of our faculty's commitment to effective use of technology mediated instruction is the overwhelming response of faculty in using the Faculty Development Laboratory and Courseware Development Center opened in early Spring 1996.

#### *Opportunities*

The CSU is moving forward toward assured student access to computing resources. As one of the pilot schools for the assured student access initiative, Humboldt is positioned to implement the initiative more aggressively than most of the other CSU institutions. Under the initiative, students are encouraged to purchase their own microcomputers and establish access to the Internet, but will not be required to do so if they can assure themselves of access to a micro, either by rooming with someone who has a micro, using one of the campus' open computing labs, or checking out a "loaner" unit from a university pool. The goal of the program is to ensure that when instructors make assignments, they know that each student has assured him or herself of access to the appropriate computing resources necessary for completion of those assignments.

If students are to be encouraged to purchase computers, there must be content in their course work that justifies the investment. Technology for technology's sake is not a goal of the initiative – effective use of information technology to enhance learning is. HSU has created a position of Faculty Development Coordinator and established a Faculty Development Lab and a Courseware

Development Center to implement this goal. This structure has become the model for courseware development in the CSU. Instructors who have implemented a significant level of technology mediated instruction in their programs already report that students learn quicker, learn more, and score higher.

The institution is involved actively in developing effective technologies to support learning. Examples of current technology at HSU include using active web pages and PowerPoint in classroom presentations and posting lecture notes on the web supplemented with links to additional information wherever it may reside on the Internet. The materials are then available for review and as general study aids from students' home computers and the campus computing labs. Another example is online testing with immediate feedback to the student and grade reporting to the instructor. Technology under development melds active web pages with CD-ROM video to create a new textbook for the future. This will be an important technology for supporting a more flexible schedule that will allow our students to learn when they are available rather than being constrained by fixed class times. Supporting services such as electronic mail and home pages for all faculty and students, list servers, and conferencing systems also have or are being implemented. HSU already has an integrated automated library system and the librarians and staff have held a long-standing commitment to using technology to enhance access to materials for faculty, staff, and students wherever the materials or the user is located. As part of its efforts to ensure that students and faculty have access to the information and scholarly resources required for learning and research, HSU is developing electronic reserves and creating a searchable database of copyright-free images. The imaging project will permit access to unique resources such as slide collections assembled by the faculty, to the benefit of the University community and scholars everywhere.

These same technologies can support the distance and the self-directed learner. Humboldt has moved beyond the old distance education model of broadcasting a "talk and chalk" presentation over a satellite to a passive audience. We see a future of active learners being supported by the technologies and techniques being developed on this campus. Humboldt is blessed with strong, unique programs that it can provide to the other CSU campuses, the nation, and the world, including Native American Studies, Environmental Engineering & Sciences, undergraduate Oceanography, Forestry, and Geographic Information Systems. Humboldt should position itself to take a leadership role in the support of distance learning in these and other areas.

The emphasis on information technology brings into question how technology mediated instruction can be used without losing the socialization benefits of a higher education (e.g., the development in students of an ethic of working within the "community"). We need to find ways to improve upon the socialization of our students in the increasingly fragmented world in which we live. Digital tools are feared as devices that will make our world more impersonal, and indeed they offer that threat. However, if we are creative, we will find ways of increasing community and flesh-and-blood contact among students and faculty by using machines in intelligent ways. We already see evidence of this at Humboldt where some faculty are spending more individualized time with students because technology mediated instruction relieves them of some of the time they once spent standing in the front of the classroom, although we also have seen the opposite where technology has been used to increase class size and actually reduce the amount of contact between instructor and student. This may be our biggest challenge, but it also may be the area where HSU has the most to offer to the other CSU campuses.

## Weaknesses

Humboldt's greatest information technology weakness is its lack of sufficient current technology computing labs. The existing labs are oversubscribed and many contain old equipment that is difficult to maintain. The impacts are many: most labs are scheduled fully for class time during the day, resulting in little open time for students who need the labs to do assignments; some faculty do not develop a computing component for their courses because they know they will not be able to get lab time in which to present it and their students will just add to the load trying to get into the labs during open periods to do assignments; and, in order to meet the most needs of the greatest number of users, the campus has had to focus its limited resources on inter-disciplinary labs, leaving no money for specialized labs in the disciplines. This problem needs to be attacked on a broad front. It would be easy to say that, under the assured student access initiative, this is a student responsibility. However, the CSU is California's "accessible" university system, and placing too large a financial burden on the students will reduce that accessibility. Although space is limited, HSU needs to build three to four additional interdisciplinary labs. One of these labs should be available only for short-term scheduling to allow faculty who include a short technology mediated instructional component in their courses to have access. It needs to modernize out-dated equipment and maintain sufficient spares to keep working machines at each station. It also needs to build several department labs where the need is great, for example for the Computing Sciences Department. It needs to place some microcomputers in locations where students do hands-on work and need access to computing, for example in the Chemistry, Geography, and Geology labs. It needs to budget funds for room monitors so that some of the existing department labs can have open hours. Further, it needs to modernize and expand its unscheduled labs and extend their open hours so students can have more access. It needs to sprinkle some low cost terminals around campus in areas of high student traffic so that expensive lab resources are not consumed for electronic mail. Finally, it needs to make its lab servers available over the network so that students who have their own microcomputers can get access to the specialized software they need without having to come in to use a lab micro. The costs of meeting these needs annually will be twice the sum of what is budgeted currently for labs and the expected revenue from the student technology fee. The campus needs to reallocate funds if assured student access is to be a success.

Another weakness is lack of faculty workstations. Also, many instructors who do have microcomputers do not have lap-tops that can be carried into the classroom. HSU has some portable projectors and lap-top computers available for check-out by the faculty. The availability of loaners allows even instructors who do not have a microcomputer to present materials in the classroom. For example, a faculty member might design course materials in the Faculty Development Lab, have it programmed in the Courseware Development Center, and present it in the classroom using the loaner equipment. HSU intends to acquire more loaner equipment as funds are identified for this purpose. However, loaner equipment can never take the place of having a workstation on the desk. The CSU's Information Technology (I/T) Survey during Fall Semester, 1995 resulted in a head count of 591 faculty having access to 166 current technology workstations and 196 obsolete technology workstations. HSU must, as part of the execution of its technology plan, institute a faculty workstation program that ensures every faculty member has access to appropriate computing and networking resources. The program will need a component to coordinate the use of software on the campus. Currently, when the latest version of software is implemented in the labs, there is no corresponding effort to update the software on faculty computers.

HSU has a fiber backbone network, but it does not extend into all of the campus' buildings. HSU has extended Ethernet connectivity to every major classroom building on campus, although to some via only 10 Mbps Ethernet extenders, and to 75 classrooms. This allows instructors with a microcomputer and a projector to use any of these classrooms to access technology mediated instructional materials that are available over the network. However, these classrooms were designed for chalk and talk, not

for presenting technology mediated instruction. HSU needs to design its “classroom of the future” and modify existing spaces as opportunities to do so arise.

All of this technology places a tremendous load on the campus network. Network capacity needs to be increased and all buildings on campus connected, and problems with the current network need to be addressed. None of HSU’s strategic vision for information technology will be accomplished unless it is able to implement a ubiquitous network. Funds to be made available to the campus by the CSU during AY 1998/99 will help improve the network infrastructure but will not pay for the full distribution of network connections throughout all our buildings. HSU needs to develop a plan for completing the network, including identifying the network services (authentication, security, name service, etc.) which are not offered by the current network but which must be implemented for HSU to be successful.

### **Using Information Technology to Support and Enhance Student Services**

The number of full-time equivalent students (FTES) has increased by 1,700 since the last time a new position was added in the Office of Admissions and Records. The CSU expects Humboldt to grow to 8,000 FTES, an increase of nearly 1,100, by the year 2005. Information technology must be the engine that drives the campus’ business process improvements to allow it to serve this growing student body without a proportional increase in support staff.

#### Strengths

Humboldt’s faculty, staff, and administrators are dedicated to the concept that this is a “student centered” campus. This focus is what makes HSU and its students so successful – the emphasis on small classes, personalized attention, and providing a supportive environment, all of which are hallmarks of the HSU experience. This results in an organization willing to embrace technological change if it can be shown to improve services while maintaining the feeling of family within our community.

#### Opportunities

HSU has the opportunity to provide on-demand student services through self-service mechanisms. New technologies, particularly the web, make it practical for students to take care of their business and administrative needs anytime from anywhere. HSU will implement a student access module on the web that will allow students under appropriate security safeguards to access their own student records in order to view and print their course schedules, lists of available course sections, unofficial transcripts, and their account statements (fees assessed, payments received). They will be able to update some information, such as addresses. After seeing their advisor, they will be able to register for and add/drop classes. In the near future, they will be able to make fee payments through the same web service. Every microcomputer in the campus labs, micros situated in other publicly available areas, and home micros with Internet access then will be self-service kiosks. These services also can be delivered via physical kiosks, which can have particular application in providing accessibility to the disabled. Vendors will continue to develop new products, and HSU should be prepared to acquire those that will be of benefit. Expected over the next several years are web services for faculty and staff that will provide degree audit/advising information and another web service that will allow students to submit and track their financial aid requests.

Corresponding access to services also is available through interactive voice response (IVR) systems. HSU already has implemented an IVR system that allows students to track the status of their financial aid requests. This system is supporting an average of 1,300 callers per week, callers who otherwise would have had to reach one of the limited number of staff members via phone or visited the financial aid office. HSU will extend these services to support registration, add/drop, and fee payment.

HSU should continue exploring technologies to support its business services as effectively as possible to ensure that the cost of doing business subtracts as little as possible from the resources available for providing the learning environment. Technologies that need to be explored include imaging of admissions and financial aid applications, electronic forms, and the expansion of One Card services (a single ID card that can be used as a debit card and electronic key).

### Weaknesses

Because of the way administrative computing support historically was provided in the CSU, HSU does not have an integrated suite of software. For example, the student information system is supported by Computing and Telecommunications Services while the financial records system is supported by the Chancellor's Office. There are separate systems for housing administration and alumni/development. Because payroll services are provided through the State Controller's office, there is no single database on the campus which includes the names of all students, faculty, staff, and administrators, but many names show up in multiple databases. All of this results in duplicated effort, the need to go to multiple sources for information, and difficulty in coordinating or implementing services such as directory services, password systems, and eligibility tracking. HSU needs to move toward more integrated systems if it is going to be successful in implementing new technologies that will allow it to support a growing number of students.

## **Developing and Maintaining a Technology Plan**

Humboldt State University has a vision for the role information technology will play in its future. Now it must develop and maintain a technology plan that will make that vision a reality.

### Strengths

HSU is positioned to build on its successes. Faculty, staff, students, and administrators all have recognized the importance of information technology as a subject of study, as a tool to improve instruction and learning, and as a strategic asset in the operation of the campus.

### Opportunities

A great deal of activity is occurring on the HSU campus which impacts its information technology resources: the pilot for the assured student access initiative; the creation of the faculty development coordinator position, Faculty Development Lab, and Courseware Development Center; the design and testing of technology mediated instructional materials; the enhancement of electronic services through the Library; the expansion of distance learning programs; and the implementation of on-demand student services. In order to coordinate these and their follow-on activities, share resources, and benefit from synergies, HSU will develop a technology plan which addresses all aspects of the use and support of information technology by its students, faculty, staff, and administrators. The plan will identify specific projects for a three-year window and be revised annually. It will include both budget projections and priorities for these projects as well as identify equipment replacement funding requirements for maintaining the infrastructure. It will address how user support services will be provided, including orientation, training, consulting, documentation, and development. This is of critical importance because currently there is no effective support structure for faculty, staff, students, and administrators. The plan also will address how technical support services will be provided, including network support and maintenance support. It will specify feedback mechanisms (e.g., surveys) that will allow the faculty, staff, and students to have continuing input into the planning process.

### Weaknesses

The development of technology plans in the past has often amounted to the building of a wish list that was beyond the funding capability of the campus. This has resulted in some in the campus community concluding that such planning is a useless exercise when nothing substantial appeared to occur: the plan was put on the shelf. It will be very important for the new technology plan to be a living document grounded in reality: it must be a plan which is within HSU's capabilities of implementing, both in terms of our available human capital and within our financial ability to provide a sustaining budget that will ensure we maintain currency. This is important to the students so they will know what resources they can expect to be available; it is important to the faculty when they are designing curriculum; it is important to the departments when they are determining course offerings; and it is important to the complete campus community when it reviews budget and program priorities.