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Distributed Academic Technologies:
Changing the Face of Teaching, Learning and Research

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Kent State University, an eight campus system serving nearly 32,000 students, is engaged in a strategic planning process in collaboration with the IBM Corporation, to define and implement technological initiatives that facilitate the development of an interactive high performance learning environment -- an environment that is more learner-centered with self-paced instructional multimedia courses that can be distributed to students anytime and anyplace. The objective of this paper is to share the rationale, goals, objectives, benefits and critical success initiatives developed during the planning process. The paper will also address the pilot distributed learning projects that are currently underway, as well as the vendor partnerships being established to support the distributed learning effort.
RATIONALE

The spectacular proliferation and integration of computers and networks have fueled the creation of a global information environment -- an environment that allows people to share information and collaborate on projects from any place on the globe. This "information age" is touching every aspect of our lives, especially the ways in which we teach and learn. It promises to extend the boundaries of education beyond the walls of institutions into the community and beyond -- into schools, homes, businesses, etc.

Kent State University, like most universities, is facing an enormous challenge -- how to acquire and integrate the technologies of the information age, and develop the interactive high-performance learning environment that will take it into the next century. The "learner-centered" environment that Kent is creating focuses on integrating distance education and multimedia technologies, and includes self-paced instructional multimedia courses capable of being delivered "just-in-time" to students anytime and anyplace.

This paper reviews some of the key issues associated with Kent’s progress in meeting the challenge mentioned above and describes the goals, objectives, benefits/impact, and implementation approach being taken to move into a high performance learning environment.

GOALS

Persistent technological change along with budgetary constraints create major challenges for Kent State University to meet the technological needs of its academic sector. The Kent Self-Study Report for North-Central Accreditation notes that the university continues to allocate an ever-greater proportion of its resources to computing in an effort to improve its networking, instructional delivery and information systems. Kent is in the process of constructing a Kent Campus fiber-optic network, as well as links to each of its seven regional campuses. Kent’s Strategic Plan states that the University should continue to “enhance access, teaching, and learning by utilizing state-of-the-art instructional and communication technologies.” The efforts to enhance Kent’s technological infrastructure support its desire to strengthen support for technological initiatives throughout the university system as well as to expand access to information sources, educational opportunities and communication networks for all students and faculty without regard to time or place.

The following specific goals for Kent include:

* growth of discipline-specific hardware and software adequate to support student and faculty educational endeavors;
* standardization of general computer applications such as word processing, spreadsheets, and database management;
* consistent access to well-equipped and staffed computer labs;
* support of electronic or multimedia classrooms that house a selected set of technologies that enhance instructional capabilities through a variety of methodologies and resources;
* requirements and opportunities for students, staff and faculty to achieve technological competency;
* student and faculty access to library and other information resources, including text and graphics, whether they are located on a specific campus, across the nation, or around the world;
* real time conferencing involving multiple users such as faculty and students, interacting at an informal conversational level;
* collaborative research projects and routine group work by teams through the use of common tools such as spreadsheets, graphic representations, tables and mathematical equations;
* the integration of administrative data into the instructional process, thus contributing to faculty and staff effectiveness through improved timely access to needed information for purposes such as student advising;
* the study of information flow and re-engineering of work processes to reduce manual procedures and paper flow is needed.

Three specific actions relate to the above goals: 1) Kent is systematically developing multimedia, distance and distributed learning courses to be initially disseminated using high speed network connections among Kent’s eight campuses. Three courses are being developed in phase one of an ongoing effort to create and offer multimedia courses and workshops distributed over computer networks throughout the Kent State University system, as well as to corporate sites in the region. A team approach to course building includes faculty participants as well as library, media and computer services staff working with corporate and other university partners. 2) Kent is in the process of establishing a technologies and learning center with facilities and programs to support a broad range of teaching and learning systems that serve faculty and students and community members who have differing technological capabilities, learning styles and needs. 3) Research on the effective and efficient use of integrated distance learning and multimedia technologies by faculty and students in multiple, teaching, learning and research environments is being emphasized through written documentation of project development and evaluation of the multimedia/distributed learning courses currently under development.

KEY OBJECTIVES

Kent recognizes that a University wide network is a required utility (like water or heat) for the survival of a modern university. The network has to be ubiquitous, reliable and provide adequate capacity to support voice, data and interactive video communications. The existing network plan, completed in September 1992, provides the University with a realistic blueprint for a campus wide backbone. In order to provide for interactive video, the plan includes the installation of single-mode fiber to support the establishment of fully mediated classrooms and distributed learning programs. By the spring of 1996, the backbone will be complete.

In addition, a technologies and learning center is being developed on the Kent campus to serve all eight Kent State University campuses. Moulton Hall, built in 1917 and listed with the National Register of Historic Place, will undergo a physical transformation to serve as the hub of technology initiatives for the University. This hub, to open in the fall of 1997, will:
* create an environment in which faculty can research, design and test how technologies can bring about more effective teaching and learning -- both face-to-face and over great distances.

* offer technologies and new techniques to a broader constituency and train that constituency in their use.

* act as an information distribution and management center and a resource center for the educational community.

* facilitate work with other universities and corporate partners to develop and disseminate “learner-centered” courses utilizing today’s new technologies.

* support the establishment of a variety of technology-rich master classrooms.

* provide classroom observation facilities to support and enhance research.

* include an academic technologies software library and laptop computer loan center.

* provide a presentation and conference facility designed for teleconferencing.

* create direct linkages to Ohio 100,000 K-12 classrooms through Ohio’s SchoolNet initiative and to business and community organizations.

**BENEFITS/IMPACT**

The impact of the multimedia/distributed learning initiatives being put into place will be on people, the places where they will earn, and the learning strategies they will use through the use of technology.

For students, multimedia/distributed learning initiatives will provide a comprehensive approach to disciplines that are not time or place bound, i.e. that link students with teachers, resources and other student across campuses as well as across the world; an all-encompassing view of disciplines using all appropriate media; a versatile technological platform for the classroom, from which professors can draw to make sophisticated observations of their own, thereby sharing their own expertise more effectively with students; an easy-to use “second voice” available 24 hours a day, 365 days of the year in dorms, at home, in other classroom buildings, in a format that allows students to move at their own pace, regardless of their educational backgrounds; connections for global teams of students who can learn and do research together; a computerized record of the student’s intellectual odyssey.

For faculty, multimedia/distributed learning initiatives will provide the impetus for restructured courses, curriculums and teaching methods that take advantage of multimedia technologies; shared research, instructional activities and equipment with the multiple campuses of Kent State University and other universities, by removing the boundaries of time and
space; new interdisciplinary research and teaching connections between universities through the use of electronically networked resources; a new research agenda related to qualitative and quantitative improvements in education through the use of information and multimedia technology; new partnerships with industry, government and primary and secondary schools through the use of the information infrastructure; and consulting opportunities in the area of technology and multimedia applications.

For the community, multimedia/distributed learning offerings will enhance the easy and regular flow of communication and ideas, that have the capacity to bring Kent and its communities closer together; apply expert knowledge originating at Kent to community problems or objectives through the use of technology; provide greater opportunity for collaboration between the university and its surrounding communities.

IMPLEMENTATION APPROACH

Solutions to the technological challenges facing the University lie in the ability of the University community to articulate clearly the options and resource requirements for multimedia/distributed learning initiatives. The logical assignment of responsibilities for meeting needs and the establishment of a well-defined balance of effort between central and distributed information systems and services is now being determined and implemented. Much work will be required before the next century to meet the particular information technology needs of each discipline. This will necessitate a major realignment of allocations across all sectors of the University to achieve noticeable progress and positive change in instructional processes.

A faculty advisory committee to participate in the development of program requirements for an academic technologies and learning center (Moulton Hall), was established in 1994. This was followed by the development of four "cross functional" teams made up of faculty and staff, to determine the direction of all multimedia/distributed learning initiatives at the University. These teams advise in the areas of 1) technology infrastructure and networking; 2) faculty and student support; 3) policy; and 4) grants and funding. All teams have been meeting regularly since May of 1995 to help articulate the vision for transforming education through the use of technology, as well as further defining program requirements in real terms, i.e. policies needed to support multimedia/distributed learning options; equipment and training needed by faculty, staff and students to work in this new environment; the technological infrastructure needed to distribute courses over computer networks; as well as the funds needed to carry various projects forward as well as sources of support. Over 60 faculty and staff from all campuses of the University are involved in the deliberations of these committees.

In addition, Kent’s multimedia/distributed learning initiatives are presenting a unique opportunity for the University to establish mutually beneficial partnerships with individuals, other educational institutions, private corporations, governmental agencies and others. By pooling resources and working as teams, partners are participating in developing asynchronous models of instruction that use the national information infrastructure, and interactive multimedia and distributed learning technologies. This collaborative effort is providing a model of joint
planning and implementation between public and private organizations that would be difficult, if not impossible, to accomplish independently.

Partners are having the option to support a series of distributed learning pilot projects; helping to determine the best solutions for implementing Kent’s eight-campus technological infrastructure; advancing specific educational and commercial agendas; or most important, helping to create the Moulton Hall Technologies and Learning Center.

All of these efforts are leading to the development of an action and project assessment plan to include the following critical success factors: vision and leadership; program definition, consensus and support, funding, training and support, quality management, visibility and public relations, facilities and policy review. Documentation of these factors is an ongoing part of the pilot project now under way.

PILOT PROJECT

Pilot 1, being completed in partnership with the IBM Corporation, is part of the Moulton Hall Technologies and Learning Center effort. It is the first of four such pilot efforts intended to build courses and workshops that will be able to take advantage of the capabilities of Moulton Hall from its initial availability. It is comprised of three separate courses which are being built to be delivered in a PC based distributed interactive multimedia environment. Pilot 1 includes development of three courses: a senior level course in Nursing, a junior level course in English and a graduate level course in Business Administration. A major benefit of the Pilot approach is the opportunity to determine problems in a controllable environment. It is also providing the opportunity to determine the true parameters of the enterprise and to make adjustments and changes as needed, from technical, logistical and policy points of view before a large number of courses are distributed over a wide area. It is helping faculty to understand what is involved in working in this new environment and promoting faculty buy-in for the distributed learning effort.
Goals of Pilot 1 include: increasing student access to education without regard for time and place; increasing teaching tools available to faculty by validating the multimedia/distributed learning model. Objectives following from these goals include: evaluating the effectiveness of the distributed learning medium and determining what works best for both faculty and students; determining a workable course development process for Kent; integrating new uses of digital technology in the classroom environment; building digital PC based interactive multimedia courses for distribution among Kent’s eight campuses; and determining a viable technical architectures to support multimedia/distributed learning courses.

Pilot 1 courses are being developed by teams of faculty and technical support staff who are “building” courses, with the aid of staff skilled in graphic design, film production and information technology systems. Formal documentation of the process underway is providing a summary of problems and issues, both technical and policy, as well as a record of how each is resolved. Documentation of repeatable processes is also underway.

Major steps in pilot course development include the following: initial course design, supported by syllabus development; training in the use of multimedia development software for both faculty and staff; facilitated story board sessions to “draw” screen images and determine appropriate multimedia content; development of new multimedia content as needed (custom video, audio, animation, graphics, photos); module (course unit) construction; testing (student “try-out” of modules); revision based on student feedback; testing of technical environment; and evaluation of teaching/learning effectiveness. The first two courses are scheduled to be offered in the spring of 1996; the third course is scheduled for the fall of 1996.

Four pilot cycles are planned before the opening of Moulton Hall; the building is scheduled for opening in the fall of 1997. Each cycle will test the use of technology, software and design applications, and establish a level of expertise by the support staff which can be carried over into courses developed within the Moulton Hall environment.

**BENEFITS**

There are several overarching benefits to the University that are likely to come from supporting multimedia/distributed learning initiatives. They include: improved motivation, retention, and satisfaction of students; students who are better prepared for their careers; graduates who are more competitive in the marketplace; students who are better prepared to live and work in the computer and information age; an improved placement record for University graduates; improved instructional techniques based on multimedia/distributed learning models; enhanced student, faculty and staff productivity; improved faculty research competitiveness; and an improved image for the University.
In addition, the establishment of Moulton Hall as a center for multimedia and distributed learning technology will support an increase in the quality and efficiency of instruction. Students will receive more hands-on instruction, resulting in an improved learning experience. When students see computers and related technology used effectively, they can develop better models for their own computer use. Computers will also be more widely used in a variety of classroom settings. Faculty will also be in a better position to use multimedia technologies to enhance the learning process. They will have added incentives to invest their time in innovative approaches to computer-based teaching. In addition, they will face fewer difficulties and have staff and technical support for their attempts to use new technologies for teaching.

Distributed learning initiatives will make it possible for students to participate in classes offered at any of Kent’s eight campuses without regard to their campus of residence. They will be able to work together and with teams of students from institutions other than Kent without having to come together in the same physical space. Northeastern Ohio will have immediate off-campus access to the technological and educational expertise of Kent faculty. Corporate executives will be able to collaborate with Kent faculty in teaching employees at remote sites. Business and community members will have both on-site and remote access to distributed education and training programs and be able to test new software, and receive training on new technological applications. School districts and classrooms, through Ohio’s SchoolNet program and from around the world, will have access to interactive distributed education and training programs.

CONCLUSION

Multimedia/distributed learning technologies are not the proper mode for all faculty or all students. Faculty must feel comfortable with the technology, must genuinely enjoy spirited interaction in a distributed mode and “expect the unexpected” to happen, both with the technology itself and with students as they learn in this environment. In addition, though there is the expectation that students will like this medium of learning better than that of traditional courses, some may drop out or may dislike it very strongly.

Multimedia/distributed learning technologies support additional methodologies for teaching and learning, not substitutions for those that currently exist. As a force for enriching the teaching/learning environment, multimedia/distributed learning technologies offer a set of tools, strengths and limitations which are available to an instructor for delivering course materials and structuring learning experiences. Kent is currently focusing on the strategic use of such technologies to address critical issues in instruction and education. It is currently demonstrating how existing multimedia development tools can be enhanced to support the creation of multimedia courseware in a distributed mode and in so doing create more learner-centered applications. The move to Moulton Hall will allow Kent to broaden its focus to explore new models of distributed learning and the use of instructional and technological systems which enable them. Kent’s ability to define new teaching and learning models based on technology is strategically tied to an understanding and deployment of distributed technologies and learning
environments created in the pilot project process.

This paper has summarized the rationale, goals, objectives, benefits and critical success initiatives identified to move distributed learning/multimedia initiatives forward at Kent State University. Kent is continuing to identify new interests and goals of faculty who wish to work in this environment. Through an ongoing pilot project effort, Kent hopes to deepen its understanding of distributed learning and provide value to the higher education community as well. Through presentations at CAUSE and other national conferences, the Kent experience can be shared with others in the higher education community. By this means developments at Kent can be brought to bear on the national dialogue regarding the strategic use of multimedia/distributed learning technologies in education.

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