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EDITORIAL

The technologies used in K-12 settings to deliver education at a distance range from correspondence and print media, audioconferencing, interactive video, and satellite delivery to more recent technological systems such as fiber optics and the Internet. Many states have established telecommunications systems or are developing networks to facilitate educational programming for students, the sharing of information, and professional development for teachers.

This issue of DEOSNEWS offers the third in a series of papers presented at the "Best Practices in K-12 Distance Education" conference held at The Pennsylvania State University, April 13-14, 1997 (see file numbers 99-00003 and 99-00004 for other articles in this series).

The two papers included in this issue describe what one state has done to extend educational and training opportunities to teachers and students alike. The Iowa Communications Network, a statewide fiber optic infrastructure providing interactive video/audio/data capabilities for educators, is the focus of the first article presented. Special educational events and virtual field trips, just a few of the activities that serve to enhance education for students in Iowa, are discussed. The second article showcases the Iowa Educational Technology Training Institute, which provides teacher training workshops and professional development opportunities for Iowa educators.

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EDUCATIONAL OPPORTUNITIES VIA THE IOWA COMMUNICATIONS NETWORK (ICN)

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Iowa Public Television

BACKGROUND

We've come a long way from hornbooks and chalkboards. The use of telecommunications in education allows us the capability of providing new dimensions in the improvement of educational opportunity. Education that once took place only in face-to-face settings has exploded into settings not limited by space and time. Teachers and learners need no longer be brought together physically, since telecommunications can provide this relationship as effectively and more economically.

The Iowa Communications Network (ICN) is a statewide fiber optic communications infrastructure that provides full motion, two-way, interactive video, voice, and data capabilities. Enhanced educational opportunities and communications are now available to Iowa's learning community in every county via this ever-expanding network of endpoints.

The ICN originated as a result of the desire of several visionary individuals to equalize access to educational opportunities across the entire state. Much of the original network planning, design, and preparation was coordinated by Iowa Public Television. The bid processes involved in construction of the network were handled by the state's Department of General Services. Eventually, an ICN agency, with its own governing and advisory boards, was created by the state. Iowa Public Television now coordinates classroom scheduling, and acts as an impartial advocate for the school districts and as an advisor in the planning and implementation of their distance learning classrooms.

PLANNING AND IMPLEMENTATION

Parts I and II of the fiber optic and electronic infrastructure connected the first 103 endpoints (one in each of Iowa's ninety-nine counties, plus one at each of the three Regent universities and one at Iowa Public Television), and is owned by the state of Iowa. Part III is, for the most part, leased by the state and connects a site at each of Iowa's Area Education Agencies and a site in each of the remaining accredited public and non-public school districts. It is estimated that, by the year 2000, there will be between 700 and 800 active distance learning classrooms throughout the state.

The Iowa General Assembly designates authorized users of the ICN. Currently, authorized users include educational institutions, public libraries, state and federal agencies, state and federal courts, the Iowa National Guard, hospitals and physician clinics for telemedicine applications, and the U.S. Postal Service for demonstration projects.

Since the completion of Parts I and II in the fall of 1993, the network has had a significant effect on the state. The ICN has improved government operations. State agencies are able to deliver consistent training and information across the state to their employees and clients. By utilizing the network, agencies are able to save dollars previously spent on travel and put those monies into improved services. Additionally, the staff time previously spent in travel can now be spent on more productive activities.

Further, the ICN has provided an economic boost to Iowa. From the scores of visitors from around the world who come to observe and explore the network, to the enticement for businesses to locate in our small, quiet communities which now have access to continuing education and training opportunities, the ICN is opening doors across the state.

For Iowa's learning community, a distance learning network such as the ICN has provided the opportunity to enhance education through additional courses shared with other districts and by permitting a single student or small number of students to participate in a class not otherwise available in their home district. The network helps keep Iowa at the leading edge of education by providing students access to guest speakers, video and virtual field trips, semester-long classes, and the World Wide Web, as well as providing continuing education for workforce adults. Through the data networking connections provided to all educational sites, the potential for developing and sharing educational resources and information will increase, strengthening the technological capabilities of all participating schools.

Research shows that students do not necessarily learn any more at a distance, nor do they learn any

less. Additionally, educators involved in administration of the network believe that, though in-service training is an essential component of our operation, effective teachers in the traditional classroom will also be effective teachers over the ICN.

Even though Iowa traditionally has produced students who rank nationally at the top of the scale on ACT and SAT scores, we are also a very rural state with many students qualifying for Chapter I assistance. Educational and media resources are often not available on an equitable basis throughout the state. The ICN allows us to have an impact on these issues of isolation and inequity.

With the assistance of a U.S. Department of Education Star Schools Program Grant, Iowa has begun to provide Iowa's K-12 students with interesting educational events and opportunities to enhance their learning environments. As a demonstration project, part of Iowa Public Television's charge is to explore new technologies and their possible educational applications and benefits. The intent is to provide worthwhile learning experiences while also demonstrating the network to new users, to extend the range of learning opportunities available to the K-12 community via the distance learning environment, to establish a wide array of presenters who can deliver enrichment opportunities to K-12 students wherever they are in the state, and to generate a resource list of presenters so that educators can make their own direct scheduling arrangements via our Web site, the Iowa Database (http://www.iptv.org/iowa_database/).

Special events offered over the ICN during the past years have included Celebrating the Magic of Music, Pet Care, Devonian Microfossils, Women in Science, Dino-Mites, Animal Welfare, Creepy Crawlers, Students and the Caucus Candidates, Unmanned Space Flight: An Interview with Dr. James VanAllen, and visits with Secretary of Education Richard Riley, Iowa's Senators Tom Harkin and Charles Grassley, Lieutenant Governor Joy Corning, and Governor Terry Branstad.

We have also begun experimenting with virtual field trips. These are interactive events that include an on-site tour, combined with other multimedia appropriate to the topic. Participating students are allowed to ask and answer questions of the host or hostess at intervals throughout the one-hour event. Participating teachers are provided with an advance information packet which includes the goals of the activity, appropriate hands-on materials, a checklist of requirements and helpful hints, an appearance release form, a copy of ICN Distance Learning Classroom Basics, and teacher/student evaluation forms.

Virtual field trips, thus far, have included trips to Saylorville Dam Spillway Gorge (a geological site), Living History Farms, DeSoto Wildlife Preserve, and Omaha's Joslin Art Museum (our first out-of-state trip). A variety of technologies have been employed in the delivery of these trips, including hardwiring into our fiber rooms, microwave, and satellite. The team consists of a camera person, a sound person, an engineer/technician, a producer/director and the on-site host. The host is equipped with a cellular headphone. Students and teachers use the push-to-talk microphones in their distance learning classrooms. An on-site visit is conducted prior to the actual event to address as many potential difficulties as possible.

Problems

Being a demonstration project allows us the luxury of experimenting and making mistakes, as long as we profit from these mistakes. Frankly, our first attempt at testing our theories consisted of forty-five minutes of failure and fifteen minutes of success. Fortunately, we were using only Iowa Public Television staff members in our classrooms, instead of "real live" students and teachers. Our subsequent attempts have been quite successful.

Initially, advertising these events and opportunities met with the obstacle of successfully reaching the "right person." We expanded our efforts by utilizing our Web site, the Iowa Database, and directing our mailings to curriculum directors at Area Education Agencies and Local Education Agencies. Additionally, we attempted to target specific subject area teachers.

We also found it essential to make very clear to the participating students and teachers exactly what protocol and code of conduct were expected during our sessions. This assisted in eliminating the loss of precious class time.

Successes

Thus far, evaluation results of events and field trips have been extremely positive. Both teachers and students see these activities as enhancements to their curriculum in this time of economic constraints. They realize that their student communities are provided with opportunities that never could have been afforded them without the state's distance learning network. In just a short time, we have been able to serve several hundred schools and reach thousands of students.

FUTURE PROJECTS

Plans for future events include collaboration with the other two Star Schools state-wide projects, Kentucky and Mississippi: testing the utilization of ISDN connections, involving individual sites to begin offering their own events, and continuing the exploration of new methods and technologies for educational programming. We will also continue to query our educational community relative to their needs.

We have been pleased with our initial efforts but refuse to allow ourselves to become complacent in this ever-changing age of technology. We feel that technology truly holds enormous implications for the future of education in Iowa. It may be the key to much of what will happen in the future, but only if we know how to use it effectively. Through the statewide distance learning network, we will strive to continuously find new ways to stretch young minds with new ideas, challenge their paradigms, expand the dimensions of their imaginations, and prepare them for the future.

THE IOWA EDUCATIONAL TECHNOLOGY TRAINING

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DEFINING THE NEED (BACKGROUND)

Today, education is dramatically affected by educational technology. The ability to manage, use, and make intelligent choices about educational technology has become an essential skill. If we want our children to have the opportunities we have enjoyed, they will need to master this skill. Iowa's educators need training and support now to help Iowa's children gain such mastery. A technologically competent work force in the education industry is needed to continue to keep the promise of universal education: to leave behind no child who is willing to try.

In addition to our high ideals about education in Iowa, educators need training and support now because of the coalescence of three factors: 1) hardware and software are more powerful and affordable; 2) there is more acceptance of an increased role for technology in education; and 3) districts all over the state are preparing or implementing educational technology plans. While Iowa has many able institutions and individuals to help, there is a need for focused non-bureaucratic leadership and coordination. A new approach was needed to overcome turf issues, maximize resources, and meet the needs of educators.

ESTABLISHMENT OF THE IOWA EDUCATIONAL TECHNOLOGY TRAINING INSTITUTE

The Iowa Legislature appropriated funds for 1995 to the University of Northern Iowa to take the leadership role in planning, coordinating, delivering, and evaluating educational technology training. Using a partnership approach, the Center for Educational Technology at the University of Northern Iowa has established and coordinated the Iowa Educational Technology Training Institute (IETTI). The partnership has included the Iowa Department of Education, Area Education Agencies, public and private institutions of higher education, school districts, individual educators, education associations, consultants, information technology companies, Iowa Communications Network, and Regional Telecommunication Councils. Members of the partnership team have varying degrees of commitment and responsibility for educational technology training. Although diverse in membership, the IETTI partnership team has a common mission.

Mission of the Institute

The mission of the Iowa Educational Technology Training Institute has been to ensure that each educator has the opportunity to become competent in the use of educational technology and be able to integrate it into their teaching, administrative duties, and the learning of their students. Educators, like all learners, need to take responsibility in order for learning to succeed.

Plan of Operation

Activities of the Institute are implemented using four major steps: 1) planning and organization, 2) scheduling, 3) training, and 4) evaluation. Planned activities support and enhance the technology plan implemented by the Iowa Department of Education. A three-phase (level) training model in educational technology is used to meet the varying knowledge and skill levels of educators:

- Phase I: Introductory and conceptual phase
- Phase II: Application phase
- Phase III: Integration phase

INSTITUTE INICIATIVES

The Iowa Educational Technology Training Institute at the University of Northern Iowa offers a wide variety of technology workshops and professional development opportunities for Iowa.

Technology Talent Search

The Institute established a statewide talent search to identify people with expertise in areas of information and educational technology that are willing to serve as part of a cadre of technology trainers. A "train-the-trainer" model is used by the Institute to prepare and organize each training team. More than 100 trainers from K-12 schools, area education agencies, higher education institutions, and business and industry have chosen to assist the Institute in state-wide technology training.

Iowa Communications Network Workshops

The University of Northern Iowa has trained more than 4,000 Iowa educators to use the Iowa Communications Network in three-day, "hands-on" workshops. Over twenty-five of these popular three-day Iowa Communications Network Workshops were offered throughout the state this academic year.

Computer Conferencing Workshops

Computer conferencing and multimedia workshops, including Internet, World Wide Web (WWW), and video conferencing, ranging in length from one hour to one day are also offered. These

workshops are offered on a face-to-face basis, over the Iowa Communications Network, and through self-paced, self-instructional materials. All workshops are based on the three-phase training model described previously. A workshop may include one or more of the phases. Specific hands-on workshops include:

- Introduction to the Iowa Communications Network
- Preparing Iowa Communications Network room managers
- Computer presentation programs -- Power Point, Persuasion, Claris Works, etc.
- Beginning, intermediate, and advanced Internet and World Wide Web
- Web-page development
- Developing multimedia presentations
- Digital audio and video
- Electronic still imaging using Quick-Take cameras, flat bed scanning, etc.
- Video conferencing
- Practical instructional development
- Developing technology plans

Iowa Technology Showcase Project

The Iowa Technology Showcase Awards are offered in cooperation with the Iowa Department of Education. Announcements of showcase activities and applications are sent to every school and higher education institution in Iowa. Over 800 projects were submitted during the first three years of competition. Each year a team of educators reviews the applications and chooses twenty-five award winning projects. Information about these exemplary technology projects is shared in three ways: 1) a book is published and distributed to every institution in the state describing each technology project; 2) descriptions of each project are included in the Iowa Data Base, a searchable database, and the Institute's Website; and 3) the award-winning projects are showcased over the Iowa Communications Network for teacher and student interaction.

K-12 Technology Inventory

The Institute developed a K-12 inventory to survey the knowledge level, skills, use of technology in the classroom, and need for technology training of Iowa teachers. The Iowa Department of Education identified a random sample of 3,000 K-12 teachers throughout the state. Inventories were sent to all

fifteen Area Education Agencies (AEA) for distribution to these K-12 teachers during spring of 1996. The Center for Social and Behavioral Research at the University of Northern Iowa completed the data entry and analysis of the completed inventories. The final analysis was completed and the results published and distributed in the summer of 1997 to assist schools and AEA's in developing and implementing their technology and training plans.

Self-instructional Training Materials

The Institute has developed a collection of commercially produced technology training materials for use throughout Iowa. Additional mediated, self-paced training materials using videotape, computer disc, CDROM, audiocassette, and online WWW tutorials are also available.

US WEST -- Iowa Teacher Technology Project

Iowa has received 1.2 million dollars in funding from the US WEST Foundation to teach teachers how to use computers and online services, including e-mail and the Internet. The Institute directs the project and serves as the fiscal agent. The goal of the project is to train approximately 4,000 teachers. Each of the teachers will receive a laptop computer, modem, and software to use as long as they continue to teach in their current school. The University of Northern Iowa, University of Iowa, and Iowa State University has teamed with Area Education Agencies to develop workshop curriculum, training, support, and project evaluation.

UNI Links -- ConceptWebs Project -- Beta Test in Education

The Iowa Educational Technology Training Institute has developed a World Wide Web site using ConceptWebs, a product developed by the US WEST Advanced Technology Center in Boulder, Colorado. This collaborative project was Beta tested with secondary school science teachers and their classes. It provides them with links to applicable Web sites that have been recommended by science curriculum specialists. In addition, this project provides links to introductory tutorials for Netscape, the Internet, the WWW, and other links that support the infusion of various technologies into the classroom.

ConceptWebs incorporates database technology with the World Wide Web to allow the learner to create a personalized version of the UNI Links site by filtering the topics, links, and pages to show only those they find interesting. The learner can also organize and arrange the links to their own preferences to create a personalized site.

Educational technology is rapidly changing and there is a critical need for on-going, in-service training for educators. The Iowa Legislature has provided permanent funding to the University of Northern Iowa to continue the operation of the Iowa Educational Technology Training Institute.

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