Northwest Missouri State University's electronic campus after four years.

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A focus group comprised of 60 students gives a firm approval to the electronic campus network in place at Northwest Missouri State Univ since 1984. Based on seven DEC VAX minicomputers, the network places a computer terminal in each faculty and administrative office and dormitory room. The system also provides a dedicated television channel and telephone line, for a total of 2,300 telephones and terminals. In addition, the high-speed fiber optic Ethernet local area network supports a number of computer stations containing MicroVAXes, Zenith Data Systems microcomputers and Apple Macintoshes. Over 200 software applications are supported, including word processing, spreadsheets, electronic mail and on-line information services. The library card catalog is also on-line, and the terminals have recently been connected to a wide-area network through the Missouri Research and Education Network.

Since 1984 Northwest Missouri State University has taken several dramatic steps to prepare its 6,200 students for the emerging information-driven, technology-based society. These have included equipping every faculty office and student dormitory room with a computer terminal, a dedicated television channel and a telephone line. All three of these components are networked through the university's VAX timesharing computers. The result is an "Electronic Campus" made up of 2,300 terminals and telephones plus over 400 microcomputers.

Prior Considerations

Early in the planning stages for our Electronic Campus, two critial commitments were made that guided development of the entire project. First, the needs of students take precedence over administrative needs; and second, the system is structured around a centralized cluster of mainframes.

Within the context of those commitments the university adopted three goals:

* To ensure students have a working knowledge of the computer, particularly skill in accessing databases;

* To improve writing skills through convenient access to word processing and reference programs; and

* To improve communications through the use of electronic mail (e-mail) between and among dormitory rooms, faculty offices and administrative services.

System Hardware

Our campuswide system is supported by a highspeed, fiber-optic Ethernet backbone in a star configuration that connects the various Pathwork LAN servers and personal computers to seven VAX computers with a channel capacity of 10 million bits-per-second. In total, Northwest provides over 11 billion characters of online storage for its students and faculty. Specialized applications are also run on any one of several university and departmental computer stations, which include color graphics terminals, seven MicroVAXes, DOS-compatible Zenith PCs, plus Rainbows and Macintoshes. In addition, the university's network supports interactive terminals in 23 high schools in northwest Missouri.

Included in the available services are touchscreen-driven color graphics directories in the library and administration building, plus a TouchTone Talker, which uses a computer-generated voice to share information, such as available class openings and an events calendar, by phone. A tutorial system comprising a computer, videodisc player and interactive voice synthesizer is also accessible from students' rooms for instruction on how to use the library and timesharing computing services.

Available Software & Services

Among the 200 software applications provided on campus are: word processing, e-mail, calculator, spreadsheet with graphics, personal address directory, and a university directory and calendar. Online database services include a library search system, encyclopedia, dictionary, thesaurus, campus news, career guidance system and listings of university student jobs and assistantships. Students may enroll, plus review their class schedule, transcripts and bill, all from their dorm room terminal. A comprehensive set of programming languages is available, as are a statistical analysis and graphing system.

The library's traditional card catalog and reader's guide have been replaced by an online, integrated electronic catalog and circulation system. Through a system called RECAL (Regional Electronic Catalog Accessed Library), students and faculty can access the university's library catalog of nearly 400,000 volumes. Users can quickly determine what resources are present, when they will be available, in which collection they are stored, and the appropriate call number of the item. Electronic searches

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can also be done by author, title, topic and/or descriptors.

In addition, the university has made RECAL services available to regional public libraries, high school libraries and other college libraries. The result is that network members can quickly and easily borrow resources from Northwest to enrich educational opportunities for their students and other constituencies.

Most recently, every student and faculty member has been given access to wide-area networking via MOREnet (Missouri Research and Education network), Missouri's gateway to worldwide Internet and BITNET services.

Telephone services are also provided via the Electronic Campus. Students and faculty are able to dial into the computer and receive information audibly, made intelligible by a voice synthesizer. Additionally, each phone station is provided with a voice-mail box having store, edit and send functions. Long-distance billing is processed on the VAX network; rate and bill information is online.

For those students with limited computer experience, Northwest offers instruction in the Electronic Campus' capabilities through innovative videodisc-based television programs. These programs can be seen in dorm rooms on a dedicated television channel. In fact, the school is a leader in creating such high-usage video training systems.

Impact on Students

Our Electronic Campus has now been in place for over four years. Extensive data have been gathered regarding usage levels, growth in computer literacy, and, to a lesser extent, impact on teaching.

At the close of the 1990/91 school year, eight focus groups composed of five to eight students each, for a total of 60 students, were interviewed. Students were selected who had "grown up" with the Electronic Campus: they had spent the last four years in a dorm room equipped with a terminal, dedicated TV channel and, in the last two years, a telephone. When responses from the interviews are added to the surveys conducted of freshmen, several provocative and encouraging themes emerge.

First of all, it is apparent that the cluster of applications students access changes as they progress through their academic career. All students, regardless of major or year in college, are heavy users of word processing. However, depending upon their major field of study, they tend to branch into different applications as they advance through college. For example, business majors learn spreadsheets and graphing programs while psychology majors concentrate on statistical packages.

Freshmen are heavy users of e-mail. Seniors report they seldom use it, but also say that e-mail has important social benefits since it is "easier" to initiate social contacts over the network than in person. One male student told of building a friendship via e-mail to the point where he and his female contact scheduled a 10 p.m. meeting under the bell tower. When they arrived 300 other students were converging on the site for the same purpose!

Quntitatively, in 1990 the system processed over 100,000 "connects" per week--that's 4 million per year. Surveys show that residence hall occupants use the Electronic Campus an average of 8.96 hours per week. Out of all freshmen 95% do word processing; 91% access the library card catalog; 82% use e-mail; 89% per-use the class openings and phone directories; 58% utilize the directory of student jobs; 60% reference the encyclopedia; and 64% also read the daily news from their computer.

Interestingly, 98% of seniors would not pay more to upgrade to a color monitor and 75% would not buy a portable computer in their senior year even if the university offered a special price. Their reason? The debt load most seniors are carrying by that time.

Computer science majors seemed least interested in substituting a microcomputer for the terminal in their room. One opined, "There isn't a PC available that has the capacity and diverse languages of the VAX."

Finally, 100% of those interviewed said they would recommend the Electronic Campus to potential freshmen; and 45% of freshmen said it was a major factor in their decision to attend Northwest. Enrollment has grown 26% since the system was installed.

Our Electronic Campus has also noticeably impacted residence hall occupancy. The number of students intending to move off-campus after their freshman year has dropped 50%. One student who elected to move off-campus reported that "after one month I forfeited a $50 deposit on an apartment so that I could return to a residence hall with computer access."

Finally, it appears that easy access to word processing has dramatically increased the amount of writing expected of students. In 1984, before the Electronic Campus, a study conducted by two English faculty suggested that students did little writing after completing the basic GE composition requirements. In 1991, however, seniors reported as many as 22 papers due in one semester.

Summing Up

In summary, Northwest's Electronic Campus has

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exceeded expectations in every category. The level and type of usage observed suggests that Northwest students are computer-literate as a result of having easy access to the system and are, therefore, prepared to comfortably function in an environment where computers play an increasingly important role.

GALE GROUP

Information Integrity