

Tech.

E X E C U T I V E O F F I C E O F T H E P R E S I D E N T

15-Feb-1996 10:32am

TO: (See Below)

FROM: Angus S. King
 Office of the Chief of Staff

SUBJECT: Ed-Tech Talking Ponts

AMERICA'S TECHNOLOGY LITERACY CHALLENGE
February 15, 1996

Expanding educational technology. Today, President Clinton travels to Union City, New Jersey to announce a \$2 billion, five-year Technology Literacy Challenge fund. The fund will help states, localities and private sector companies work to ensure that our schools provide all our children with a greater opportunity to learn the skills they need to thrive in the next century. President Clinton and Vice President Gore will see a demonstration of the educational technology that has connected students at Christopher Columbus Junior High School and the Bergen Academy of Technology to each other and to the world over the information superhighway.

"In our schools, every classroom in America must be connected to the information superhighway with computers and good software and well-trained teachers....I ask Congress to support this education technology initiative so that we can make sure this national partnership succeeds."

President Clinton, State of the Union, January 23, 1996

A NATIONAL MISSION TO MAKE EVERY YOUNG PERSON TECHNOLOGICALLY LITERATE: The President has launched a national mission to make all children technologically literate by the dawn of the 21st Century, equipped with essential communication, math, science, and critical thinking skills essential to prepare them for the 21st century. He challenges the private sector, schools, teachers, parents, students, community groups, state and local governments, and the federal government, to meet this goal by building four pillars that will:

1. Provide all teachers the training and support they need to help students learn through computers and the information superhighway;
2. Develop effective and engaging software and on-line learning resources as an integral part of the school curriculum;
3. Provide access to modern computers for all teachers and students;
4. Connect every school and classroom in America to the

information superhighway

A NEW TECHNOLOGY LITERACY CHALLENGE FUND: The \$2 billion, five year, Technology Literacy Challenge will catalyze and leverage State and local efforts -- including work with the private sector -- so that our schools provide all our children with a greater opportunity to learn the skills they need to thrive in the next century.

State Challenge with Maximum Flexibility: While the states are asked to come forward with a statewide strategy to meet this four-part national mission, they are given maximum flexibility to accomplish these objectives. In order to receive funds, states must only meet the following three objectives:

1. State Strategy: Each state will develop a strategy for enabling every school in the state to meet the four goals that the President has outlined by the dawn of the next century. These State strategies will ensure that local districts and schools from the suburbs to the inner cities to rural America are able to participate fully in this initiative. Strategies would include benchmarks and timetables for accomplishing the four goals, but these measures will be set by each State not by the federal government.

2. Private Sector Partnership and Matching Requirement: State strategies should include significant private-sector participation and commitments to meet the four pillars. Private-sector commitments should at least match the amount of federal support. Such a match can be met by volunteer services, cost reductions and payments for connections under the expanded Universal Service Fund provisions of the Telecommunications Act, and a range of other commitments.
3. Annual Progress Report to the Public: To ensure accountability, each state must not only set benchmarks, but it must also publicly report at the end of every school year to its residents the progress made in achieving its benchmarks and how it will achieve the ultimate objectives of its strategies in the most cost-effective manner.

Local Community Challenge Option: While states are encouraged to come forward with statewide strategies in order to receive funding, a state may also choose to have its local communities compete individually for a pro-rata portion of its funds. Or if a state is unable to come forward with a statewide strategy application, local communities -- or consortia -- will have the option to come forward with local plans.

Local Innovation Challenge Fund: Even where a state does have a statewide strategy, local consortia of private companies and local communities will be eligible to compete for a innovation challenge fund, which will be funded by expanding the existing Technological Learning Challenge from \$10 million a year to \$50 million a year. This will further ensure that everyone can participate in meeting this Technologically Literacy Challenge.

Funding Levels: The Technology Literacy Challenge Fund will provide a total of \$2.0 billion over five years. The President made a commitment in his balanced budget proposal that even as spending is being cut dramatically, education funding will continue to grow each year in response to the Nation's education needs. The \$2 billion in discretionary spending over the next five years, by coming from within these funds, will mean holding back or cutting lower priority programs. Funding per state will be based on the number of students in each state.

Reassessment and Review: The Technology Literacy Challenge Fund will provide funding for five years, then be subject to a sunset provision to allow a review of what the Fund has accomplished and a reassessment of whether the Fund is still necessary, and if so at what level of funding.

Building on Affordable Connections under the Telecommunications Act: The President signed the Telecommunications bill on Thursday, February, 8, 1996. This landmark Act will lower the costs of connecting schools and classrooms to the information superhighway

by billions of dollars, by requiring carriers to provide telecommunications services to schools and libraries at discounted rates -- helping schools and students gain access to the internet and advanced information services. The Technology Literacy Challenge takes the next step by building on this new platform to support the national partnership that can now accomplish the national mission of preparing all students with the basic skills they will need for the 21st century.

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The McGuffey Project
Children. Community. Communications. Change.

- Ask Doris about

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Technology -

21st C. Teachers

21st Century Teachers Network

Executive Summary

This is a project for the Education, Culture, and Lifelong Learning primary application area. The 21st Century Teachers Network will identify, recruit, support and bring together teacher leaders who want to bring the benefits of communications and computer technology to their classrooms and colleagues. Many teacher leaders are improving educational achievement through technology, but they often operate in isolation. We will build a vibrant, national community of local teacher leaders, providing them with information, connections, mentoring and encouragement. We will utilize state-of-the-art Intranet software for peer-to-peer interaction. The partners include leading national organizations such as the National Education Association and the National School Boards Association. They, and the Software Publishers Association and TechCorps, will be the Steering Committee for this network.

21ST CENTURY TEACHERS NETWORK

I. Project Purpose

Problem

All over the country there are teacher leaders who are improving educational achievement utilizing technology in their classrooms, and mentoring their colleagues. In most cases, these leaders are on their own. Their work is usually done in isolation; some get discouraged and lose their initial drive to grow personally and share their expertise with their colleagues. Some don't have the knowledge or experience to deal with resistance from administrators or colleagues.

If these same teachers were supported with information, resources, and professional development, and connected to their colleagues across the country facing similar challenges, they would become a powerful leadership force for successful technology integration to improve education in the classroom. These are the leaders who can also transfer their knowledge and enthusiasm to others, helping overcome the common teacher resistance to technology.

Unfortunately today there is no broad-based program supporting teacher technology leaders. As schools race to catch up with technology, efforts to install the "wire and the box" are receiving national attention. Far less attention has been paid to the teachers who are critical to making it work for our children. Technology budgets still provide less than fifteen percent for training.

Reaching a Solution

For the last year staff of The McGuffey Project have traveled the country, speaking with teachers and other experts and participating in national education technology conferences. We developed a detailed plan for identifying and empowering teacher leaders to be active, and full participants, in the introduction of technology in our schools. We saw first hand the transforming power of effective teacher leaders, but how isolated they are.

Last year, a group of more than 20 leading education groups announced the creation of 21st Century Teachers. Its goal was to enlist 100,000 teachers committed to personal technology proficiency, and to mentoring five other teachers each (see attached article p. 15). During the rest of the year, the organizations enlisted over 4000 teachers who made that commitment. But they decided an intensive organizational effort was needed to sustain and build on those commitments; the commitment alone would wither unless it was actively nourished. Early this year they approached The McGuffey Project to turn these volunteer commitments into a vibrant and expanding 21st Century Teachers Network, and agreed to support this application.

The McGuffey Project's 21st Century Teachers Network will identify, recruit, support, and bring together teacher leaders who want to bring the benefits of communications and

computer technology to their classrooms. It will be a community of teachers dedicated to helping other teachers apply technology effectively in their classrooms, and to empowering those who have yet to realize the potential of computer and communications technology. It will provide a range of recruiting, empowerment, professional development, and support services to members of the network and specific chapters set up within the network.

The Network will “empower up”, not “organize down”. This Network will go beyond just connecting members and answering their questions. Members of the Network will be given the opportunity to build and sustain their leadership potential. This Network’s success will be measured on its ability to help these leaders grow professionally and support their commitment to assist their colleagues. It will also connect these teachers to leaders from other groups critical to educational technology introduction: administrators, community leaders, and business leaders.

Building the Network

The goals of this national movement will be to celebrate and sustain the enthusiasm of teacher leaders, both in their own use of technology and in mentoring their colleagues. We will accomplish this by: (1) linking them together and to resources with a sophisticated Intranet system; (2) leveraging limited staff and financial resources through a structure of chapters which encourages leadership initiative; (3) providing intensive staff support to that structure; and (4) rewarding participation with a wide variety of opportunities for personal and professional growth. Teachers will want to join the Network and mentor their colleagues because belonging will be fun and a growth experience, not just more work.

- The **Intranet** program will allow total interactivity among teacher leaders. This state-of-the-art Intranet will allow any teacher with a computer and a modem to connect to other leaders around the country, share information, and explore new curriculum and professional development opportunities. The Intranet provides:
 - Conversations between members on specific issues.
 - Updated news, grants and professional development information.
 - Links to significant resources and applications of classroom technology.
 - Updated information on specific events around the country.
- Developing specific **chapters** by issues, subjects and geographic regions will allow individuals the opportunities to assume leadership roles. Rather than just being an Intranet site with 4,000 viewers, a group of affinity chapters will emerge based on the expressed desires of the members. These chapters will require individual leadership, which will recruit additional members, run the mentoring programs, and use the national organization to find the resources needed by their chapters.
 - Chapter leaders will emerge, or be recruited. They will develop agendas for their chapters. The two constants in each chapter will be a mentor support and reward

- ▶ program, and a specific area of the Intranet for their exclusive use.
 - ▶ We will recruit nationally-recognized experts who are willing to devote time to those chapters which match their expertise. These may be educational experts, scientists, writers, and others who chat with members on-line through the Intranet.
 - ▶ A similar program will be launched to involve celebrities with chapters and the overall organization, to make being part of the Network fun and interesting.
- A service staff will support each chapter by “hand holding”, “cheer leading”, and responding to specific requests from chapter leaders. McGuffey staff and participating “Super-mentors” or chapter leaders will answer questions and provide information relevant to specific chapters. The service department will include:
 - ▶ Staffing an 800-number to answer specific questions dealing with technology and teaching applications.
 - ▶ Supporting a specific area on the Intranet for on-line questions from each chapter.
 - ▶ Responding to chapter leader requests for particular resources and organizing assistance, including a mentoring guide.
 - ▶ Matching new recruits to the network with chapters of interest to them.
 - ▶ Connecting teacher leaders with leaders from other constituencies.
 - ▶ Finding and publishing professional development opportunities from government, business, foundations, and other organizations.
 - ▶ Providing on-the-ground, face to face contact with members as the program develops.
- Our leadership development program will focus on two fronts: rewarding and incentivizing leaders and mentors, and empowering and developing their potential. To maintain and enhance the enthusiasm and outreach of these teacher leaders, it is important to both reward and incentivize them, with particular attention paid to those who assume leadership positions. Leaders will be rewarded by:
 - ▶ Special awards and organizational recognition, including recognition by national and state officials, the media and others.
 - ▶ Opportunities to meet face-to-face with other teachers through regional and state meetings sponsored by businesses and other organizations.
 - ▶ Inclusion in special professional development programs and opportunities provided to teachers by businesses, academic institutions and others.
 - ▶ A 21st Century Teacher briefcase kit that will include multimedia presentations and other media that can be used in speaking to community organizations and others.
 - ▶ Connecting these teachers to leaders outside the education community such as business leaders and public officials.

Outcomes

All of these activities focus on making the connection between teachers, increasing their ability to reach others, and providing a flow of information to them. The Network will be successful if thousands of teachers have joined the network and are sharing, mentoring, and empowering other teachers to become leaders in their communities. The network will launch initial activity for the 4,000 21st Century Teachers recruited during last year's effort. This project will aim for a goal of 100,000 teachers recruited by the end of the two year period. Success will not just be measured by how many passwords are requested to join the Intranet; it will also emphasize the ability of members to reach out to other teachers and their colleagues.

Innovation and Replicable Models

Professional development is usually thought of as a trainer and a trainee. This Network attempts to go beyond that by building a grassroots network, developing individual leadership, and leveraging that leadership to expand the network and increase the ability of teachers to mentor others. It is also easily expandable through additional chapters, funded by subject or geographic area.

It is easy to see how this kind of network could be replicated for other groups of leaders. This Network may provide a national model around technology for other key groups such as a network of principals, systems administrators, school board members, parents, or community organizations.

II. Project Feasibility

Technical Background

There are many ways that teachers learn. One of the best is peer-to-peer interaction. Members of the network will be able reach their peers through a sophisticated state of the art Intranet, that will be created by IntraACTIVE Inc. This on-line community will utilize recently developed Intranet technology, which is far more sophisticated and flexible than a WWW homepage; it is more akin to Lotus Notes. But, unlike Lotus Notes, any teacher with a computer and a modem will be able to access it (see attached software description pp. 16-17).

Connecting colleagues will be done through **On-line Conferences** that allow for issue discussions and responses to request for information and assistance. Each chapter will have its own areas for discussions. If teachers want to locate network members for individual assistance, they can find them through **Group Rolodexes/Contact lists**. Teachers leaders can also go beyond just "chatting." They will be able to post their work and view others' papers and technology applications through a **Library** that can be filled by any teacher utilizing any document format.

The site will bring in outside resources through a News area that will detail recent announcements and grant opportunities. Any teacher can add Links to relevant Web sites they think are important to their colleagues. Teachers looking for professional development events will be able to visit the central Calendar of conferences, meetings and important events. Finally the site will include a powerful Search Engine where members can locate information or discussions anywhere on the site.

Interoperability/Scalability

While the Network staff will post content on the site, the uniqueness of this Intranet is its ability of members to post information from wherever they are located for all their colleagues to view. This site is based on an open architecture and is open to all Internet standards. The site is as scalable as the Internet itself. The site will be able to support a rapid expansion of members. There are no geographic limits; users will be able to access the site with any Internet connection and a browser. The site will be maintained and housed at IntraACTIVE. It will run on a Sun Sparc 20 Server with an Oracle database. IntraACTIVE will customize their software to fit the 21st Century Teachers Network.

Applicant and Organization

The site content, the structure, staffing of the service department, and the activities in the field will all be run by teachers for teachers. The McGuffey Project will manage the Network and hire the staff. The Project, a 501(c)(3) organization, is comprised of teachers and organizers who have led both successful technology integration efforts and grassroots organizing efforts.

The Project will hire a Project Director. Bonnie Bracey, who is already on the McGuffey staff, will be the Director of Outreach of the Network. She is universally recognized for helping other educators successfully integrate technology into their learning environments and was the only teacher selected by President Clinton to serve on the National Information Infrastructure Advisory Committee (see attached biography p. 27).

The 4,000 teachers who will initially join the network were recruited by a group of leading national education organizations. These groups are partners in this application and will serve as the Steering Committee for the Network. The initial members of this committee are our partners, the National Education Association, the National School Boards Association, the Software Publishers Association, and TechCorps. These organizations will also be part of a Resource Committee that will meet regularly to provide content resources to the site (see attached letter and background pp. 18-26).

Chapter leaders will be recruited and helped by an advisory group of experts who have committed to supporting and developing programs for network participants. These include Larry Anderson, Director, National Center on Technology Planning, Bruce Daley, Administrative Specialist for Technology for the Clark County School District, and Kathleen Fulton, Associate

Director of the Center for Education Technology at the University of Maryland (see attached letters of support and bios pp. 28-35).

Budget and Implementation Schedule

Requested funding for The 21st Century Teachers Network will cover two years. The first phase of the project will involve outreach to raise awareness of the network through partnership organizations, completing the Intranet site, building connections to resources through the network's Intranet site, and recruiting overall and chapter leaders.

The second phase will be launched soon after the site is built and customized, which is expected to take between 1-2 months. This will include the development of the service desk to support both members of the network and specific chapter leaders. Two teacher support staff members will be responsible for handling service requests. After the first few months of operations, the Network staff will begin supporting chapter leaders with resources, information briefcases, and other opportunities to help them lead others (see timeline and organizational chart pp. 9-13).

Sustainability

For the most part, content and information will be sustained mainly by its users. As the network grows, we expect resources from outside sources that want to demonstrate their content and information for a national network of education technology leaders. As chapters develop throughout the network, we expect increased field activities throughout the country. While many states are still focused on getting the "wire and the box" into schools, 21st Century Teachers Network chapters will help organize teacher leaders and build face-to-face meetings and a more hands on approach to individual leadership development, utilizing the national network of teachers to support these state efforts. Funding for these chapters would likely come from state institutions and local businesses.

III. Community Involvement

Partnerships

The partners of the 21st Century Teacher Network include many of the Nation's recognized leaders in education. Every partner recognizes the importance of building a movement of teacher leaders that can help expand the effective integration of technology in the classroom.

The Steering Committee will assist with the overall strategy of the 21st Century Teachers Network, provide education content resources for the site, and utilize their national memberships to both recruit and disseminate information about the network. These organizations will be vital in the development of field efforts around the country.

Members of the Advisory Committee will help facilitate discussions in various chapters and provide assistance to the service area to respond to member's questions. These individuals will also help expand the advisory committee.

Community participation

The 21st Century Teacher Network will focus on building a national community from local people. Each partner will recruit members from their organizations and affiliates around the country and encourage them to join the Network. In addition, we will help build connections between teachers and other key leaders: administrators, parents, government officials, and community organizations in targeted states and communities.

Support for End users

The central purpose of the Network is serving end users: teachers. Serving them by providing both information, connections, and encouragement. Imagine Julie Smith, a social studies teacher in a middle school who read about the Network, and committed to learn more and mentor her colleagues. She requested a password and entered the site.

There she found a wealth of information. She pulled up specific teaching models for integrating technology in her classroom. She joined the Social Studies Chapter and a discussion group on "Getting Your School Fully Connected". She chatted on-line with four other social study teachers about potential collaboration projects for their students. Julie read a paper in the Library about getting your district to do more on professional development. She took some of those ideas directly to her principal. Then Julie heard that a chapter was forming of middle school history teachers. She received a message from a chapter leader encouraging her to look at various locations on the site. The chapter leaders told her to visit the calendar to find out about a summer institute for history teachers, and asked her if she would accept 4 new members for mentoring. Julie agreed and later was invited to join a small evening on-line discussion for active Network history mentors with Shelby Foote, the well known Civil War historian. She also received congratulatory e-mails from her state's Governor and the Vice President.

Privacy

Julie will not have to worry about her privacy. Every member of the network will be able to register their own password for this site (the site will be open to all teachers, but must be entered with a password). Each person's private information is completely closed to the outside and to other users; every piece of data on the site has its own security profile which defines who is authorized to access and use it. Those without access to particular data have no indication that the data exists. Passwords will be protected by IntraACTIVE.

IV. Disparity

Today there is a disparity in the attention given to teachers in education technology. Less than fifteen percent of technology budgets are dedicated to teacher training. Most public-private partnerships focus on installation of computers and wiring; little focus is given to the "people part" of technology integration. By focussing on teachers, we will reduce this huge disparity.

A disparity also exists today between the relatively few teachers that are fully supported and are integrating technology into their learning environments and the tens of thousands of others who are not. The Network will reduce this disparity between the empowered and supported "haves" and the inspired but often overlooked "have-nots" by: mentoring, focusing chapter organizing activities on subjects and geographic areas with the most need, connecting trained teachers to teachers in disadvantaged schools, and focussing our site content and staff expertise on methods of overcoming barriers in less advantaged schools.

Throughout this campaign, there will also be an emphasis on getting members of the network to adopt "off-liners" to demonstrate the power of technology and provide a mentoring role to teachers first beginning to use technology applications and the Internet.

At this time, there is a critical need for federal support. Support now can be leveraged to build on the equipment and software investments which have already been made, and the upcoming focus on additional assistance for local school districts. For example, there has been significant interest by corporations and the government to provide connectivity and resources to urban and rural school districts. This will surely increase as the Universal Service Fund for schools and libraries is fully implemented. The Network will reach out to corporations and foundations for grants to support local versions of the Network, particularly for disadvantaged school districts.

V. Evaluation

This Network is by teachers for teachers. The network will be evaluated and refined by educators throughout the project. The Intranet will provide a public conference area to accept suggestions from users and also present new ideas before they are tested on the site.

On-line surveys and questionnaires will be distributed on the Intranet twice a year to network users. In addition, electronic statistics will monitor use of Intranet functions, number of users accessing site, and length of stay by network members. These statistics will be regularly reviewed by the Steering Committee for changes and refinements to the Intranet.

The quality and quantity of content posted and shared on the Intranet will also be an important criteria upon review. Rather than users simply "browsing", the site will record the number and type of collaborative projects, discussions, and curriculum posted. Phone surveys with members will examine effectiveness of resources for Network members.

The Steering and Advisory Committees meet regularly on their own, and will come together once every six months to discuss the effectiveness of the network, review the site, and evaluate that Network's outreach functions. Members of the steering committees will also solicit comments and about the network's usefulness.

Finally, the Network has budgeted for two focus groups of members during the project. The results of these groups will be presented in an evaluation report, along with site usage statistics prepared by IntraACTIVE, after the first and second years of the project.

The evaluation for 21st Century Teachers Network will be conducted by Innovation Network, Inc. (InnoNet). InnoNet has widespread experience examining both national and community programs (see background pp. 37-39).



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Anything here?
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EDUCATION AND TECHNOLOGY PROGRAMS

NEH grantmaking in education

For more than 30 years, NEH has awarded grants to help strengthen the teaching and learning of humanities subjects in schools and colleges across the country. These grants support teachers, professors, and educational institutions in efforts to develop new materials, approaches, and topics in humanities education; demonstrate how these can be implemented in actual classroom settings; and make the results of successful development and demonstration efforts available as widely as possible.

NEH programs have helped to create some of the most important and far-reaching improvements in American education in the last 30 years, such as the National Writing Project, writing-across-the-curriculum programs, the revival of interest in the core curriculum, and foreign-languages-across-the-curriculum programs. No other organization or program fulfills this key role of generating effective, content-based improvements in humanities education at all levels of the nation's educational system.

Through small Humanities Focus Grants, NEH recognizes and supports groups of teachers who work together in the same or neighboring educational institutions. Through larger development and demonstration grants, NEH helps educators marshal the necessary resources to launch broadly based, nationally significant efforts on behalf of improved humanities teaching and learning. The agency also supports the creation of widely applicable print, video, and electronic instructional materials, as well as related curriculum and professional development efforts.

Sample grant

- With the help of a Humanities Focus grant, thirteen secondary school teachers in Houston collaborated with faculty from Texas Southern University to explore connections between jazz, folk art, and the writings of Langston Hughes, Zora Neale Hurston, James Weldon Johnson, and other members of the Harlem Renaissance. In daily writing sessions and in discussions the teachers began to design a new curriculum that would engage their students in learning more about the Harlem Renaissance.

Teacher training programs

NEH offers two kinds of summer study opportunities for school teachers. These NEH workshops are distinctive in the way they are grounded in specific humanities *content* and *materials*, as opposed to generalized technique or pedagogy.

- ◆ *NEH Summer Seminars for School Teachers* offer up to 15 participants--school teachers as well as principals and other educators from kindergarten through the twelfth grade--the opportunity to engage in intensive reading and study of basic humanities texts and documents. Seminar participants deepen their knowledge of significant humanities works and improve their ability to teach English, history, foreign languages, and the other humanities subjects in the schools.
- ◆ *NEH National Institutes for Elementary and Secondary Teachers*, on the other hand, allow groups of as many as 35 teachers from across the nation to come together under the leadership of a distinguished team of scholars to explore recent advances in understanding of humanities scholarship and teaching. Summer institutes are a particularly appropriate mechanism for creating foreign language immersion opportunities for elementary and secondary school teachers.

Sample grants

- In 1997, fifteen teachers from across the country will spend four weeks at Gonzaga University in Spokane, Washington, studying the Lewis and Clark expedition. They will compare Elliott Coues' 1893 *History of the Expedition Under the Command of Lewis and Clark* with twentieth-century scholarly editions; investigate specific topics suggested by the journals; and participate in a field trip down a segment of the Missouri River traveled by the expedition.
- Another 1997 summer institute for school teachers focuses on the use of performance in the teaching of Shakespeare. Twenty-five high school teachers of English from across the nation will gather for four weeks in Ashland, Oregon (home of the Oregon Shakespeare Festival) to immerse themselves in selected plays; study historical and literary works; attend live performances; and learn how to use acting in their classrooms to engage students in the meaning, the language, and the history of Shakespeare's plays.

NEH in the digital age

NEH plays a prominent national role in supporting projects that advance the humanities through electronic technology. Activities supported include the use of CD-ROMs and interactive displays in museum exhibitions, efforts to establish standards and protocols in converting humanities materials into digital format, and the development of hypertext materials and digital databases for scholarly research in the humanities.

Sample grants

- Utah State University is creating a database of linguistic and cultural materials documenting the life and culture of Numic-speaking Native American peoples, who lived throughout Utah, Idaho, Oregon, Nevada and California in pre-historic times. This exhaustive compilation of information about one of the largest linguistic groupings of Native America will shed new light on the pre-history of the American peoples and will serve as a model for the comparative historical reconstruction of Native American life and languages.
- A consortium of six universities is preserving, cataloging, digitizing, and putting on the Internet ancient Egyptian papyri from their collections, which are the six largest in the nation. Based at Columbia University, the project's staff will also develop a set of standards and procedures to digitize and provide on-line access to papyri and related documentation.
- A new Internet forum called H-Net, which began in 1994 with a grant from NEH, currently serves over 65,000 people interested in the study of history and receives more than 150,000 electronic message postings per day. The American Historical Association has just awarded H-Net and its founder, Richard Jenson, the 1997 James Harvey Robinson Prize for the most outstanding contribution to the teaching and learning of history.

Teaching With Technology

To date, most advances in educational technology have come in the area of math and science. Through the *Teaching with Technology* initiative, the Endowment is stimulating similar progress in history, English, foreign languages, and other humanities subjects. This three-year program, launched in 1996, is designed to support efforts to improve humanities instruction through the development, testing, and implementation of new information technologies. These technologies—including digital audio, video and imaging, hypertext and hypermedia, video-conferencing, speech processing, the Internet, and World Wide Web sites—can enable teachers to engage their students in more active content-rich learning and thinking.

NEH focuses its support on three pivotal moments in the development and classroom use of digitized humanities content: materials development, field testing and classroom applications, and teacher preparation.

Sample grants

- Northwestern University in Evanston, Illinois, received support for the development and deployment of a multimedia relational database on the history of the United States Supreme Court. Recently made available on the World Wide Web, <<http://oyez.at.nwu.edu/oyez.html>>, the project enables students from around the country and the world to learn about this nation's highest court. The project reports that "visits" or "hits" at this web site are averaging a stunning 250,000 per month.
- *Valley of the Shadow*, an interactive program for learning about the Civil War, is based at the University of Virginia. Users will be able to explore every aspect of the conflict and reconstruct the life stories of soldiers, enslaved and free blacks, families, women, politicians, farmers, and merchants. Contains a rich archive of diaries, letters, newspapers, street maps, census information, and other primary documents relating to the lives of two communities in the North and South before the war. Available on the World Wide Web, <<http://jefferson.village.virginia.edu/vshadow2>>.

Preparing Schools for the Information Age (PS.InfoAge)

While helping to develop electronic materials is an important mission of NEH, new developments in technology may have limited impact unless schools are prepared to take full advantage of them. Thus, in fiscal year 1998, NEH plans to build a new initiative on the basis of the highly successful *Teaching with Technology* initiative. The aim of the new three-year special emphasis will be to jump start the process by which schools and their teachers become competent, and comfortable, with these new humanities materials and technologies. The extent to which schools and teachers are proficient in using electronic materials and formats will directly affect the level of student learning and achievement. Projects to be supported under this new initiative would

- involve a whole school and require commitments from teachers, the principal, and the Parent-Teacher Association;
- leverage public-private funding partnerships and establish links with parents, local colleges, and universities;
- focus on challenging substantive questions in the humanities that could be addressed by the use of rigorous interactive educational software;
- support hands-on training for a school's teachers and enough time to develop both confidence with the technology and the materials and to create challenging and engaging classroom uses that would enrich the school's curriculum; and
- exploit the potential of the Internet not only to link participants in a single project but also to trigger rapid fire, nationwide dissemination and participation.

1965

- Public Law 89-209 establishes the National Endowment for the Humanities

1966

- Endowment's first grants to the American Society of Papyrologists and to the American Council of Learned Societies

1967

- *The Letters of Louis D. Brandeis*
- *John Dewey: The Early Works*
- *The Wellesley Index to Victorian Periodicals*
- First fellowships: among the recipients Jaroslav Pelikan and James McPherson

1968

- *The Booker T. Washington Papers*
- *The Collected Writings of Walt Whitman*
- *The Papers of Ulysses S. Grant*
- *The Princeton Encyclopedia of Classical Sites*

1969

- First volume of Dumas Malone's *Jefferson the President*
- Kyrenia ship project

1970

- *The Papers of George Washington*
- *Civilization* film series distributed to 2,000 colleges

1971

- *Walden* edition
- *Dictionary of American Regional English*
- State Councils formed

1972

- IREX grant to widen scholarly

NATIONAL ENDOWMENT FOR THE HUMANITIES



AT THIRTY YEARS

As the National Endowment marks its anniversary, here are some of the milestones along the way, from the King Tut exhibition to the Library of America to the epic film *The Civil War*.

exchanges with the Soviet Union and Eastern Europe

- Summer seminars for college teachers

1973

- "Paintings from the USSR"
- *History of Culture*
- Courses by newspaper
- *Encyclopedia of Bioethics*

1974

- First National Humanities Institute
- *The Papers of John Marshall*
- "Masterpieces of Tapestry"
- *Thesaurus Linguae Graecae* database

1975

- "From the Lands of the Scythians"
- *The Papers of John Adams*
- *The Papers of John Quincy Adams*
- "Archaeological Treasures from the People's Republic of China"
- *The Frederick Douglass Papers*
- *The Jane Addams Papers*
- *Jefferson and His Times*

1976

- *The Adams Chronicles*
- "Treasures of Tutankhamun"
- States and Nation series for U.S. bicentennial
- *The Papers of Benjamin Franklin*

1977

- Paul Fussell's *The Great War in Modern Memory* wins National Book Award
- *Edith Wharton: A Biography*
- *American Short Story* series on TV

1978

- Film of *The Scarlet Letter*
- *Intellectual Life in the Colonial South*
- *The Papers of Dwight D. Eisenhower*
- Slavery and Human Progress project
- *Byron's Letters and Journals*

1979

- *The Encyclopedia of the American Constitution*
- *Political Parties in America*
- *The Dred Scott Case: Its Significance in American Law and Politics* wins Pulitzer Prize
- "Heartland"

1980

- Dead Sea Scrolls photographed
- *Middle English Encyclopedia*
- *Lewis and Clark Journals* annotated edition
- "The Great Bronze Age of China"

1981

- *A History of Cartography*
- *The Papers of Thomas Edison*
- *Journals of Henry David Thoreau*
- Chautauqua expands to the Great Plains
- *The Letters of Gustave Flaubert*

1982

- Library of America
- *The Papers of Andrew Jackson*
- *The Papers of Andrew Johnson*
- *The Brooklyn Bridge*
- *Documentary History of the Ratification of the Constitution*
- U.S. Newspaper Program

1983

- *The Works of Giuseppe Verdi*
- *Isak Dinesen: The Life of a Storyteller*
- *The Papers of James K. Polk*
- Summer seminars for schoolteachers
- "Let's Talk About It" library discussion program

1984

- "The Homefront" in World War II
- Computerizing of Dante
- "The Sun King: Louis XIV and the New World"
- *The Brownings' Correspondence*

1985

- The first Cowboy Poetry Gathering in Elko, Nevada

- *The Stone Carvers* wins Academy Award
- *The Correspondence of Charles Darwin*
- Documentary on Herman Melville

1986

- *Louise Bogan: A Portrait* wins Pulitzer Prize
- *Life and Times of Huey Long*
- *The Cambridge History of China*

1987

- Bicentennial Bookshelf
- *Chaucer: His Life, His Works, His World*
- *Voyagers to the West* wins Pulitzer Prize

1988

- *The Letters of Mark Twain*
- Teacher-Scholar program
- *Battle Cry of Freedom* wins Pulitzer Prize
- *The Letters of Jack London*
- "The Art of Paul Gauguin"

1989

- *The Papers of Thomas A. Edison*
- "Goya and the Spirit of Enlightenment"
- Distinguished Teaching Professorships
- *Encyclopedia of Southern Culture* published
- Demarest on war and the Mayan civilization

1990

- *Historical Atlas of Political Parties in the United States Congress: 1789-1989*
- *The Legal Papers of Abraham Lincoln*
- "A City Comes of Age"
- *A Midwife's Tale* wins Pulitzer
- "Yoruba"

- *Randall Jarrell: A Literary Life*
- *The Civil War* televised

1991

- "Seeds of Change"
- *The Age of Discovery*
- Foreign language initiative
- "Always a River"

1992

- *The Great Depression*
- Repairs to museum, library, and school collections damaged by Hurricane Andrew and Midwest floods
- *Documentary History of the First Federal Congress*
- "Art of the American Indian Frontier: The Chandler-Pohrt Collection"
- *The Papers of Thomas Jefferson*
- Archival studies of former Soviet Union
- "The Worlds of Thomas Jefferson at Monticello"
- *Dancing*

1993

- "Ancient Nubia"
- *The Papers of James Madison*
- *Opera in America*
- "The Blues Project"
- "Nature, Technology, and Human Understanding"

1994

- *Baseball*
- *Wade in the Water: African-American Music Traditions*
- "The Age of Rubens"

1995

- National Conversation on American Pluralism and Identity
- *Out of Ireland* documentary
- *Harriet Beecher Stowe: A Life* wins Pulitzer Prize

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what learning means

NATIONAL ENDOWMENT FOR THE HUMANITIES

If a nation expects
to be ignorant and
free, in a state of
civilization, it expects
what never was and
never will be.

— Thomas Jefferson

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preserving america's heritage

NATIONAL ENDOWMENT FOR THE HUMANITIES

We confront the
danger of historical
amnesia. As the sources
for understanding
our national past
deteriorate and vanish,
we will gradually lose
our sense of identity.

— James McPherson

Pulitzer Prize-winning historian

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economic impact

NATIONAL ENDOWMENT FOR THE HUMANITIES

Culture is not
consumed like a
typical commodity
— a car or a
cabbage.

— 1992 Report to the South
Carolina Legislature

NATIONAL CENTER FOR EDUCATION STATISTICS

Statistics in Brief

February 1997

Advanced Telecommunications in U.S. Public Elementary and Secondary Schools, Fall 1996

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The *Survey of Advanced Telecommunications in U.S. Public Elementary and Secondary Schools, Fall 1996* requested information regarding the availability and use of advanced telecommunications in regular public schools and, in particular, access to the Internet, plans to obtain Internet access, use of advanced telecommunications by schools and teachers, and sources of support for advanced telecommunications in schools. Major findings of the survey are as follows:

- Sixty-five percent of U.S. public schools had access to the Internet in fall 1996 (table 1). This represented a gain of 15 percentage points in each of the last two consecutive years.
- While 61 percent of all public elementary schools had Internet access, about three-fourths (77 percent) of secondary schools had Internet access (table 1).
- Large schools were more likely to have Internet capabilities than their smaller counterparts. Eighty percent of public schools with 1,000 or more students had Internet access compared with 57 percent of schools with fewer than 300 students and 66 percent of schools enrolling between 300 and 999 students (table 1).
- Urban fringe (or suburban) schools reported higher rates of Internet access than schools in rural locales or towns. Seventy-five percent of urban fringe schools were connected to the Internet, compared with 60 percent for rural schools and 61 percent for schools in towns (table 1).
- Public schools with high levels of students in poverty were less likely to be connected to the Internet. Internet access was available in about half (53 percent) of schools in which 71 percent or more students were eligible for the free or reduced-price lunch program and in 58 percent of those in which 31 to 70 percent of students were eligible.

In comparison, 72 percent of schools with 11 to 30 percent student eligibility for the lunch program had Internet access and 78 percent of those with less than 11 percent free or reduced-price lunch eligibility were connected to the Internet (table 1).

- Eighty-seven percent of public schools that did not have access to the Internet had plans to obtain access by the year 2000 (table 2). Thus, 95 percent of the nation's public schools were expecting to obtain Internet access by the end of the century (figure 3).
- In fall 1996, 14 percent of all public school instructional rooms (classrooms, computer or other labs, and library media centers) were connected to the Internet (table 1). This was more than a fourfold increase since fall 1994, when 3 percent of all instructional rooms had access to the Internet.
- In 5 percent of public schools on the Internet, Internet access capabilities were not installed in instructional rooms (including classrooms, computer or other labs, and library media centers). Forty-three percent of schools with Internet access provided this access in one instructional room (figure 2). Twenty-two percent had access in two or three rooms, 4 percent reported four rooms, and 25 percent were connected to the Internet in five or more instructional rooms.
- Among all public schools, 20 percent of teachers used advanced telecommunications for teaching (table 5).
- Thirteen percent of all public schools reported that training for teachers in advanced telecommunications was mandated by the school, district, or teacher certification agencies (table 6). Thirty-one percent of schools indicated that incentives were provided to encourage teachers to obtain advanced telecommunications training, while in about half (51 percent) of the nation's public schools it was left up to teachers to

initiate participation in advanced telecommunications training.

- Support for advanced telecommunications in all public schools was most frequently provided by local school districts. Eighty-three percent of public schools reported that the school district provided funds for advanced telecommunications (table 7). Funds from state or federal government agencies helped support advanced telecommunications in 38 percent of public schools, and 18 percent reported that parents or other community members provided monetary support for the schools' advanced telecommunications.

The National Information Infrastructure (NII) initiative, set forth by the President, encourages an acceleration of the goal to connect all of the nation's schools and classrooms, as well as libraries, hospitals, and law enforcement agencies, to the "Information Superhighway." In response to this federal goal, the U.S. Department of Education has commissioned three surveys to obtain data on the status of advanced telecommunications in public elementary and secondary schools. The first obtained baseline data in fall 1994 against which future change could be measured. A followup survey was conducted in fall 1995 and because the status of advanced telecommunications is changing rapidly, a third study, the *Survey of Advanced Telecommunications in U.S. Public Schools, Fall 1996*, was conducted for the National Center for Education Statistics (NCES) through its Fast Response Survey System (FRSS).

This report presents selected data from the fall 1996 survey; the data were collected from 911 regular public elementary and secondary schools and were weighted to produce national estimates for all regular public schools. Special education, vocational education, and alternative schools were not included in the study. Data presented include the prevalence of Internet access in public schools, the types of Internet capabilities schools make available, use of

advanced telecommunications by schools and teachers, and sources of support for advanced telecommunications in schools. Future reports will provide additional study findings, including barriers to the use of advanced telecommunications for students with disabilities.

Internet Access in Schools

Overall, 65 percent of public schools had Internet access during fall 1996 (table 1). This number represents all schools that had any access to the Internet.

Table 1.--Percent of all public schools and the percent of all public school instructional rooms with Internet access in fall 1994, fall 1995, and fall 1996, by school characteristics

School characteristic	Percent of schools with Internet access			Percent of instructional rooms with Internet access ¹		
	1994	1995	1996	1994	1995 ²	1996
All public schools.....	35	50	65	3	8	14
Instructional level ³						
Elementary	30	46	61	3	8	13
Secondary	49	65	77	4	8	16
Size of enrollment						
Less than 300.....	30	39	57	3	9	15
300 to 999.....	35	52	66	3	8	13
1,000 or more	58	69	80	3	4	16
Metropolitan status						
City	40	47	64	4	6	12
Urban fringe	38	59	75	4	8	16
Town	29	47	61	3	8	14
Rural	35	48	60	3	8	14
Geographic region						
Northeast	34	59	70	3	6	10
Southeast	29	44	62	2	5	10
Central	34	52	66	3	10	19
West.....	42	48	62	5	9	15
Percent minority enrollment						
Less than 6 percent.....	*	52	65	*	9	18
6 to 20 percent.....	*	58	72	*	10	18
21 to 49 percent.....	*	54	65	*	9	12
50 percent or more.....	*	40	56	*	3	5
Percent of students eligible for free or reduced-price school lunch						
Less than 11 percent.....	*	62	78	*	9	18
11 to 30 percent.....	*	59	72	*	10	16
31 to 70 percent.....	*	47	58	*	7	14
71 percent or more.....	*	31	53	*	3	7

*Data not available.

¹The percent of instructional rooms across the country is based upon the total number of instructional rooms (e.g., classrooms, computer labs, library/media centers) in all regular public elementary and secondary schools.

²Data for the percentage of all instructional rooms across the country with Internet access in 1995 was previously reported as 9 percent. Subsequent checking found that the correct number for 1995 is 8 percent.

³Data for combined schools are not reported as a separate instructional level because there were very few in the sample. Data for combined schools are included in the totals and in analyses by other school characteristics.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Advanced Telecommunications in Public Schools, K-12," FRSS 51, NCES 95-731; "Advanced Telecommunications in U.S. Public Elementary and Secondary Schools, 1995," FRSS 57, NCES 96-854; "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

School access to the Internet has increased by 15 percentage points for the second consecutive year. In 1994, when data were first collected, 35 percent of public schools were connected to the Internet (table 1). This increased to 50 percent by 1995 and rose again in 1996 to the current level.

Differences in Internet access in fall 1996 were found among schools by instructional level, size of enrollment, metropolitan status, and poverty level of students' families. While 61 percent of public elementary schools had Internet access, about three-quarters (77 percent) of public secondary schools were connected to the Internet. Schools with enrollments of 1,000 or more students were more likely to be connected to the Internet than their smaller counterparts. Eighty percent of large schools were connected to the Internet, compared with 66 percent of schools enrolling 300 to 999 students and 57 percent of those with fewer than 300 students.

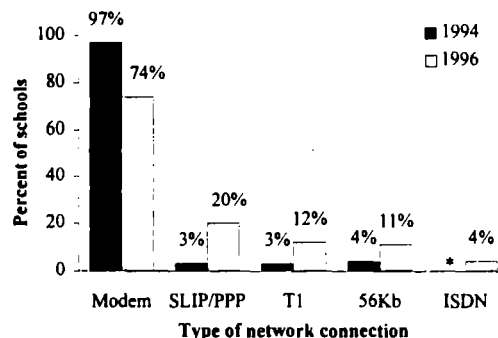
Urban fringe (or suburban) schools reported higher rates of Internet access than those in towns or rural areas. Seventy-five percent of public schools in urban fringe areas had Internet access compared with 61 percent in towns and 60 percent of schools located in rural areas.

School access to the Internet was examined by the level of poverty in the school as defined by the proportion of students eligible for the free or reduced-price lunch program. Schools with higher proportions of students eligible for the free or reduced-price lunch program were less likely to have Internet access than those with smaller percentages of students eligible for this program. About half (53 percent) of schools in which 71 percent or more students were eligible for the free or reduced-price lunch program had Internet access and 58 percent of those schools with 31 to 70 percent of eligible students had

Internet access. In comparison, about three-fourths (72 to 78 percent) of schools with smaller proportions of students eligible for free or reduced-price lunch had Internet access.

Schools connect to the Internet in a variety of ways. Although modems remained the most common means of connection, use of higher speed connections had increased since 1994. In fall 1996, 74 percent of schools with Internet were connected by modem (figure 1). Twenty percent used higher speed SLIP or PPP connections, 12 percent had a T1 connection, 11 percent had a 56Kb connection, and 4 percent connected to the Internet with an ISDN. This represents a change from 1994 when data were first collected. In 1994, 97 percent of schools with Internet connected by modem; 3 to 4 percent used each type of high speed connection such as a SLIP/PPP (3 percent), T1 (3 percent), or 56Kb (4 percent).

Figure 1.--Percent of public schools with Internet access, by type of network connection: Fall 1996



*Data not collected in 1994.

NOTE: The percents of public schools with each type of connection are based upon schools with Internet access--65 percent of public schools in 1996 and 35 percent of public schools in 1994. Percents do not sum to 100 because some schools had more than one type of connection.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Internet Access in Instructional Rooms

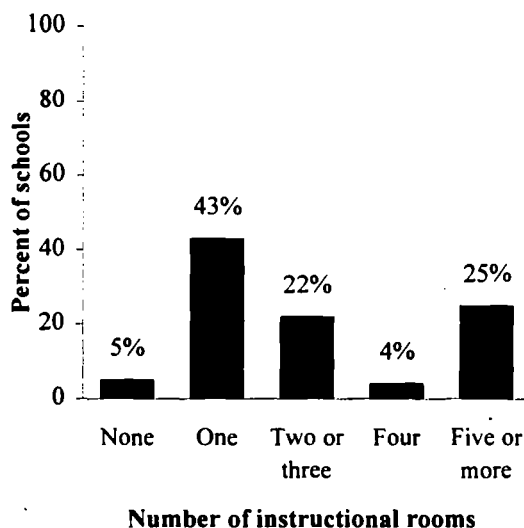
In addition to Internet access at the school building level, the survey collected information regarding the percentage of instructional rooms including classrooms, computer or other labs, school libraries, and media centers that had Internet access. Overall, while 65 percent of schools were on the Internet, 14 percent of all instructional rooms in U.S. public schools had Internet access. This percentage has grown by 5 to 6 percentage points annually since fall 1994 when 3 percent of instructional rooms were on the Internet (table 1).

The percentage of rooms with Internet access differed by percent minority enrollment and poverty of the school. While schools with minority enrollments of 20 percent or less reported Internet access in 18 percent of their instructional rooms, those with minority enrollments of 50 percent or more had access in 5 percent of their instructional rooms. Instructional rooms in schools with the highest level of student poverty (71 percent or more) were about half as likely to have Internet access (7 percent) as schools with lower levels of poverty (14 to 18 percent).

Of the schools with Internet access, 95 percent indicated that they had Internet access in at least one instructional room such as a classroom,

computer or other lab, or library media center (figure 2). Forty-three percent reported access in one instructional room, 22 percent had Internet access in two or three instructional rooms, 4 percent reported access in four instructional rooms, and 25 percent had Internet access in five or more rooms.

Figure 2.--Percent of public schools with Internet access, by the number of instructional rooms with access: Fall 1996



NOTE: Percents do not sum to 100 because of rounding and percents with Internet access in one or more instructional rooms do not sum to 95 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Future Plans for Internet Access

Among schools that do not currently have Internet access (35 percent of all schools), 87 percent have plans to obtain access to the Internet in the future (table 2). Seventy-four percent of schools either had Internet access or indicated that they planned to obtain Internet access by the end of 1997 (figure 3). All but 5 percent of public schools had or were planning to connect to the Internet by the year 2000.

No significant differences in plans for obtaining Internet access were found by school poverty level. However, schools with larger proportions of students in poverty had lower current levels of Internet connectivity. Proportionately, almost twice as many schools in which over 30 percent of students were eligible for school lunch programs (42 to 47 percent) as schools with lower levels of poverty (22 to 28 percent) did not already have access to the Internet (table 2). Thus, higher proportions of these schools

Table 2.—Percent of public schools that do not currently have access to the Internet and their plans to obtain access to the Internet, by school characteristics: Fall 1996

School characteristic	No current Internet access	Planning Internet access by year 2000 ¹	No plans for future Internet access
All public schools	35	87	13
Instructional level ²			
Elementary	39	85	15
Secondary	23	93	7
Size of enrollment			
Less than 300	43	83	17
300 to 999	34	88	12
1,000 or more	20	87	13
Metropolitan status			
City	36	84	16
Urban fringe	25	87	13
Town	39	88	12
Rural	40	87	13
Geographic region			
Northeast	30	94	6
Southeast	38	90	10
Central	34	77	23
West	38	89	11
Percent minority enrollment			
Less than 6 percent	35	86	14
6 to 20 percent	28	88	12
21 to 49 percent	35	95	5
50 percent or more	44	78	22
Percent of students eligible for free or reduced-price school lunch			
Less than 11 percent	22	88	12
11 to 30 percent	28	92	8
31 to 70 percent	42	84	16
71 percent or more	47	85	15

¹Schools reported whether they had plans to obtain access to the Internet. All schools reporting that they did have plans to obtain Internet access planned to obtain access by the year 2000.

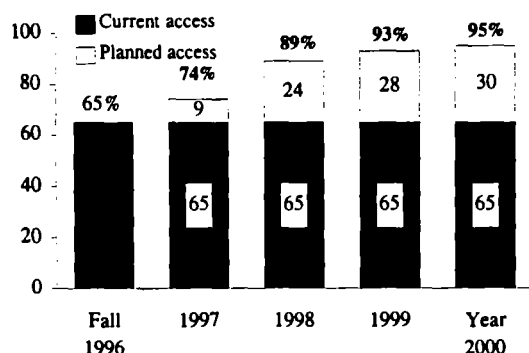
²Data for combined schools are not reported as a separate instructional level because there were very few in the sample. Data for combined schools are included in the totals and in analyses by other school characteristics.

NOTE: The percents of schools with and without plans for future Internet access are based upon schools with no current Internet access—35 percent of public schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996." FRSS 61, 1996.

must become connected if they are to equalize access for students in poverty.

Figure 3.--Percent of all public schools having or expecting Internet access between fall 1996 and the year 2000



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Type of Internet Capabilities Available

Ninety percent of schools with Internet access had e-mail and 89 percent had access to the World Wide Web (table 3). Ninety-four percent of schools with World Wide Web access made it available to teachers, 86 percent made it

available for administrative staff, and 74 percent made it available to students.

While most schools on the Internet provided teachers and staff access to e-mail, about a third (35 percent) made it available for student use.

Advanced Telecommunications

In addition to information obtained specifically about the Internet, all schools were asked about the use of advanced telecommunications in general. *Advanced telecommunications*, while including the Internet, refers more broadly to all modes of communication used to transmit information from one place to another including broadcast and interactive television, two-way video, and networked computers (both local and wide area networks). With the exception of the Internet, access to other advanced telecommunications capabilities were relatively unchanged since 1994 (unpublished tabulations). Schools provided information about the use of these telecommunications by schools and teachers, training for teachers, and various sources of support for advanced telecommunications in schools.

Table 3.--Percent of public schools having access to the Internet, by various types of Internet capabilities and members of the school community having access to the capability: Fall 1996

Internet capability	Available ¹	Members of school community with access to capability ²		
		Administrative staff	Teachers	Students
E-mail	90	92	88	35
News groups	57	85	91	43
Resource location services (e.g., Gopher, Archie, Veronica, etc.)	67	87	93	64
World Wide Web Access (e.g., browsers, such as Netscape, MOSAIC).....	89	86	94	74

¹Percents in this column are based upon the number of schools having access to the Internet--65 percent of public schools.

²Percents in these columns are based upon the number of schools with the corresponding Internet capability.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Uses of Advanced Telecommunications by Schools and Teachers

Seventy-four percent of schools used advanced telecommunications (including but not limited to the Internet) to access information (table 4).

Sixty-seven percent of schools used advanced telecommunications for record keeping within schools or school districts. About one-fifth of schools used advanced telecommunications to communicate with parents or for distance learning (22 percent for each).

Table 4.--Percent of all public schools using advanced telecommunications in selected ways, by school characteristics: Fall 1996

School characteristic	Use of advanced telecommunications ¹			
	To access information	For record keeping within school or school district	To communicate with parents	For distance learning
All public schools.....	74	67	22	22
Instructional level ²				
Elementary	71	66	22	19
Secondary	84	68	21	33
Size of enrollment				
Less than 300.....	65	56	19	22
300 to 999.....	76	69	22	21
1,000 or more	83	80	29	33
Metropolitan status				
City	72	70	26	22
Urban fringe	81	71	25	19
Town	72	66	23	20
Rural	71	60	16	29
Geographic region				
Northeast	72	59	18	17
Southeast	79	75	27	29
Central	77	60	22	22
West.....	69	72	21	22
Percent minority enrollment				
Less than 6 percent.....	74	55	17	23
6 to 20 percent.....	79	72	23	23
21 to 49 percent.....	72	66	27	27
50 percent or more.....	71	78	23	17
Percent of students eligible for free or reduced-price school lunch				
Less than 11 percent.....	78	62	25	25
11 to 30 percent.....	75	62	20	24
31 to 70 percent.....	72	68	21	22
71 percent or more.....	71	77	25	17

¹Advanced telecommunications includes all modes of communications technology used to transmit information from one place to another including local and wide area computer networks (including the Internet); broadcast, cable, and interactive television; one-way video with two-way audio or computer link; two-way video; etc. Advanced telecommunications do not include standard telephone and fax capabilities.

²Data for combined schools are not reported as a separate instructional level because there were very few in the sample. Data for combined schools are included in the totals and in analyses by other school characteristics.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Schools also reported the proportions of teachers in the school regularly using any advanced telecommunications for teaching, professional development, or curriculum development. Twenty percent of public school

teachers were using advanced telecommunications for teaching, 16 percent for professional development, and 15 percent for curriculum development (table 5).

Table 5.--Percent of teachers in all public schools regularly using advanced telecommunications for teaching, professional development, and curriculum development, by school characteristics: Fall 1996

School characteristic	Teachers using advanced telecommunications ¹ for:		
	Teaching	Professional development	Curriculum development
All public schools.....	20	16	15
Instructional level ²			
Elementary	22	17	15
Secondary	18	15	14
Size of enrollment			
Less than 300.....	20	15	16
300 to 999.....	22	17	15
1,000 or more	16	14	14
Metropolitan status			
City	18	15	15
Urban fringe	20	17	14
Town	23	16	15
Rural.....	20	17	16
Geographic region			
Northeast	19	16	13
Southeast	23	16	14
Central	19	17	15
West.....	20	15	17
Percent minority enrollment			
Less than 6 percent.....	22	17	16
6 to 20 percent.....	19	15	16
21 to 49 percent.....	21	17	15
50 percent or more.....	19	14	13
Percent of students eligible for free or reduced-price school lunch			
Less than 11 percent.....	20	17	16
11 to 30 percent.....	20	16	15
31 to 70 percent.....	22	16	15
71 percent or more.....	20	15	14

¹Advanced telecommunications includes all modes of communications technology used to transmit information from one place to another including local and wide area computer networks (including the Internet); broadcast, cable, and interactive television; one-way video with two-way audio or computer link; two-way video; etc. Advanced telecommunications do not include standard telephone and fax capabilities.

²Data for combined schools are not reported as a separate instructional level because there were very few in the sample. Data for combined schools are included in the totals and in analyses by other school characteristics.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

These percentages showed very little variation across school characteristics. Rather, there seemed to be a core of teachers, in very diverse schools, using advanced telecommunications.

Teacher Training

Teacher training in advanced telecommunications was mandated by the school or district or required by teacher certification agencies in 13 percent of schools, while in about half of schools it was left up to teachers to initiate participation in advanced telecommunications training (51 percent; table 6). Thirty-one percent of schools offered incentives to encourage teachers to participate in advanced telecommunications training.

Support for Advanced Telecommunications in Schools

Across various types of support, local school districts were the most frequently reported source of support for advanced telecommunications. In terms of funds, 83 percent of schools indicated that they received funds from the school district, 38 percent obtained funding from state or federal government agencies, and 18 percent reported that parents or other community members supported advanced telecommunications in the school with funds (table 7). Teachers provided advanced telecommunications training in 28 percent of schools and technical assistance in 24 percent of schools.

Summary

Considerable progress has been made in connecting all public schools to the Internet. By fall 1996, 65 percent of all regular public schools were already connected; an additional 30 percent reported that they planned to have Internet access by the year 2000. However, connecting schools is only part of the equation. Although Internet access in instructional rooms in public schools more than quadrupled between fall 1994 and fall 1996 (from 3 percent to 14 percent of all instructional rooms), the actual percentage of instructional rooms with Internet access remains low. Student access to the Internet is another part of the equation, but one about which little is known.

Although the surveys included in this report focused on regular public schools, the National Center for Education Statistics has collected information on Internet access in private schools through a fall 1995 FRSS survey. A report of the findings from that survey will be released shortly. National data regarding Internet access in special types of public schools (special education, vocational education, and alternative schools), however, have not been collected.

In addition to tracking the rate at which schools and instructional rooms have access to the Internet, the *Survey on Advanced Telecommunications in U.S. Public Elementary and Secondary Schools, Fall 1996* gathered data regarding what other kinds of advanced telecommunications are available in schools, types of teacher training in advanced telecommunications provided by schools and school districts, and barriers to the use of schools' advanced telecommunications resources by students with disabilities. These issues will be examined in forthcoming NCES reports, scheduled for release later in 1997.

Table 6.--Percent of all public schools in which advanced telecommunications training for teachers is mandated, encouraged by incentives, left up to teachers to initiate, or described in some other way, by school characteristics: Fall 1996

School characteristic	Advanced telecommunications ¹ training for teachers is:			
	Mandated by school or district or by teacher certification agencies	Encouraged by incentives	Left up to teachers to initiate participation	Other
All public schools.....	13	31	51	4
Instructional level ²				
Elementary	13	31	51	4
Secondary	11	32	53	4
Size of enrollment				
Less than 300.....	11	32	51	7
300 to 999.....	14	31	52	3
1,000 or more	9	34	53	4
Metropolitan status				
City	7	30	59	4
Urban fringe	13	39	46	2
Town	19	26	52	3
Rural	13	30	50	8
Geographic region				
Northeast	8	37	51	3
Southeast	22	29	45	4
Central	11	34	50	5
West.....	11	27	57	5
Percent minority enrollment				
Less than 6 percent.....	11	33	50	5
6 to 20 percent	15	35	47	3
21 to 49 percent.....	15	29	52	4
50 percent or more.....	11	26	59	4
Percent of students eligible for free or reduced-price school lunch				
Less than 11 percent.....	14	38	44	5
11 to 30 percent.....	11	39	45	5
31 to 70 percent.....	15	24	58	3
71 percent or more.....	11	29	57	3

¹Advanced telecommunications includes all modes of communications technology used to transmit information from one place to another including local and wide area computer networks (including the Internet); broadcast, cable, and interactive television; one-way video with two-way audio or computer link; two-way video; etc. Advanced telecommunications do not include standard telephone and fax capabilities.

²Data for combined schools are not reported as a separate instructional level because there were very few in the sample. Data for combined schools are included in the totals and in analyses by other school characteristics.

NOTE: Percents may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Table 7.—Percent of all public schools by sources of support for advanced telecommunications in the schools: Fall 1996

Organization	Support for advanced telecommunications*					
	Funds	Hardware	Software	Training	Technical assistance	Network access
School district	83	76	74	76	73	57
College or university	1	2	2	12	6	7
Business or industry	10	13	9	5	7	4
State or federal government agencies	38	18	15	17	12	11
Other community nonprofit organizations (e.g., libraries, museums)	6	4	4	3	3	3
Teachers	6	6	11	28	24	4
Students	1	1	2	3	5	1
Parents or other community members	18	14	11	4	11	1
Other	1	1	1	1	1	1

*Advanced telecommunications includes all modes of communications technology used to transmit information from one place to another including local and wide area computer networks (including the Internet); broadcast, cable, and interactive television; one-way video with two-way audio or computer link; two-way video; etc. Advanced telecommunications do not include standard telephone and fax capabilities.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Technical Notes

The sample of elementary and secondary schools for the FRSS survey on advanced telecommunications was selected from the 1993-94 NCES Common Core of Data (CCD) Public School Universe File. Over 84,000 public schools are contained in the CCD public school universe file. For this survey, elementary and secondary schools were selected. Special education, vocational education, and alternative schools were excluded from the survey along with schools that did not have at least first grade and those outside the 50 states and the District of Columbia.

A stratified sample of 1,000 schools was selected from the public school frame. To select the sample, the frame of schools was stratified by instructional level (elementary, secondary) and by geographic region (Northeast, Southeast, Central, and West). Within these primary strata,

schools were also sorted by metropolitan status (city, urban fringe, town, rural), size of enrollment (less than 300, 300-499, 500-999, 1,000-1,499, 1,500 or more), and percent minority enrollment (less than 5 percent, 5-19.9 percent, 20-49.9 percent, 50 percent or more). The allocation of the sample to the major strata was made in a manner that was expected to be reasonably efficient for national estimates, as well as for estimates for major subclasses.

In September 1996, questionnaires were mailed to the principals in the 1,000 sampled schools. The principal was asked to forward the questionnaire to the computer or technology coordinator or to whomever was most knowledgeable about the availability and use of advanced telecommunications at the school. Telephone followup of nonrespondents was initiated in late October, and data collection was completed in November. Five schools were found to be closed, and a total of 911 schools

completed the survey. Thus, the final response rate was 92 percent (911 of 995 eligible schools).

The survey responses were weighted to produce national estimates. The weights were designed to adjust for the variable probabilities of selection and differential nonresponse. The findings in this report are estimates based on the sample selected and, consequently, are subject to sampling variability. The standard error is a measure of the variability of estimates due to sampling. It indicates the variability of a sample estimate that would be obtained from all possible samples of a given design and size. Standard errors are used as a measure of the precision expected from a particular sample. If all possible samples were surveyed under similar conditions, intervals of 1.96 standard errors below to 1.96 standard errors above a particular statistic would include the true population parameter being estimated in about 95 percent of the samples. This is a 95 percent confidence interval. For example, the estimated percentage of public schools with Internet access is 65 percent, and the estimated standard error is 1.8 percent. The 95 percent confidence interval for the statistic extends from $65 - (1.8 \times 1.96)$ to $65 + (1.8 \times 1.96)$, or from 61 to 69 percent. Estimates of standard errors for this report were computed using a technique known as the jackknife replication method. Standard errors for all of the estimates are presented in the tables. All specific statements of comparison made in this report have been tested for statistical significance using chi-square tests and t-tests adjusted for multiple comparisons using the Bonferroni adjustment and are significant at the 95 percent confidence level or better.

The survey estimates are also subject to nonsampling errors that can arise because of nonobservation (nonresponse or noncoverage)

errors, errors of reporting, and errors made in collection of the data. These errors can sometimes bias the data. Nonsampling errors may include such problems as the differences in the respondents' interpretation of the meaning of the questions; memory effects; misrecording of responses; incorrect editing, coding, and data entry; differences related to the particular time the survey was conducted; or errors in data preparation. While general sampling theory can be used in part to determine how to estimate the sampling variability of a statistic, nonsampling errors are not easy to measure and, for measurement purposes, usually require that an experiment be conducted as part of the data collection procedures or that data external to the study be used. To minimize the potential for nonsampling errors, the questionnaire was pretested with public school technology coordinators and other knowledgeable respondents like those who completed the survey. During the design of the survey and the survey pretest, an effort was made to check for consistency of interpretation of questions and to eliminate ambiguous items. The questionnaire and instructions were extensively reviewed by the National Center for Education Statistics. Manual and machine editing of the questionnaire responses were conducted to check the data for accuracy and consistency. Cases with missing or inconsistent items were recontacted by telephone to resolve problems. Data were keyed with 100 percent verification.

The survey was performed under contract with Westat, Inc., using the NCES Fast Response Survey System (FRSS). Westat's Project Director was Elizabeth Farris, and the Survey Manager was Sheila Heaviside. Judi Carpenter, Shelley Burns, and Edith McArthur were the NCES Project Officers. The data were requested by Linda Roberts, U.S. Department of Education.

This report was reviewed by the following individuals:

Outside NCES

- Oona Cheung, Council of Chief State School Officers
- Douglas A. Levin, Pelavin Research Institute/American Institutes for Research
- David Osher, Pelavin Research Institute/American Institutes for Research

Inside NCES

- Michael P. Cohen, Statistical Standards and Services Group
- Mary J. Frase, Data Development and Longitudinal Studies Group
- Gerald S. Malitz, Surveys and Cooperative Systems Group
- William H. Freund, Surveys and Cooperative Systems Group
- Kerry L. Gruber, Surveys and Cooperative Systems Group

For a copy of the questionnaire, *Advanced Telecommunications in U.S. Public Schools, Fall 1996*, or for more information about the Fast Response Survey System, contact Shelley Burns, Data Development and Longitudinal Studies Group, National Center for Education Statistics, Office of Educational Research and Improvement, 555 New Jersey Avenue, NW, Washington, DC 20208-5651, telephone (202) 219-1463. This and other NCES reports are available on the Internet at www.ed.gov/NCES/.

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Advanced Telecommunications in U.S. Public Elementary and Secondary Schools, 1995, FRSS 57, NCES 96-854, Washington, DC: U.S. Government Printing Office.

Appendix A

Standard Error Tables

Table 1a.--Standard errors of the percent of all public schools and the percent of all public school instructional rooms with Internet access in fall 1994, fall 1995, and fall 1996, by school characteristics

School characteristic	Percent of schools with Internet access			Percent of all instructional rooms with Internet access		
	1994	1995	1996	1994	1995	1996
All public schools.....	1.5	1.8	1.8	0.3	0.7	1.0
Instructional level						
Elementary	1.9	2.4	2.1	0.4	1.0	1.5
Secondary	2.4	2.7	1.8	0.6	1.0	1.5
Size of enrollment						
Less than 300.....	3.4	3.9	4.4	0.7	1.6	2.9
300 to 999.....	2.0	2.2	2.0	0.5	1.0	1.2
1,000 or more	3.0	4.1	3.4	0.6	1.0	2.1
Metropolitan status						
City	3.1	4.3	4.5	0.8	1.3	1.6
Urban fringe	2.9	3.8	3.3	0.8	1.4	2.2
Town	2.3	3.7	4.0	0.6	2.0	1.9
Rural.....	2.7	3.8	3.3	0.4	1.5	2.2
Geographic region						
Northeast	3.1	5.3	4.3	0.7	1.4	2.4
Southeast	3.1	5.3	4.0	0.3	1.5	1.7
Central	2.8	3.3	3.7	0.8	1.3	2.5
West.....	2.6	3.4	3.5	0.8	1.4	1.8
Percent minority enrollment						
Less than 6 percent	*	3.3	3.4	*	1.4	2.4
6 to 20 percent	*	4.4	3.0	*	1.5	2.2
21 to 49 percent	*	4.0	3.2	*	2.1	2.3
50 percent or more.....	*	3.8	4.6	*	1.0	1.5
Percent of students eligible for free or reduced-price school lunch						
Less than 11 percent	*	3.5	3.6	*	1.6	2.9
11 to 30 percent	*	3.6	3.1	*	1.8	2.0
31 to 70 percent	*	2.9	3.2	*	1.6	1.8
71 percent or more.....	*	4.3	5.2	*	0.9	1.6

*Data not available.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Advanced Telecommunications in U.S. Public Elementary and Secondary Schools, 1995," FRSS 57, NCES 96-854; "Advanced Telecommunications in Public Schools, K-12," FRSS 51, NCES 95-731; "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Table 2a.--Standard errors of the percent of public schools that do not currently have access to the Internet and their plans to obtain access to the Internet, by school characteristics: Fall 1996

School characteristic	No current Internet access	Planning Internet access by year 2000	No plans for future Internet access
All public schools.....	1.8	2.1	2.1
Instructional level			
Elementary	2.1	2.5	2.5
Secondary	1.8	2.6	2.6
Size of enrollment			
Less than 300.....	4.4	4.4	4.4
300 to 999.....	2.0	2.5	2.5
1,000 or more	3.4	7.8	7.8
Metropolitan status			
City.....	4.5	5.4	5.4
Urban fringe	3.3	5.7	5.7
Town	4.0	4.1	4.1
Rural.....	3.3	4.2	4.2
Geographic region			
Northeast	4.3	4.3	4.3
Southeast	4.0	3.9	3.9
Central	3.7	5.2	5.2
West.....	3.5	3.3	3.3
Percent minority enrollment			
Less than 6 percent.....	3.4	3.8	3.8
6 to 20 percent.....	3.0	5.5	5.5
21 to 49 percent.....	3.2	2.9	2.9
50 percent or more.....	4.6	5.4	5.4
Percent of students eligible for free or reduced-price school lunch			
Less than 11 percent.....	3.6	7.0	7.0
11 to 30 percent.....	3.1	3.8	3.8
31 to 70 percent.....	3.2	3.7	3.7
71 percent or more.....	5.2	5.1	5.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Table 3a.--Standard errors of the percent of public schools having access to the Internet, by various types of Internet capabilities and members of the school community having access to the capability:
Fall 1996

Internet capability	Available	Members of school community with access to capability		
		Administrative staff	Teachers	Students
E-mail	1.3	1.2	1.7	2.2
News groups	2.1	2.0	1.5	2.7
Resource location services (e.g., Gopher, Archie, Veronica, etc.)	2.4	1.6	1.3	2.4
World Wide Web Access (e.g., browsers, such as Netscape, MOSAIC).....	1.6	1.4	1.2	2.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Table 4a.--Standard errors of the percent of all public schools using advanced telecommunications in selected ways, by school characteristics: Fall 1996

School characteristic	Use of advanced telecommunications			
	To access information	Record keeping within school or school district	To communicate with parents	For distance learning
All public schools.....	1.5	1.7	1.3	1.6
Instructional level				
Elementary	1.8	2.1	1.8	1.8
Secondary	1.8	2.1	1.8	3.0
Size of enrollment				
Less than 300.....	4.0	4.1	3.4	3.3
300 to 999.....	1.7	1.9	1.9	1.8
1,000 or more	2.9	3.4	3.7	4.0
Metropolitan status				
City.....	3.2	4.0	2.7	2.7
Urban fringe	2.9	3.4	2.9	3.2
Town	3.5	3.6	3.0	2.6
Rural.....	3.7	3.4	2.7	3.6
Geographic region				
Northeast	3.5	4.3	3.3	3.3
Southeast	3.2	3.4	3.4	3.7
Central.....	3.1	3.3	2.5	2.6
West.....	3.2	2.8	2.7	2.8
Percent minority enrollment				
Less than 6 percent.....	3.2	3.3	2.6	3.1
6 to 20 percent.....	3.1	3.4	2.9	3.2
21 to 49 percent.....	4.2	3.5	3.7	2.8
50 percent or more.....	3.5	3.4	3.2	3.3
Percent of students eligible for free or reduced-price school lunch				
Less than 11 percent.....	3.8	4.7	3.8	4.5
11 to 30 percent.....	3.4	3.7	2.6	3.3
31 to 70 percent.....	2.5	2.9	2.7	2.2
71 percent or more.....	4.4	4.5	4.3	3.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Table 5a.--Standard errors of the percent of teachers in all public schools regularly using advanced telecommunications for teaching, professional development, and curriculum development, by school characteristics: Fall 1996

School characteristic	Teachers using advanced telecommunications for:		
	Teaching	Professional development	Curriculum development
All public schools.....	1.0	0.9	0.8
Instructional level			
Elementary	1.3	1.1	1.0
Secondary	1.2	1.0	0.8
Size of enrollment			
Less than 300.....	2.3	2.0	2.2
300 to 999.....	1.3	1.1	1.0
1,000 or more	1.5	1.3	1.7
Metropolitan status			
City	2.2	1.8	2.0
Urban fringe	2.4	2.0	1.8
Town	2.1	1.6	1.7
Rural	1.8	1.7	1.9
Geographic region			
Northeast	2.6	2.6	2.4
Southeast	2.4	1.9	1.7
Central	1.7	1.8	1.5
West.....	1.8	1.4	1.6
Percent minority enrollment			
Less than 6 percent.....	1.7	1.5	1.5
6 to 20 percent.....	2.1	1.9	1.8
21 to 49 percent.....	2.3	1.9	1.6
50 percent or more.....	2.4	1.8	1.8
Percent of students eligible for free or reduced-price school lunch			
Less than 11 percent.....	2.6	2.6	2.4
11 to 30 percent.....	2.0	1.8	1.6
31 to 70 percent.....	1.8	1.7	1.4
71 percent or more.....	2.9	2.3	2.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Table 6a.--Standard errors of the percent of all public schools in which advanced telecommunications training for teachers is mandated, encouraged by incentives, left up to teachers to initiate, or described in some other way, by school characteristics: Fall 1996

School characteristic	Advanced telecommunications training for teachers is:			
	Mandated by school or district or by teacher certification agencies	Encouraged by incentives	Left up to teachers to initiate participation	Other
All public schools.....	1.3	1.7	1.9	0.7
Instructional level				
Elementary	1.6	2.1	2.3	0.9
Secondary	1.6	2.4	2.4	0.9
Size of enrollment				
Less than 300.....	2.4	3.3	3.1	2.1
300 to 999.....	1.7	2.4	2.7	0.8
1,000 or more	2.6	3.4	3.8	1.7
Metropolitan status				
City	2.2	3.7	4.2	1.5
Urban fringe	2.5	3.8	3.8	0.8
Town	2.4	3.5	4.3	1.3
Rural	2.2	3.1	3.6	2.2
Geographic region				
Northeast	2.7	4.9	5.0	1.5
Southeast	3.6	3.2	3.7	1.5
Central	2.1	3.4	3.4	1.6
West.....	2.1	3.2	3.2	1.4
Percent minority enrollment				
Less than 6 percent	2.2	3.3	3.2	1.5
6 to 20 percent	2.7	3.6	4.5	1.1
21 to 49 percent	3.0	3.9	4.4	1.8
50 percent or more.....	2.7	3.9	4.8	1.5
Percent of students eligible for free or reduced-price school lunch				
Less than 11 percent	2.8	4.9	4.4	1.8
11 to 30 percent	2.2	3.6	3.4	1.5
31 to 70 percent	2.5	2.2	3.2	1.2
71 percent or more.....	3.1	4.3	5.1	2.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Table 7a.--Standard errors of the percent of all public schools by sources of support for advanced telecommunications in the school: Fall 1996

Organization	Support for advanced telecommunications					
	Funds	Hardware	Software	Training	Technical assistance	Network access
School district.....	1.2	1.8	1.9	1.9	1.8	2.0
College or university	0.3	0.4	0.5	1.2	0.8	1.0
Business or industry	1.0	1.2	1.2	0.7	1.0	0.7
State or federal government agencies	1.9	1.6	1.3	1.3	1.1	1.2
Other community nonprofit organizations (e.g., libraries, museums).....	0.9	0.8	0.8	0.6	0.6	0.3
Teachers.....	0.9	0.8	1.0	1.9	1.5	0.6
Students	0.3	0.4	0.5	0.7	0.6	0.3
Parents or other community members	1.5	1.4	1.4	0.9	1.2	0.4
Other.....	0.4	0.4	0.4	0.4	0.4	0.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Table 8.--Estimates and standard errors for the figures: Fall 1996

Figure	Estimate	Standard error
Figure 1: Percent of public schools with Internet access, by type of network connection: Fall 1996		
1994		
Modem.....	97	0.7
SLIP/PPP	3	0.6
T1.....	3	0.8
56Kb.....	4	0.7
ISDN.....	*	*
1996		
Modem.....	74	1.8
SLIP/PPP	20	1.9
T1.....	12	1.5
56Kb.....	11	1.6
ISDN.....	4	0.7
Figure 2: Percent of public schools with Internet access, by the number of instructional rooms with access: Fall 1996		
None	5	1.2
One	43	2.5
Two or three	22	1.9
Four	4	0.8
Five or more	25	2.0
Figure 3: Percent of all public schools having or expecting Internet access between fall 1996 and the year 2000		
Current access.....	65	1.8
Planned access		
1997.....	74	1.5
1998.....	89	1.1
1999.....	93	0.9
Year 2000	95	0.8

*Data not collected for 1994.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61, 1996.

Turning Virtual Classrooms Into a Reality

Online College Degree Programs Offer Opportunities, Challenges

By Rene Sanchez
Washington Post Staff Writer

A new era is emerging on the nation's college campuses—one without campuses at all.

Across academia, some students are starting to conduct their college careers almost entirely by personal computer, interacting with professors and classmates online and rarely entering a classroom. Many universities are eagerly pursuing the idea of virtual degree

programs even as they worry about how it eventually could transform college life.

At the University of Maryland, more than 70 students in the graduate school of management and technology embarked this year on earning full-fledged master's degrees through the Internet. Several other similar graduate programs are scheduled to begin there soon.

This year, Duke University will graduate its first class of students with virtual master's degrees from

its business school. Other large, mainstream institutions—Ohio University, the University of Florida, Purdue—also now have their first online MBAs.

In the West, meanwhile, the governors of 13 states are developing what may be the most ambitious online academic venture yet: A fully accredited virtual university that they intend to open, albeit in cyberspace, by early next year.

See COLLEGES, A18, Col. 1

PHOTOCOPY
PRESERVATION

Many Educators Foresee Virtual Classrooms Becoming Integral Part of College Life

COLLEGES, From A1

"We're starting to see a revolution," said Nick Allen, the dean of Maryland's University College. "These are real classes and real degrees, only a modem away."

Long-distance learning has been a small part of higher education for decades. But the days of professors and students laboriously mailing assignments back and forth every few weeks during a semester are fading. So, too, are the audio or video lecture tapes that have become a staple of correspondence courses. Now, more campuses are opening classes on the Internet, or experimenting with two-way video technology, to allow faculty and students who are many miles apart to interact without delay.

The styles of the virtual classes vary. In some, professors post class assignments and academic lectures on computer bulletin boards and require students to check in regularly with questions or their completed assignments. Other courses emphasize online computer chat rooms that allow a teacher and a class, or a group of students teaming up on an academic project, to work together simultaneously. Some programs obligate students to convene on campus a few times a semester, or at least at the start of a course.

So far, the new programs are mostly for graduate students and tend to attract far-flung professionals who want advanced degrees but lack time to attend traditional classes, or who cannot uproot their lives to study full time on campus.

Roxanne Everetts, a 37-year-old network systems specialist for a firm in Falls Church, is among the pioneers. She is midway through the new online master's degree program at Maryland, and her reviews of it are good.

Payne, the director of educational technology at the University of Virginia. "It is an entirely different mind-set for colleges to consider, and it presents an awful lot of questions about the style in which you want your students to learn."

Life as a virtual student also has its own distinct glitches and shortcomings. Some colleges say lessons have been disrupted at times by computer problems. In some cases the programs are more costly because they require a computer and online access. Time differences can delay faculty responses to student questions.

Some students say that when they travel, hotels lack the computer services they need to tap into their classes. Hunter said that problem

has forced her to wait until she returned from a business trip to rejoin her virtual class. She had fallen days behind other students.

There are other concerns. Cheating is an issue in any collegiate setting, especially when students are judged largely by research papers, take-home exams or the work they do in group academic projects. But some educators worry that the potential for academic fraud is even greater when faculty and students interact largely by computer.

That is another reason why some new virtual programs also require students to spend some time in a traditional classroom.

"We do worry about it," said Richard Staelin, who directs Duke University's online initiative. "But I

think it's less of an issue when you're dealing with mature students. We strongly believe in an honor code at Duke, and the more you have campus sessions along with the distance learning, it becomes less of an issue. But there will always be some opportunity for fraud."

The educators advocating virtual learning also say that, for all the shortcomings, online learning holds a number of advantages: The idea could broaden access to college, tap student markets overseas and save money.

Costs are one of the central issues driving the western governors to try to create an online university. Across the nation, college enrollment is projected to rise through the next decade, and states such as Col-

orado, Nevada and Utah are bracing for much of the surge because their populations are growing sharply. But building new campuses to handle the influx of students would be expensive—far more, at least, than opening more classes in cyberspace.

Creating the virtual university that the western governors envision will take as much as \$10 million. But that is a mere fraction of what it would cost to purchase land and build traditional college campuses. All of the states involved in the project are contributing money; the rest is being raised from private foundations.

The idea is to create a spectrum of courses in the arts and sciences, business and law, taught mostly by professors from universities in the

states that are participating. Enrollment would not be limited to students in the West. Every course would be taught by computer, or interactive video. The university would grant its own degrees, or have completed online courses count toward degrees at other participating universities.

College officials across the nation are closely watching how the project evolves. Many university business schools, looking for competitive edges in attracting students worldwide, also are studying virtual degree programs like the new one at Duke, which will double in size next year and include more than 80 graduate students.

"This is a paradigm shift in education," said Duke's Staelin. "We can do things we've never done before."

PHOTOCOPY
PRESERVATION

At first, she worried that the courses would lack rigor, a stigma that has dogged long-distance learning programs for years. But Everetts said she spends several hours a day on her computer keeping up with course demands. One professor's syllabus is more than 40 pages long; it took an eternity to download. And working with professors, she said, almost seems easier than it was when she was an undergraduate in traditional classes at George Washington University.

"It's better," Everetts said. "Most of the interaction is one-on-one, and the program gives you flexibility. You're not on the road all night going to and from classes."

Judy Hunter is her classmate, so to speak. Hunter, a technology manager at the U.S. Geological Survey in Reston for more than a decade, decided to enroll in Maryland's virtual graduate program after casting aside serious doubts about it.

"I worried that a professor would be just this faceless entity out there I couldn't ever relate to," she said. "But in the online class I have now, I feel like I know him, even though we've never met. He could walk right by me on the street."

The initial experiments in online courses are proving to be so popular that many educators already foresee a day when virtual classrooms become an integral part of college life, competing with traditional campuses for students.

Hardly anyone is predicting the demise of those campuses. But with more adults returning to college, and with more students juggling jobs and courses at the same time, educators anticipate that online degree programs will become a widespread option.

"We're only at the very beginning of this," said Wayne Peay, a faculty member at the University of Utah who is helping plan the online campus that will bear the name Western Governors University.

To some academics, the prospect of virtual universities is at once thrilling and troublesome. Some professors say that they worry that as universities turn more attention to distance learning by computer, they stand to lose as much as they gain.

College, some faculty members contend, should not merely be a collection of courses to be completed as efficiently as possible, but an opportunity as well for students to develop socially and to soak in the rich and diverse intellectual atmosphere of a campus.

Some universities are allowing students to complete only a portion of their course requirements through computers. At Duke, students in the virtual business degree program meet once every four months. Faculty say those sessions help build trust and familiarity between students working together, albeit online, on academic projects.

Other campuses, however, are reluctant to offer any virtual classes.

"We are not convinced we're ready to move that way," said John

Olympic Cyber Village
Technology



Thomas A. Kalil

06/10/97 02:52:43 PM

Record Type: Record

To: Robert M. Shireman/OPD/EOP, William R. Kincaid/OPD/EOP, Michael Cohen/OPD/EOP

cc: Jim Kohlenberger/OVP @ OVP

Subject: Olympics Cyber Village

To the education gang:

We (Jim Kohlenberger, Linda Roberts, and myself) had a good meeting with PBS. They proposed developing an "Olympic Cyber-Village" that would build a curriculum around the '98 Winter Olympics.

We thought this was a great idea -- and worthy of WH support. A meeting here with some of the key industry players would probably be enough to get this off the ground -- this is sufficiently visible that sponsorship should not be a problem.

We also think there is a nice link between Olympic athletes and students striving to attain world-class standards.

Before we charge ahead on this, we wanted to find out:

1. What you think of the proposal.
2. Whether we should endorse it.
3. Whether you want to be involved in a meeting we would convene with industry and PBS to explore this.

A write-up of the proposal is attached. If we have ideas, I'm sure PBS would be willing to work with us.

Thanks!

- Tom Kalil

----- Forwarded by Thomas A. Kalil/OPD/EOP on 06/10/97 02:44 PM

PBS' Olympics Cyber Village (OCV)
"It takes a Cyber Village..."

PBS' Olympic Cyber Village will use the appeal of the Winter Olympics (2/7 – 2/22/98; Nagano, Japan) to involve fourth through eighth grade students and their teachers in a cross-curricular learning experience that integrates electronic resources and communications into student activities, and teacher professional development.

- * The OCV will be based on the Winter Olympics events and focused on three event clusters.

- * Each event clusters will consist of learning experiences and a broad spectrum of curricula that are based on and use the Olympic events within that cluster.

- * The learning experiences and curricula will be linked and integrated (cross-curricular) within each event cluster and across event clusters.

- * Each event cluster will include the following activities and resources:

- o Information about the events, including descriptions about the events, the venue, the athletes, etc.
- o Content and curricular materials produced by professional and commercial organizations for learners and teachers, including web sites.
- o Content and curricular materials produced by learners and teachers, individually and in collaboration, for learners and teachers, including web sites. These contributions will be screened initially at the school or organization where the material is created.
- o Challenges/Projects for learners, including:
 - Haiku writing
 - Design activities, e.g. event site design, event equipment design, event fashion design
 - Creating or writing for an event newspaper, radio spots, video
 - Statistical probabilities, hypothesis, educated guess contest
 - Best Web page per event
 - Writing about an Olympian
- o Professional development opportunities
- o Resources:
 - Reference materials (required)
 - Web-based discussion groups for learners and teachers (required)
 - Master teacher support (required)
 - Multi-media CD (optional)
 - Simulations (optional)
 - Real-time events, e.g., interviews, athletes on-line (optional)

- * Learning experiences and curricula within each event will include at least four of the following seven areas:

- o Design: facilities, sports equipment, clothing
- o Geography
- o Language Arts: writing, reading, journalism, biography, poetry
- o Math: business
- o Physical education
- o Science: biology of athletes, physics of the events, geology of the site, meteorology, nutrition
- o Social Sciences: History, gender issues, religion, culture,

- * Individuals and organizations will be able to participate in the OCV both prior to and/or during the Winter Olympics activities.

- o Prior to the Olympic events:
 - Event organizers will assemble and provide learning and teaching

content and activities in their event site beginning 7/1/97.

- Learners and teachers will be able to create and provide content and activities for each event site beginning 9/15/97.

- Learners and teachers will be able to participate in pre-Olympics projects/ challenges, e.g., design and creation of the Web-based virtual Olympic site beginning 9/15/97

- All materials provided will be filtered by the organization through which the material is being provided.

- o During the Olympics, learners and teachers will use the materials and participate in the learning activities, curriculum, and projects/challenges available on the site (2/7 – 2/22/98).

- * All content and materials provided for the OCV will be categorized by the provider according to:

- o Grade level (required)

- o Curricular area (required)

- o Skills learned (optional)

- o Professional development opportunities (optional)

- * Access to content and materials will be through the event, but within each event, and across events, users will be able to also access content and materials by:

- o Grade level

- o Curricular area

- o Skills learned (when available)

- o Professional development opportunities (when available)

- * Assessment activities will be integrated throughout the OCV, including:

- o Electronic surveys posted and completed through electronic forms, aggregated automatically by the system, and the results presented graphically and statistically on the OCV Web site.

- o System-generated usage data automatically calculated by the system and also presented on the Web site.

- * Participation in the OCV will require access to the Internet.

Information, activities, resources and communications will exist primarily on and through the OCV Internet site in order to:

- o Realize the goal of integrating electronic resources and communications into student activities, and teacher professional development.

- o Stimulate the use of these electronic resources by students and teachers who are considering the use of these resources.

- o Enhance the potential for success by singing to the choir, i.e., learners and teachers who are early adopters and already passionate and committed to the use of these resources.

- o Use and demonstrate the strength and reach of these resources.

- o Produce the OCV Project in the most cost effective manner possible.

- * Additional information about and resources for the OCV will also be distributed by other electronic media, and possibly hard copy delivery services.

- * The OCV site will look and feel as follows:

- o The home page will be a student designed and created Olympic village.

- o Users will click on one of the event venues and zoom into that area.

- o Once in an event , users will find:

- Information about the events.

- Curriculum

- Challenges/Projects
- Professional development opportunities
- Resources
- Filtering capabilities that will allow learners and teachers to find content by grade level, curricular area, skills learned (when available), and professional development opportunities (when available)
- * Participants in the OCV will have their contributions scored (Olympic point system) and be eligible for awards (e.g. medals, scholarships, trips to the Olympics)
- * Authoring standards will include:
 - o Technology standards
 - Media
 - Allowable size
 - o Educational standards
 - Teacher guides
 - Student activities
 - Projects/Challenges
 - o Web design standards
 - o Graphics standards
 - o Interactivity standards
 - o Right-to-copy standards; redistribution standards; attribution standards
 - o Professional development standards
- * Resources made available to authors/creators will include:
 - o Authoring standards
 - o Cool Links
 - o Authoring tools
 - o Tips and hints
 - o Discussion groups for authors
 - o Master teachers
 - o List of authors
 - o Information about the Olympics and the participants
- * Distributions technologies may include:
 - o World Wide Web
 - Live
 - Pre-produced
 - o CD Hybrid
 - o Push Technology (e.g., PointCast, Marimba, BackWeb, etc.)
 - o Video (e.g., broadcast, cable/satellite, video tape, Internet-based streaming video)
 - o Audio (e.g., radio, audio tape, Internet-based streaming audio, etc.)
- * The OCV organization will include:
 - o Management oversight by PBS, responsibilities including:
 - Strategic alliances (e.g., NBC, NHK, etc.)
 - Web design, development, creation, management
 - Creation of ancillary materials, e.g., CD
 - Incentives and Awards
 - Funding
 - Budgets
 - Marketing/PR/Advertising
 - o Design Team consisting of one representative from each of the following teams: PBS, Event Organizers, Discipline Editors, Challenge Team, Web Site Design Team, Technology Team, and Advisory Board will be

responsible for creating a final, detailed design document that will specify:

- Curriculum standards
- Content standards
- Challenge/Project standards
- Professional development standards
- Site design
- Authoring standards
- Technologies
- o Event Organizers Team will consist of three Event Organizers, one for each of the three event clusters who will be responsible for:
 - Managing their event to ensure that it meets the OCV Design Standards.
 - Collaborating in the recruiting and managing the contributors and resources.
 - Ensuring that all activities relate to and are appropriate for their event (high level editorial function).
 - Ensuring that all activities are cross-curricular.
 - Ensuring that all activities integrate professional development opportunities.
- o Discipline Editors Team will consist of seven Discipline Editors, one for each of the seven curricular areas who will be responsible for:
 - Managing their curricular area to ensure that it meets the OCV Design Standards.
 - Recruiting, managing and honoring those who contribute content and resources.
 - Ensuring that all activities and content relate to and are appropriate for their curricular area (high level editorial function).
 - Ensuring that all activities integrate professional development opportunities.
- o Challenge/Project Team will be responsible for:
 - Managing the OCV Challenges to ensure that they meet the OCV Design Standards.
 - Recruiting and managing the creators of challenges and their resources.
 - Recruiting, managing and honoring those who accept the challenges.
 - Ensuring that all activities and content relate to and are appropriate for the OCV (high level editorial function).
 - Ensuring that all challenges integrate professional development opportunities.
- o Web Site Design Team will be responsible for:
 - Establishing and managing the design standards for all contributions to the OCV Web site.
 - Designing and maintaining all OCV content on the OCV site, including the Olympic Cyber Village Main Page.
- o Technology Team consisting of a technology expert, the OCV Web Master, a database expert who will be responsible for:
 - Specifying, establishing and maintaining the OCV Web site.
 - Establishing the technical standards for all contributors and participants.
- o Advisory Board consisting of leaders from PBS, the Olympics, strategic partners, education, business, government, and potential funders will be responsible for:
 - Advising the OCV Project

- Assisting in the development of strategic alliances
- Assisting with marketing/PR
- Assisting in the acquisition of funding
- * OCV Schedule:

5/21/97 Start: First Meeting

5/31/97 First definition of all phases of project, i.e., refine this document to the level of detail necessary to complete the project.

6/2/97 Distribute second draft of concept paper and budget, and two page marketing document.

6/2/97 Establish PBS management oversight team, and begin all projects.

6/2/97 Identify, recruit, and initiate the activities of the Event Organizers, Discipline Editors, Challenge Team, Web Site Design Team, Technology Team, and Advisory Board.

6/2/97 Establish OCV Design Team

6/9/97 Design Team meeting to clarify responsibilities and create first draft of Design Document.

6/18/97 Design Team meeting to refine Design Document.

6/30/97 Final draft Design Document.

7/1-9/15 Create Web Site; gather information about events; gather, create, and integrate content, curricular materials and challenges; gather and create resources.

9/15/97 Publicize the OCV; notify the learners and teachers about the OCV; provide the necessary structure, templates, tools, resources and incentives to allow and encourage learners and teachers to create content for the OCV; provide an interim electronic venue where learner and teacher created content can be collected, edited and stored.

1/1/97 Olympic Cyber Village Homepage designs due.

2/7/98 Open ceremonies for the OCV

2/22/98 Closing ceremonies for the OCV

- - - - -

Adam Stewart
Fourth Grade Teacher
Detroit, Michigan

Adam Stewart, a recent graduate of Brown University, joined Teach America to postpone his entry into the adult world, to test his feelings about teaching, and to give back to those who were less fortunate. He was assigned to Malcom X Academy Elementary School, next to the largest housing project in Detroit, Michigan. Although the school was relatively new, and, thanks to Title 1, fully equipped with computers connected to the Internet, the first semester was hell. Most of his fourth grade students were reading well below grade level and could care less about school. He spent most of his time baby sitting and breaking up fights.

When Adam expressed concerns that he might not survive another semester, his supervisor shared with him a new PBS project called the Olympics Cyber Village (OCV), and suggested that he check out <http://www.ocv@pbs.org>. That night, when Adam entered the OCV's URL, and found a virtual Olympic Village created by fourth through eighth grade students from around the world. The site was loaded with active links, and while clicking through

the six major event areas, he became very interested in the Luge. He clicked on an image of Herchel Walker, and heard an audio clip of him explaining why he was participating in the Winter Olympics.

The next day, Adam asked his principal if he had received an OCV CD that, according to the site, had been included in a NetDay mailing that was scheduled to arrive at every school by mid-September. Unfortunately, for the last 23 years, his principal had been in survival mode. He treasured silence and hated technology, and didn't even own a CD audio player. The computers in his school were the result of the dedication of a hand full of teachers who were ready to try anything to get through to their students. The principal didn't care enough to oppose their efforts, but any technology that came his way, he trashed.

Adam was disappointed but determined. The OCV site had also suggested that he contact his local PBS affiliate. He had seen PSA's for the Olympic Cyber Village on WTVS-TV, and within two days of calling the station he received the CD loaded with video and audio clips, still images and text.

That night it snowed so hard that schools were closed for the rest of the week. Adam took this opportunity to thoroughly explore the OCV online, on the CD and on WTVS-TV. He found that for each Olympic event there were student and teacher materials for language arts, math, science, history, geography, physical education, and design. There was everything anyone ever needed to know about the Olympics. There were Web-based discussion groups where teachers could share ideas and find support from master teachers, and where students could collaborate on projects. There were challenges, simulations and games where his class could work and play with classes throughout the country and even the world. There were even real-time opportunities where students could interview athletes, talk with NBC and NHK sports anchors, and take electronic field trips.

When Monday came, Adam was ready. Using an LCD projector that he borrowed from the district's media center, he opened up the OCV site. When the class came into the room, there was Herchel Walker, live and online.

Malcolm Edwards
Fourth Grade Student
Detroit, Michigan

Malcom Edwards had never left the projects located next to the Malcolm X Academy Elementary School. He liked that the school was named after him, but he hated school. He lived with his mom, and saw his dad once a every month or so. He normally hung out in the neighborhood, or watched television. Malcolm was in Mr. Stewart's fourth grade class, but he was reading at the second grade level. When Mr. Stewart introduced the Olympic Cyber Village, Malcolm thought it was pretty cool. He liked sports and he liked television. He had a quick mind and a quick mouth, and on the first day back after the big snow storm of '97, Malcolm actually got to speak to Herchel Walker.

At the end of the week, Mr. Stewart had Malcolm and his class carry a bunch

of old boxes up onto the hill behind the projects. They cleared a run in the snow, and sledged for the rest of the day. Longest run. Fastest run. Most kids in a box. Boy, did they have fun.

When Saturday came and Malcolm's dad put in one of his rare appearances, Malcolm had a lot to share. While watching the opening events of the Winter Olympic Games on TV, he told about his talk with Herchel Walker and about sledding on the hill. Sports was one of the few places where Malcolm could begin a conversation with his dad. He explained that when his class clicked on a globe that was spinning on the Olympic Cyber Village site, they were able to zoom into the home towns of all the athletes who had ever participated in the Olympics. His dad was from Jamaica, and he was disappointed when he found out that the class hadn't checked out his nation's Bobsledding team.

Malcolm grabbed his dad, and took him to a media center that had been set up in the Projects by HUD and the Department of Energy. He sat down at a computer, clicked on a browser, and carefully typed in, <http://www.ocv@pbs.org>. When the site came up, Malcolm found the spinning world, and with his dad's help, when Jamaica came into view, he took his dad home. They spent the rest of the day learning about Jamaica, the Jamaican Bobsledding team, bobsledding in general, other teams that competed in bobsledding, who they were and where they were from. They even played with a bobsledding simulation that allowed them to test the impact of changing the weight of the sled, the angle of the hill, the shape of the course, etc. As Malcolm surfed fearlessly around the World Wide Web, his dad read the information. Malcolm was impressed with his dad's ability to read, and his dad couldn't believe that his son could use computers.

WTVS-TV
PBS Affiliate
Detroit, Michigan

WTVS-TV had aired very little programming about sports and was nearly overwhelmed by the response to their Olympics Cyber Village PSA's. Teachers were requesting the OCV CD's. Parents and students wanted to learn more about how they could participate. WTVS-TV was well known for their public television outreach to the schools, but this online event was quite different. The Station had started a Web site almost two years ago, but the usage was now skyrocketing. People coming to the site who had never visited it before were pleasantly surprised by how much their local PBS affiliate had to offer.

Early on, WTVS-TV had decided to maximize the OCV opportunity by producing programming that highlighted the surprising number of people from Detroit who had participated in the Winter Olympics in one way or another. Taking advantage of the NBC/NHK collaboration that PBS established to fund and cross-promote OCV projects, WTVS-TV produced a series of shows about Detroit and Michigan-based and born Olympians. Each show included a studio audience of fourth through eighth grade students and teachers, interviews with local Olympic heroes, video clips and still images of their home and of their competitions, etc. NBC and NHK were given access to these video

pieces to use in their programming: Olympics, news and otherwise. In exchange, NBC and NHK encouraged learners and educators to use the OCV to complement their Olympic broadcasts.

WTVS-TV also served as the focal point for all OCV activities in their region. They provided their facilities for two-way distance learning electronic field trips. They judged student entries to the many OCV events. They created and produced many Detroit and Michigan-based activities. They facilitated OCV teacher activities and discussion groups. They used the OCV to remind their community that WTVS-TV is an excellent resource for K-12 education and lifelong learning, whether it be through broadcast or outreach. And they positioned WTVS-TV as Detroit's public information organization for the future.

PBS' Olympic Cyber Village (OCV): Leveraging the International Games for Precedent Setting World Wide Web Learning

PBS' Olympic Cyber Village will use the appeal and excitement of the 1998 Winter Olympics in Nagano, Japan to involve students and their teachers in an unprecedented cross-curricular, cross-cultural learning experience that integrates cutting-edge electronic resources and communications into student activities and teacher professional development. This high-visibility, high-energy event will bring national attention to the Administration's teacher training and educational content objectives in the same way that the successful NetDay events have brought international attention to computer hardware and Internet connectivity.

The Importance of Content and Teacher Training

The enormous potential of the Administration's initial efforts to invigorate education through the use of technology will only be reached if they are leveraged by properly trained teachers who are utilizing first-rate educational content. While this seems to be a "given," to date there has not been a nationwide initiative to create national excitement and a call to action. The PBS Olympic Cyber Village is that event. PBS, in cooperation with the Administration, will use the 1998 Winter Olympics as the "teachable moment" to call national attention to the importance of quality educational content and teacher training.

Key Elements of the OCV

Target Group: fourth through eighth grade students and their teachers

Educational content: based on Winter Olympics Events and focused on three event clusters

Content areas: language arts, math, geography, design, science, social studies, physical education

Technology and resources utilized:

■ Interactive OCV Web site – rich with narratives, art, history, current information, bulletin boards, discussion groups, simulations and real-time events.

■ Broadcast and digital television, audio broadcast, telecommunications

- Multi-media CDs
- Push technology
- Master teacher support

Administrative Leadership

The leadership of this Administration is crucial to the success of the Olympic Cyber Village to help us pull together the numerous public- and private-sector partners that will be necessary to stage such an ambitious event. In addition, we would like President Clinton and Vice-President Gore to figure prominently in the activities during and leading up to the actual event. What better way to demonstrate the power of integrated learning, ignite student interest, and spotlight the Administration's education technology initiatives than through the games of the Winter Olympics.

PBS's Role

PBS will manage the Olympic Cyber Village Project. It will establish strategic alliances, manage budgets, seek funding and awards, promote and publicize the OCV, and assess the impact of these activities. PBS will convene teams of Gold-Medal teachers, curriculum designers, educational innovators, trainers, technologists, web masters and media companies (business partners) to create learning experiences that capitalize on the natural appeal of the Winter Olympics. It will work with students and teachers to create a World Wide Web site that spans curricula, cultures and continents. PBS will re-open its learning laboratory to experiment with the use of media and interactive electronic technologies on behalf of students of all ages. And it will once again establish models to help educators and others make future events into learning opportunities.



061014CZ.TXT



061014D1.TXT



061014D2.TXT



061014D3.TXT



061014D4.TXT

Technology



bb9s @ faraday.clas.virginia.edu
04/30/97 11:37:00 AM

Record Type: Record

To: William R. Kincaid
cc:
Subject: a nifty web project by Ayers

Bill,

thought that you might be interested in Ed Ayers' web-based project, "Valley of the Shadow." He has data entered a remarkable quantity of primary sources from two towns, close geographically, but divided by the Mason Dixon Line during the Civil War period. Its a really cool use of the web. Since I know that the Clintons and Al Gore are promoting this kind of transfer of knoweldge through the Web I thought that you might want to bring it to their attention.

Ed testified at the NEH hearings before the Senate and I am appending the Org of Am. historians blurb on his testimony. The URL is <
<http://jefferson.village.virginia.edu/vshadow2>. >

Hope you are doing well. Ted seems to be thriving.

Brian

According to Page Miller:

> From root Tue Apr 29 18:42:11 1997
> From: Page Miller <pagem@capaccess.org>
> To: Friends of OAH Advocacy Efforts <advocacy@oah.indiana.edu>
> Subject: NCC Washington Update, Vol 3, #17, April 29, 1997 (fwd)
> Date: Tue, 29 Apr 1997 18:34:36 -0400 (EDT)
> Errors-to: <mr@oah.indiana.edu>
> Sender: Maiser@oah.indiana.edu
> X-listname: <advocacy@oah.indiana.edu>
> MIME-Version: 1.0
> Content-Type: TEXT/PLAIN; charset=US-ASCII
> X-Mailer: Mercury MTS v1.21
> Message-ID: <22451810F3@oah.indiana.edu>
>
> NCC Washington Update, vol. 3, # 17, April 29, 1997
> by Page Putnam Miller, Director of the National Coordinating
> Committee for the Promotion of History <pagem@capaccess.org>
>
> 1. Senate Hearing on Reauthorization of NEA and NEH
>
> 1. Senate Hearing on Reauthorization of NEA and NEH -- On April 29 the

- > Senate Committee on Labor and Human Resources held a hearing to consider
- > reauthorization of the National Endowments for the Arts and Humanities.
- > Senator James Jeffords (R-VT), chair of the committee, opened the hearing
- > by stating that the intent of this hearing is to cover the issue of
- > reauthorization with a broad brush and to focus particularly on education.
- > "Both agencies," he stated, "have great potential to enhance and improve
- > the educational opportunities for the people of our nation." Jeffords
- > lamented that Congress spends too much time discussing controversial
- > grants and not enough on the agencies' meaningful accomplishments, such
- > the educational programs. In the last Congress, Jeffords noted the
- > Senate passed by a bi-partisan vote of 12 to 4 a reauthorization bill that
- > aimed at tightening up the administration of both agencies, closing
- > loopholes, and streamlining functions. "It is legislation," he said,
- > "that I hope that we can use as a basis for discussion this year." He
- > ended his opening statement by saying that he was confident that this
- > Congress would move forward on reauthorization legislation for the
- > endowments.
- >
- > This lengthy hearing consisted not only of remarks by the eight Senators
- > who attended but also of testimony from two panels -- one made up of the
- > heads of the endowments and the other of witnesses testifying about
- > successful endowment funded educational projects. Sheldon Hackney, Chair
- > of NEH, and Jane Alexander, Chair of NEA, summarized their testimony and
- > spent more of their time responding to Senators comments and questions on
- > a wide range of issues.
- >
- > Senator Ted Kennedy (D-MA), the ranking minority member of the committee,
- > stressed that these small agencies had a crucial impact on the arts and
- > humanities of the country and that a few controversial grants shouldn't
- > warrant the elimination of the endowments. Senator John Warner (R-VA)
- > complimented the two chairs of the endowments and said they had brought
- > their agencies enhanced credibility. Senator Jeff Bingaman (D-NM)
- > emphasized the positive role of the endowments in his state and called for
- > new exploration of ways that the endowments' educational work could
- > relate to Headstart programs. Senator Jack Reed (D-RI) commented on the
- > indispensable role of the endowments in economic development as cultural
- > and heritage tourism gain increased momentum. Mike DeWine (R-OH) restated
- > a point that he has been making over the last several years which is that
- > in a time of reduced resources the endowments priorities need to be on the
- > underserved in our population, particularly children and rural areas.
- >
- > After recognizing the key role of the endowments, Senator Christopher Dodd
- > (D-CT) presented again his idea for building a true endowment for these
- > agencies, an idea that he has been promoting for the last several years.
- > His plan calls for expired copyrights to be auctioned for a period of
- > perhaps 10 years and for the funds from the auction to build an endowment
- > for the NEH and NEA. He noted that the Copyright Office had been somewhat
- > hostile to this idea but that he was going to continue to pursue it and
- > would be seeking cosponsors.
- >
- > Senator Tim Hutchinson (R-ARK) voiced the only criticism of the hearing,
- > and his remarks were directed only at NEA. In sharply worded comments and

> questions he attacked the high administrative costs of NEA, the fiscal
> problems of the NEA, and the failure of NEA to respond within a year to an
> Inspector General's report. Hutchinson stated that no federal dollars
> should be spent on NEA and that the argument that NEA funds are a catalyst
> for securing private funds is a bogus one for private funding for the arts
> has increased even when NEA's funds have been cut. No responses to these
> criticisms by either Senators or witnesses were able to change
> Hutchinson's firmly held views on these matters.

>

> The panel on exemplary education projects consisted of Dr. Edward Ayers,
> Professor of History at the University of Virginia; Dr. Victor Swenson,
> Executive Director of the Vermont Council on the Humanities; Mr. Jeff
> Hooper, Founder and Director of the Mad River Theater Works in Ohio; and
> Ms. Alicia Dandridge, a 6th grade teacher in a Washington, DC school.

>

> Ayers and Swenson addressed NEH funded projects. Ayers, project director
> of the "Valley of the Shadow Project: Two American Communities in the Era
> of the Civil War", gave a demonstration and talked about how this project
> reaches thousands of people every week who visit the WEB site of the
> Valley Project to look at evidence and to draw their own conclusions about
> the Civil War. By perusing diaries, letters, slave census, newspapers,
> church records, photographs, and many other surviving documents, visitors
> to the WEB site are able to gain knowledge first hand about the Civil War
> and to sift through quantities of evidence with a powerful yet simple
> computer tool. Ayers noted that the project has received many positive
> responses, some from teachers who comment that students who have visited
> the Valley Project write better papers and ask more insightful questions.
> Senator Jeffords applauded this use of technology to make history come
> alive and said he was "excited by what you have shown us." Ayers
> concluded by noting that there is no way to recover costs of making this
> vast range of documents available to people around the world and that it
> was too big a project, with too many people involved, to have undertaken
> with NEH support.

>

> Swenson talked about a variety of programs that the Vermont Council on the
> Humanities have sponsored to tackle the thorny problem of illiteracy. One
> program, "Never Too Early: Teaching the Earliest Teachers," provides
> training on reading to children for people engaged in child care programs
> for the very young. "Our approach to literacy through the humanities in
> Vermont," Swenson said, "depends on a central love of books and reading
> and on intense cooperation among many agencies, organizations and devoted
> individuals." The Vermont Council also sponsors programs on adult
> literacy and has a program for teen mothers to show them the ways of
> reading to babies and toddlers. Swenson concluded by stating that they
> have discovered that "if reading is central to the humanities, it is
> equally true that the humanities are central to reading." Jeffords had
> high praise for the state councils' literacy programs.

>

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TO BILL
FROM SUSAN F.
- THOUGHT THIS
WOULD BE HELPFUL
W/ WHAT YOU ARE
WORKING ON ✓

u0105usnwr

r w bc-clinton-remarks 10-10

Remarks by President Clinton on Technology Learning Grants,
Amtrak Sabotage

To: National Desk

Contact: White House Press Office, 202-456-2100

WASHINGTON, Oct. 10 /U.S. Newswire/ -- Following is a transcript
of remarks by President Clinton in announcing technology learning
grants:

The Roosevelt Room

9:28 A.M. EDT

THE PRESIDENT: Thank you, Mr. Vice President, for your
outstanding work on this issue. And thank you, Secretary Riley and
Secretary Brown, for your work as well.

I want to say a few more things about the people behind
me and those in front of me, but if I might, in the beginning, I
think it would be appropriate for me to make a few comments about
what has happened to the Amtrak train in Arizona.

We believe it was a case of sabotage. And I am
profoundly outraged by it. I want to make it clear that we will do
everything we can with the federal government to catch whoever is
responsible. I am determined that we will make sure that in the
United States we will have the tools, the means we need to keep the
American people safe. We will get to the bottom of this. We will
punish those who are responsible. We will not tolerate acts of
cowardice like this in the United States, regardless of the motive.

And when I know more about it, I'll be glad to comment
more about it.

I have just finished a meeting, along with the Vice
President and other members of our administration, with leaders who
are here behind me, leaders of many of the American companies on the
cutting edge of the Information Age. They are helping to lead our
nation into the world of the 21st century as the strongest economic
power in the world.

Two and a half weeks ago in California, I met with some
other business leaders, and I called on the representatives of
business, government, teachers, schools, parents, students, to become
involved in a high-tech venture with a guaranteed return. I asked
for a national public-private partnership to connect every classroom
in America to the information superhighway by the year 2000.

This today, this meeting, is the next step. Today these
business and education leaders have joined with me to launch a
partnership that will ensure that every child in America is
technologically literate for the dawn of the 21st century, and that
every child in America has the resources, the means, by which to
become technologically literate by the dawn of the 21st century.

The idea that every child deserves the opportunity to
build a bright future has been at the heart of America's education
system and America's entire value system. Education is the way we
keep the promise of the American Dream to all of our children without
regard to their circumstances.

Today, that means computers, knowing how to make the
most of them, having teachers who can work with students to make the
most of them, and having the right software to make the computers
make sense.

Technological literacy must become the standard in our
country. Preparing children for a lifetime of computer use is just
as essential today as teaching them the basics of reading, writing
and arithmetic.

This isn't just computers for computers' sake. We're

going to work together to help our schools use technology to revolutionize American education so that all children will be able to learn better and teachers will be able to be more effective.

In the next few months, the leaders here behind me will be working with us to produce a plan based on the four pillars I outlined in California: modern computers in every classroom, accessible to every student from kindergarten through the 12th grade; connections from every classroom to the incredible educational resources flowing throughout the world; teachers in every classroom who are trained to make the most of new technology to educate every student. And I want to emphasize one of the most important aspects of the technological revolution is the opportunities being opened to children so many Americans had given up on and schools that too many Americans had given up on. And finally, a rich array of educational software and information resources.

Today, I'm announcing three steps forward that show we are turning these principles into reality. First, we're awarding Technology Learning Challenge Grants to 19 communities. In each community there's a partnership of educators, businesses, libraries, museums and community groups that have come together to retool their schools for the 21st century. They are matching these grants. They are committing hardware and software, hard work, and know-how. For example, in Dover, Delaware, Bell Atlantic, Lightspan Partnership and the State Education Department are linking homes and schools through family tv sets to improve reading and arithmetic in the early grades. This is how these partnerships will work.

Let me say that it costs a very modest amount of money. This is one of the discussions we have to have in the weeks ahead as we continue our progress toward a balanced budget. We can balance the budget without cutting back on our commitment to our educational future. For a very small amount of national money, we are leveraging much larger amounts of local resources. And I would say again, this is the kind of thing that the nation ought to be doing now in the area of education and the sort of thing I will be trying to preserve as we negotiate the shelves of the budget discussions.

The second thing I want to announce is a private sector effort making a difference in one state is now going nationwide. We must rely on the expertise of millions of Americans working in the high-tech professions. The Technology Corps brings private sector volunteers into our schools so that they can bring technology into our classrooms. It's already working in Massachusetts where it was started by Gary Beach, who is here with us today, to connect Massachusetts schools. And now we want to do this around the country.

Finally, we're launching the American Technology Honor Society to harness the high-tech skills of exceptional students so they can help to expand their own school's use of technology. We have to remember that people born in the Information Age are more comfortable with it than people like me, who weren't. (Laughter.)

The American Technology Honor Society will be rooted in the National Honor Society, and it will be run by the National Association of Secondary School Principals. Communities, businesses and governments; parents, teachers and students -- this could be the largest merger in history, with no questions from the Justice Department. (Laughter.) Certainly it will be the most important partnership for the future in the United States today, working together to put a computer in every classroom, and a computer whiz at every desk.

Every child in America deserves the chance to get the high-tech know-how to unlock the promises of the 21st century. Every

child in America. And thanks to the statesmanship and vision of the people who are here with me today and many like them all around America, we are going to forge a partnership to do just that.

Thank you very much. (Applause.)

END

9:35 A.M. EDT

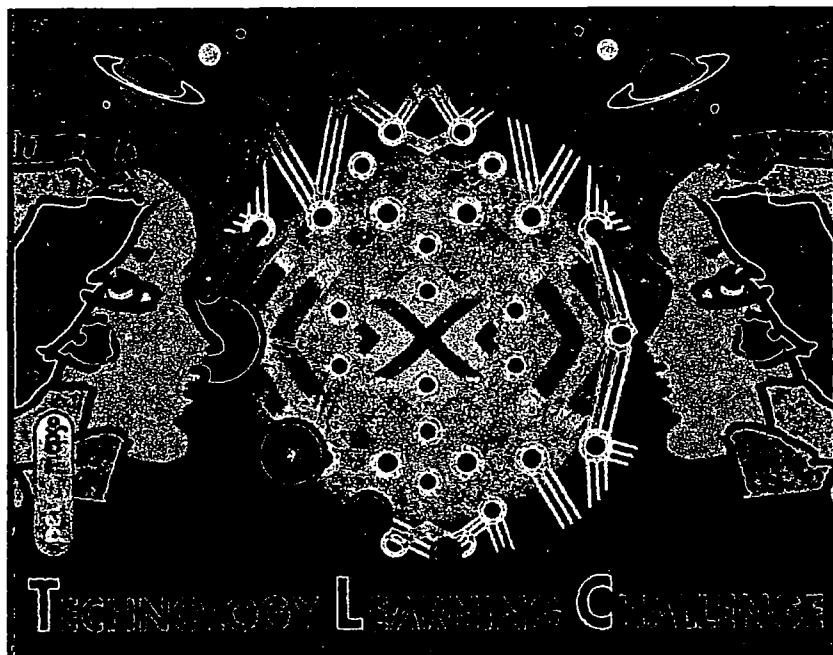
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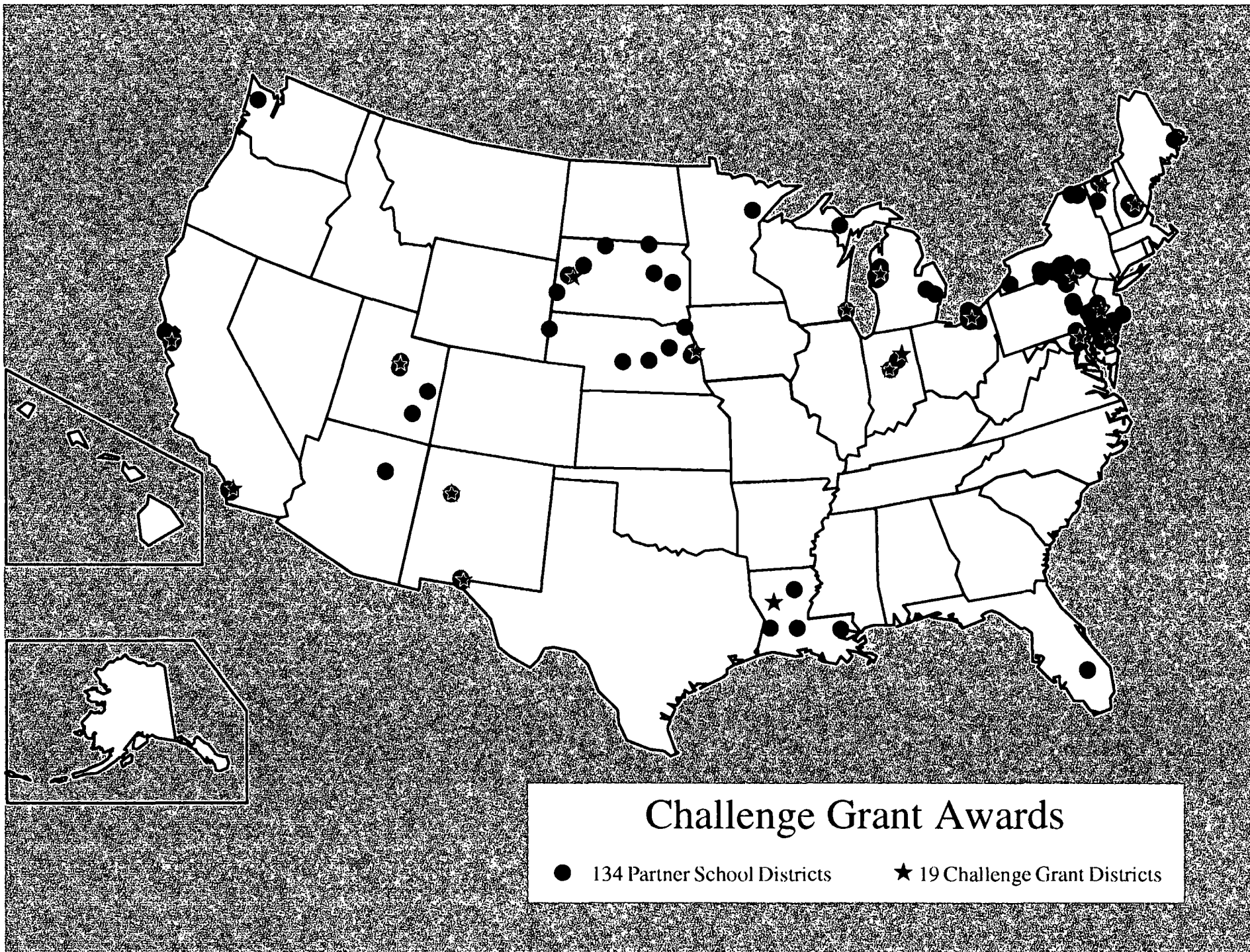
Challenge Grants for Technology In Education

GRANT ABSTRACTS
FY 1995



Interagency Learning Technology Office
U.S. Department of Education
Suite 6300
1250 Maryland Ave., S.W.
Washington, D.C. 20202-5544
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Prepared by William Anderson
National Aeronautics and Space Administration



Technology Learning Challenge Grants

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CHALLENGE GRANTS FOR TECHNOLOGY IN EDUCATION

The U.S. Department of Education is awarding \$9.5 million in Challenge Grants for technology in education to 19 communities in 16 states across the country. The 19 school districts in these communities will work in partnerships with a total of 134 other school districts in 23 states. These school districts will be using powerful new technologies and the information superhighway to transform their factory era schools into information age learning centers.

Challenge Grants will average \$1 million a year for five years. During the first year, one and a quarter million students will be served by these grants, and the number of students served will grow each year during the life of the projects.

In each Challenge Grant community a consortium of schools, businesses, libraries, museums and community organizations are matching the grant with substantial commitments for equipment, software development, technical support, telecommunications services and other costs. These Challenge Grant communities are making a significant educational investment in the future of their children. The total value of matching commitments is over \$70 million in the first year, and during the five year life of these projects the total value of these investments is expected to be over \$300 million. Funds awarded through the Challenge Grants will augment these local investments and support new curriculum design, teacher training, and the evaluation of educational effectiveness.

Over 380 partners will participate in the activities of these nineteen Challenge Grant communities. A total of 153 school districts will use new technologies for education reform. Over 120 business firms are participating in Challenge Grant community partnerships, along with 34 universities and colleges, ten museums, five libraries, nine State Education Agencies, the education offices of five national parks and a state park system, two regional education laboratories, an energy laboratory, a Navy base, an Army base, three Governor's Offices, and two Mayor's offices. Of the participating school districts 78 are urban and 70 are rural. The rural school districts include eight Bureau of Indian Affairs schools. Of the 120 businesses committed to these partnerships, 14 are hardware manufacturers; 12 are software developers; and 18 are telecommunications firms. Additional school districts, firms, and community organizations are encouraged to join these partnerships in the future.

Nineteen local school districts, one in each community, will administer these grants. A list of the school districts is attached, along with a map designating the locations of the 19 Challenge Grant communities and the rest of the 134 participating school districts. A one page abstract of each Challenge Grant community's initiative is also attached.

These communities are responding to an ambitious challenge. Everywhere we look, technology is changing the way we work and live -- everywhere, that is, but in our schools and classrooms. In classrooms that should be modern information centers for learning, the basic media of instruction continue to be black boards and chalk. The implications for education and economic competitiveness are enormous. In a strong economy, employers must have well-educated employees who make skillful use of information technologies to increase their knowledge and continuously improve their productivity. But few schools today are able to provide the high performance learning tools that would allow students to develop these skills.

As catalysts for change, challenge grants will support communities of educators, parents, industry partners, and community leaders who are working to retool their schools for the 21st century. Powerful new technologies and the information superhighway create new possibilities for extending the time, the place, and the resources for learning. Schools can be linked to the home, and to libraries, museums, community centers and the work place, to provide high quality learning opportunities at any time and any place. Challenge grant communities will make these connections and open their schools to new educational resources available across the nation and around the world.

As each Challenge Grant community acts on its vision for education reform, careful attention is being paid to ensure that we do not become a society in which low income communities and other areas with the greatest need for technology are left behind in the acquisition of skills and knowledge needed to be productive citizens in the 21st century. These grants support local alliances of educators, industry partners, and community leaders who are committed to developing creative responses to the information age requirements of all learners, including those in inner cities and rural areas.

These 19 Challenge Grant communities are likely to succeed because they have begun with a clear definition of the educational problems they want to address. In most cases these communities are working on the integration of new technologies into state or local education reform efforts that have been stimulated by the National Education Goals. Effective use of new technologies in these communities will contribute to school readiness and improved student achievement in reading, writing, science, mathematics, the arts and other disciplines. Each project will support professional development for teachers and promote greater parent and community involvement in education. And each will help smooth the transition from school to work by engaging students in real life learning experiences through which they can develop the life-long learning skills necessary to compete in the economy of the 21st century. In several cases, district-wide, state-wide, and regional efforts to set clear expectations for what all students should know will enable these communities to form major markets that stimulate demand for new high quality learning systems and software.

Although the funds available this year limit these Challenge Grants to just a handful of the 530 communities that applied, during the 1995-96 school year we plan to conduct a second round competition, which could lead to an additional award of 20 new grants by September 1996.

For additional information on this program contact:

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San Mateo County Office of Education

Redwood City, California

Silicon Valley Challenge 2000 Multimedia Project

This project is one element of an ambitious program to revitalize education in schools throughout Northern California's Silicon Valley. Under the leadership of the San Mateo and Santa Clara County offices of education, and a consortium of industry partners called "Joint Venture: Silicon Valley" (JVS), over \$15 million in corporate contributions has been raised in the area to support systemic school reform. The Challenge 2000 Multimedia project builds on the collaborative foundation and experience of JVS, helps unite several of its diverse elements, and focuses on the use of multimedia technologies in the creation of student instructional units. The project includes 37 schools, more than 750 teachers and 23,000 students drawn from two counties and nine school districts. Over 50% of these students come from low-income homes. The project addresses objectives of the Goals 2000 Act, provides an extensive professional development program, contains a strong school-to-work element, and promotes reform at all levels of education.

The Multimedia Project creates four "school communities," consisting of elementary and secondary schools, and colleges. The program is establishing a high-performance telecommunication network that links the schools, allowing them to exchange curriculum information and participate in joint educational activities. Through the network, the schools have access to state-of-the-art multimedia development tools, and physical and virtual resources at the Bay Area Multimedia Technology Alliance (BAMTA). BAMTA's "Collaboratory" is an educational research facility and technology testbed that facilitates the development of multimedia projects, including collaborative work environments. The school communities are being equipped with multimedia hubs containing high performance computer graphics workstations that allow students and teachers to take full advantage of Collaboratory resources. Each of the schools is developing an "exemplary practice" model for learning activities supported with multimedia software and network tools. Students use these technologies to explore subject matter content, and engage in collaboration, planning, revision, problem solving, critical thinking, and reflection. The school communities have also developed individual technology plans:

Blossom Valley Learning Consortium

Located primarily in South San Jose, this school community includes nine schools, and the general and special education departments of San Jose State University. Support services such as tutoring, alternative learning, and medical diagnoses are provided in partnership with local government, public agencies and industry. A school networking plan and a cross-school assessment system help consolidate the schools' programs. One school district in the consortium is opening a "Technology Teacher Magnet School" where teachers learn to use telecommunication and multimedia to enrich curricula.

Family of Schools

This community of 15 schools drawn from four districts serves an economically and culturally diverse population of over 10,000 students. The team's high school draws 40% of its students from an inner-city area where the median household income is less than half the national average. The Family of Schools focuses on improving math and science instruction, with extensive support from industry partners, including three major businesses, three community colleges, and an educational foundation. This community has established a professional development center where teachers create and test technology-supported math and science curricula.

Overfelt Family

These five East San Jose schools serve one of Silicon Valley's most economically stressed communities. At the elementary schools, eight out of ten children are eligible for free or reduced-price lunches. At

home, nearly 80% of the students speak a language other than English. The Overfelt Family community is focusing on improvements in literacy and language arts, and is turning its schools into family centers, building on the school-linked "Healthy Start" integrated services program. Other focuses are retention, motivation and support of teachers in connecting instructional activities to real-world applications.

Palo Alto Learning Communities

This community of 16 schools focuses on literacy and school-to-work activities in an ambitious reform program that: 1) promotes performance assessment by community and corporate representatives who conduct standardized scoring of student multi-media exhibitions; and 2) helps develop school-to-work skills with a network link between schools, libraries, administrative offices and corporations.

JVS has obtained commitments for educational support from the Hewlett-Packard Company, Intel, Network General, Symantec, 3Com, Silicon Graphics, Apple Computer, Applied Materials, Cirrus Logic, Logitech, NetManage, Quantum, the Robert Noyce Foundation, Sun Microsystems, Wells Fargo Bank, and Adobe Systems. JVS is acting as a broker in obtaining technical support from the staff of these corporations for Multimedia Project schools. Additionally, JVS is providing funding for release time and basic computer and Internet training of teachers. Silicon Graphics, Inc. will donate up to ten high-performance workstations for each school community hub, which will be located in the team's secondary school.

Project evaluation will be performed by SRI International. The project will maintain complete records of activities and products generated by the four school communities, and these materials along with results of the project evaluation will be disseminated in hard copy form and through the World Wide Web. The Multimedia Project brings together a powerful consortium of public, and private institutions to implement a comprehensive plan to help reform education in schools throughout the Silicon Valley.

Consortium Partners

Bay Area Multimedia Technology Alliance
Blossom Valley Learning Consortium
Family of Schools
Institute for Research on Learning
Joint Venture: Silicon Valley--21st Century Education Initiative & Smart Valley, Inc.
Overfelt Family
Palo Alto Learning Communities
Santa Clara County Office of Education
Smart Valley, Inc.
SRI International

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San Diego Unified School District

San Diego, California

The Triton Project

"The Triton Project" is a multi-partner educational reform effort that blends a unique ocean-themed curriculum with several technologies to create new learning opportunities for students and teachers in the San Diego schools. The San Diego Unified School District is the eighth largest in the country. More than 26% of its students are classified "English language learners" (ELL), and they speak more than 50 native languages. Over half the ELL students are economically disadvantaged, and academic achievement among many students throughout the school system is poor. The Triton Project uses the capabilities and unique appeal of modern technology to capture interest in core curricula, provide a highly productive education program, and produce improved student achievement throughout all elementary and secondary schools in the system. As the program is expanded to include all San Diego School System students by the year 2000, more than 128,000 children will participate. This program includes a strong staff development component and evaluation plan. Its major focus is the development of a content-based and standards-driven curriculum. The program stresses systemic reform, and contains elements that are in compliance with recommendations of the National Education Commission on Time and Learning and the Goals 2000 Act. There are four main goals:

1) Equitable Access to Technology

The program is increasing the availability of educational technologies throughout the school system in order to ensure equitable access to technology-related opportunities for all students. The program teaches students to identify, organize and allocate educational resources. They work with a variety of technologies, including the Internet, word processing, spreadsheets, databases, multimedia, telerobotics, videoconferencing, digital video, and virtual reality.

2) Improved Learning Outcomes

The program utilizes a variety of technologies to improve learning outcomes in reading, writing, math, and science. Several approaches are employed, including the establishment of measurable objectives and evaluation strategies, the implementation of curricula that address the needs of second language learners, and the application of technology to specific learning challenges.

3) Improved Interaction with Parents and the Community

The program promotes effective telecommunication using computers, video and cable television. These technologies encourage communication across ages, geographies, genders, ethnicities, and economic levels. Through telecommunication, digital video production, and cable television, the program allows students to contact and learn from schools and other community resources at distant sites.

4) Effective Staff Development

The program provides effective, hands-on training for administrators, teachers, support staff, and parents. Teachers learn to use technology as a tool in developing lessons, and discover how to locate and utilize educational resources on the Internet.

The Triton Project is a collaborative partnership between the San Diego City Schools and a number of private and public organizations within the community. Each of the partners provides a unique service to the program. The school system is working closely with the Mayor's office to connect electronically all classrooms, offices, and school libraries to colleges, universities,

public libraries, medical centers, social service agencies, research facilities, Sea World, museums and other places of interest in the city. Sea World is expanding its telecommunication capabilities directly into district classrooms, and communicates directly with students via the Internet. Scripps Institution of Oceanography and the Stephen Birch Aquarium-Museum are sharing two curricular units they have developed: "Kelp Forest" and "Forecasting the Future." They also work with teachers in the development of new curricula. The San Diego Public Libraries offer Homework Centers as an electronic resource for students. Pacific Bell, through its Education First project, links the partners electronically, and is working with San Diego State University on a curriculum development project. The San Diego Supercomputer Center supports the design and production of a curriculum that takes the vast resources of the Internet and filters them into a practical, useful program of study. It also supports the virtual reality component of the project. The Naval Command Control and Ocean Surveillance Center gives advice in virtual reality development, demonstrates advance technologies in action, works with students to design and develop robots that can operate at a distance and in virtual worlds, and offers engineering and technical support.

An external evaluator from San Diego State University is working with Triton Project staff to design an evaluation plan for the program. The evaluator will conduct site visits, observations and interviews, and will coordinate project data collection. School district staff will work with Triton Project staff to coordinate data collection and analysis. Project participants will assist at every level in the design, implementation and interpretation of the evaluation.

The Triton Project blends new technologies, intriguing subject matter, and non-traditional learning opportunities in a unique and motivational education program.

Consortium Partners

Naval Command Control & Ocean Surveillance Center
Office of the Mayor of San Diego
Pacific Bell's Education First Initiative
San Diego Data Processing Corporation
San Diego Public Library System
San Diego State University
San Diego Supercomputer Center at UC-San Diego
Scripps Institute of Oceanography
Sea World
Stephen Birch Aquarium-Museum

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Capital School District

Dover, Delaware

Delaware Interactive Educational Television Consortium

The Capital School District and the State of Delaware have formed an Interactive Educational Television Consortium that is bringing unique and engaging classroom learning activities directly into the homes of schoolchildren throughout the state. Through the use of small computers ("set-tops") that connect to home televisions equipped with cable or phone modems, the consortium can provide programming that is interactive, entertaining, educational, and tailored to meet both state curriculum requirements and the individual needs of students. This program can be easily replicated in school systems throughout the country. It responds to recommendations of the National Commission on Time and Learning, fits within the framework of the Goals 2000 Act, and has a strong school-home element. The program is being piloted in five elementary schools with high percentages of disadvantaged students. As it grows into the state's 16 school districts, more than 12,500 students in grades K-6 eventually will participate. The program has four major goals:

1) Increase Student Learning Time

In response to the challenge of breaking the mold of our "factory-era schools" this project utilizes cutting-edge technology to extend learning into the home on a daily basis. This allows students to increase their learning time with instructional programs that directly address their learning styles and needs. Time typically spent passively and unproductively watching television and playing video games is replaced with active and productive learning time in which solid curricula are combined with video game interactivity to create a new learning dynamic for children.

2) Increase Parental Involvement

Family and community participation are vital components of this project. No matter how thoughtful and comprehensive a school improvement program is, the school alone cannot improve academic performance for all students. This project fosters and supports a home environment that encourages learning, provides for realistic expectations, and enhances the parent's role as the child's first and most important teacher. It also fosters improved communication between parents and teachers.

3) Provide Professional Development for Teachers and Staff

Teachers and staff receive comprehensive training for the project, and they are provided set-top computers for their homes. As the infrastructure is deployed, teachers participate in interactive staff development "on-demand," and they learn to use the system to generate personalized instructional materials for students. In addition, they can go "on-line" with their colleagues and learn, share and communicate easily with one another.

4) Provide Equitable Access to Educational Technology

Every child involved in the project and every household they represent is provided, free of charge, all equipment needed to participate fully. This program opens opportunities for universal access to high-quality instruction and helps to close the gap between the technology haves and have-nots.

Hardware and initial programming for this project have been developed by The Lightspan Partnership, Inc. of Robbinsville, New Jersey. Lightspan also provides training for faculty and parents, and ten days of consultant support for each school. Additional programming in language arts, health, social studies, science, math,

parenting and other subjects is provided through contracts with a wide variety of educational publishers.

The Interactive Educational Television Consortium is an outgrowth of the Delaware Educational Technology Committee, the Delaware Goals 2000 Technology Committee, and the Capital School District Technology Committee. State partners in the consortium include the Delaware Department of Public Instruction and all school districts in Delaware with elementary student populations. Programming partners include the Lightspan Partnership, Cable in the Classroom, WHYY Public Broadcasting in Wilmington, Tom Synder Productions, the Agency for Instructional Technology, Seymour Pappert's Creative Playground, the Imagination Machine, and others. Hardware and technical support partners include Comcast Inc., TeleCommunications Incorporated (TCI), the Cable Television Association of Maryland, Delaware, and the District of Columbia, Apple Computer, and others.

In addition to the interactive telecommunications network, each elementary classroom involved in the project is being equipped with new technologies to support the education process at school. Participating classes contain three set-top computers, one teacher workstation with a large-screen monitor for instructional presentations and lesson modeling, and two set-tops serving as student workstations. Student workstations are equipped with headsets, so that students can participate in personal multi-media instruction without disturbing classmates.

Dover's Capital School District and the State of Delaware have forged a dynamic alliance of private industries, government agencies and educational institutions to extend the education process beyond the walls of the traditional classroom and place it in the hands of parents and their children.

Consortium Partners

Apple Computer, Inc.
Bell Atlantic
Cable in the Classroom
Cable Television Association of MD, DE, & DC
COMCAST
Delaware Department of Public Instruction
Delaware Schools with K-6 students
The Lightspan Partnership
State of Delaware
Tele-Communications Inc. (TCI)
WHYY Public Broadcasting, Wilmington

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Waukegan Community Unit School District 60

Waukegan, Illinois

Technology and Learning Collaborative

The Technology and Learning Collaborative (TLC) is a dynamic consortium of educational institutions, private businesses, and government agencies that has developed a multi-faceted program to modernize and improve the educational process in the Waukegan Public Schools. Waukegan schools experience many of the problems common to inner city systems: high truancy rates, widespread poverty, high mobility rates, and low academic achievement. The TLC consortium is addressing these problems by implementing a community-wide math and science education program based on innovative uses of new technologies. This is a replicable program that has strong school-home, school-community and school-work components. It provides for extensive professional development training, and addresses targets of the Goals 2000 Act. More than 7,000 students in grades 4-12 receive direct benefits from the program. Project goals are:

1) Improving Student Achievement in Math and Science

With the use of new technologies and an emphasis on project-based learning activities, students improve their achievement through: 1) Active engagement in constructing and communicating principles of math and science; 2) Participation in meaningful scientific investigations; 3) Investigation and understanding of basic math and science concepts; 4) Investigating and understanding connections between subject disciplines; and 5) Relating scientific and mathematical knowledge to themselves and their lives by working on real-life problems and issues.

2) Promoting Engaged Learning

Making the transition to "engaged learning" (learning while doing and learning from doing) requires rethinking the way traditional material is taught. To accomplish this, teachers in Waukegan schools practice peer coaching through classroom visits and conferencing with lead teachers. Lead teachers develop project-based, collaborative learning units that integrate math, science and technology. They receive training in engaged learning methods from Apple Computers, Inc., the North Central Regional Education Laboratory (NCREL), and other consortium partners, and they learn how to utilize technology to facilitate engaged learning.

3) Promoting the Use of Educational Technologies

The consortium is establishing model classrooms to be duplicated throughout the Waukegan schools. Each classroom contains a teacher workstation with multimedia capability; an overhead TV monitor; five student workstations with multimedia capabilities; a laptop; a printer; a compact video camera; a color scanner; a digital camera, and an Internet connection. The project provides teachers and students training in the use of these technologies.

4) Improving Workplace Readiness and Workplace Skills

In a program to reach beyond the walls of the classroom, the Technology and Learning Collaborative is establishing Technology Learning Community Centers (TLCC's) that provide students, parents and other adults access to a wide range of educational technologies and information. The TLCC's are located at four easily accessible sites within the community, and they offer computers, printers, connectivity to the Internet and other resources for public use. In addition, the Waukegan Public Library is developing and maintaining an on-line community bulletin board that provides assistance to individuals seeking information on education, community services and job opportunities.

This project is producing several products and processes that are being disseminated to school systems throughout the country. Examples include project-based, collaborative learning units for math and science, classroom case studies in video, print and

electronic forms; a professional networking model; and a model Technology Learning Community Center (TLCC) for lifelong learning. These products are distributed nationally and globally with the assistance of Apple Computer, Northwestern University, the North Central Regional Education Laboratory (NCREL), and the Illinois State Board of Education (ISBE).

The TLC is receiving substantial support from businesses and government agencies in the Waukegan community. Abbott Laboratories is helping to produce workplace readiness videos. The College of Lake County, the Waukegan Park District, and the YMCA are providing space, staff and programming for three Technology and Learning Community Centers. Barat College is providing faculty and student mentors for science projects. The ISBE is developing guides for use by other school systems. Legat Architects and U.S. Cable are donating program planning services for infrastructure design. North Central Regional Education Lab is conducting a series of training workshops for teachers. The Northeastern Illinois Assistive Technology Consortium and the Special Education Parents Advisory Council (SEPAC) are offering extensive support for children with disabilities. Northwestern University is using Waukegan as a test site for its Collaborative Learning through Visualization (CoVis) project in earth science, and the Waukegan Schools Foundation is providing educational technology equipment.

Consortium Partners

Abbott Laboratories
Apple Computer, Inc.
Barat College
College of Lake County
Illinois State Board of Education (ISBE)
Lake County Technology Campus
Legat Architects
North Central Regional Education Laboratory
Northeastern Illinois Assistive Technology Consortium
Northwestern University
Special Education Parents Advisory Council
U.S. Cable of Lake County
Waukegan Park District
Waukegan Public Library
Waukegan Schools Foundation
YMCA

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Anderson Community School Corporation

Anderson, Indiana

Anderson Community Technology Project

Anderson Community Technology Now! is a consortium of local and state agencies in Indiana that is combining innovative technology initiatives to raise the academic achievement of 3,140 underchallenged and at-risk students (and their families) in six elementary and two middle schools. The program is designed to accelerate the pace of educational improvement and ensure greater economic opportunity within the community.

The project is addressing its goal by--

- increasing community involvement in public education;
- increasing teacher professionalism and productivity through professional development activities;
- developing new learning environments;
- strengthening the connections between home, school, and community to foster family skills and involvement in education; and
- providing opportunities for teachers and students to become self-directed and collaborative learners.

As part of previous school and systemic restructuring efforts, Anderson has undertaken several activities which will be used in this project. One such activity is the School on Wheels, a specially trained cadre of teachers and principals who can temporarily assume the roles of entire school faculties to enable educators to participate in staff development. Another activity is the 1995 Community Forum for Education, supported by local employers, community organizations, and civic groups. This organization studies, plans and helps implement new educational applications of technology.

The Anderson Community Technology Project has several major components:

1) **The Buddy System Project** at the Corporation for Educational Technology (CET) promotes the extension of the learning day beyond the classroom and into the homes of 4th-8th grade students.

2) **The Vision Athena Project**, sponsored by the Corporation for Educational Communications (CEC) and the Children's Museum of Indianapolis, is making available two-way video for distance learning and electronic field trips, e.g. to the Indianapolis Zoo, Butler and Indiana Universities, the school system, and the Anderson Federation of Teachers are providing instructional courses and staff development in the use of educational technology.

3) **A community technology center** with Internet connections and regularly held training sessions is being dedicated at the Anderson Public Library to benefit all community members.

4) **Professional development services** are being provided by the Indiana University School of Education and the Butler University College of Education. The focus is on integrating technology into the history, language arts, mathematics, and science curricula.

5) **On-line and in-person tutoring** in literacy, mathematics, and technology is being provided by Anderson University students (60 in the first year) to elementary and middle school students.

6) **Educational videotapes** developed by Indiana Public Broadcasting Stations in collaboration with Anderson teachers are supplementing 4th grade Indiana history materials.

7) **Special educational programming and teacher training** are being broadcast through the local TCI cable operator to students and their families. Programs include "Ingenious" (news, weather, etc.)

and "What on Earth" (6 news stories per day). This is one of the first multimedia databases for homes delivered by cable.

8) **Family mathematics and science training** is delivered via two-way video by the Children's Museum of Indianapolis to school and community facilities to strengthen family learning in mathematics and science.

About 240 fourth grade students are the focus of first-year activities, and the project will expand to all upper elementary and middle school students and their teachers by the end of the five-year project. First-year activities include computer instruction in word processing and productivity software, and integration of technology applications into 4th grade language arts and social studies classes. Emphasis is on changing teaching styles, using the home computer for collaborative writing and reading projects, and using telecommunications projects to teach Indiana history. Each school has a fund to allow teachers to purchase professional development services from the three participating universities. Other professional development activities include the School on Wheels and the Principals Technology Leadership Training Program sponsored by the Indiana Department of Education. Rockman *et al.*, a research and evaluation group in San Francisco, is conducting an evaluation of the entire program. The evaluation will determine changes in: academic achievement of disadvantaged students, family involvement in the education process, computer-based instructional time, and changes in teacher attitudes and instructional approach.

Consortium Partners

Anderson Area Chamber of Commerce
Anderson Federation of Teachers
Anderson Public Library
Anderson University
Butler University College of Education
Children's Museum of Indianapolis
Corporation for Educational Communications (CEC)
Corporation for Educational Technology (CET)
Indiana Department of Education
Indiana Public Broadcasting Stations
Indiana University School of Education
National City Bank
TCI of Central Indiana (cable TV)

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Indianapolis Public Schools

Indianapolis, Indiana

A Learning Cooperative

The Indianapolis Public Schools are pioneering a unique school/government/business consortium called "A Learning Cooperative: Connecting and Supporting Systemic Mathematics, Science and Technology Initiatives via Telecommunication." Utilizing the experience and resources of Ameritech, a cellular service provider, this consortium is developing an affordable, scaleable, and equitably distributed telecommunication infrastructure which links the North Central Regional Educational Laboratory (NCREL), 25 schools in Indianapolis, 25 in Chicago, and 3 in Walled Lake, Michigan. The new network delivers research-based curriculum and technical support to participating schools, and it provides professional development activities for the program's teachers. The program promotes systemic change in the teaching of mathematics, science, and technology, is in accord with the recommendations of the Goals 2000 Act, and has strong school-home, school-community and school-work elements. About 90,000 students receive direct benefit from the project. There are six major components of the program:

1) Developing and Sharing Exemplary Instruction

The network allows exemplary teachers to conduct lessons at participating consortium schools via "distance learning." Lessons are prepared in the form of "Curriculum Support Units" (CSU's), short video programs with supplementary text that teach specific key concepts. Through careful collaboration among the consortium members, the CSU's are designed to address basic math and science concepts, and to fit smoothly within the curriculum frameworks of each district.

2) Providing Professional Development

The Learning Cooperative provides unique professional development opportunities for individual teachers, principals, administrators and school community teams. During regularly scheduled on-line meetings, educators analyze and improve their curriculum, instruction and assessment practices in math and science. The system provides access to a database of professional development materials produced by NCREL, and it is connected via the Internet to other professional development resources.

3) Providing Technical Assistance and Educational Support

The Learning Cooperative and Ameritech have established a group of advisors that provide technical support related to the program's infrastructure and educational content. The advisors help participating teachers identify effective methods for putting Learning Cooperative activities in place, suggest ways to share ideas for using the system, and promote the use of technology in math and science instruction.

4) Improving Communications Between Parents and Schools

The Learning Cooperative is building awareness of the need for increased parental involvement in the educational program, and it is working to improve the connection between parents and school staff. The consortium's telecommunication infrastructure is being used to provide information to parents on specific ways they can take an active role in school activities, to convene parent support groups, to establish a hotline for homework information, to provide a voice mail service for teachers, and to produce educational television broadcasts.

5) Conducting evaluation

The Learning Cooperative is conducting an ongoing evaluation for the purpose of: 1) determining its progress in achieving goals; 2) improving the curriculum; 3) identifying barriers to a successful program; and 4) identifying the next steps in improving the program. Evaluation activities have been designed to help consortium partners measure their own progress in improving math and science curricula and understand the theories behind best practice methods in math and science teaching.

6) Developing partnerships to provide ongoing resources.

The Learning Cooperative has established an educational communications system for use by school personnel, parents, and community members. The system contains information on the effective uses of technology in learning and teaching, and it allows teachers, parents, community members and other interested individuals to make contacts, learn and work together, or just talk to one another. The system is connected to numerous other Internet resources related to critical education reform issues.

Each partner in the consortium has a unique role. Ameritech is installing and maintaining the equipment. The Indianapolis Public Schools are leading the development of science units and staff development. The Chicago Public Schools are developing mathematics activities and staff development activities. The Walled Lake Community Schools are developing a method to integrate the science and math units into the curriculum of the three districts. NCREL is developing communities of practice and curriculum support units, as well as scheduling distance learning through the telecommunication infrastructure.

The "Learning Cooperative" has developed a comprehensive program that utilizes educational technologies to revitalize the education process in participating schools, involve parents in school reform, and promote cooperation between disparate school systems in three midwestern states.

Consortium Partners

Ameritech (Indianapolis, IN)
Chicago Public Schools
Detroit High School of Commerce & Business
Administration
Indianapolis Public Schools
LearningAccess (Washington, DC)
North Central Regional Educational Laboratory
(NCREL) (Oak Brook, IL)
Walled Lake Consolidated Schools (Walled Lake, MI)

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Natchitoches Parish School Board

Natchitoches, Louisiana

The Natchitoches Parish School Board and Goals 2000/LaNIE

The Natchitoches Parish School Board and Goals 2000/LaNIE Technology Challenge Grant Consortium is developing comprehensive programs that use telecommunication to increase participation in high-tech learning by underserved K-12 students in five Louisiana school districts. The consortium will ultimately increase communication among all community stakeholders by using learning technologies to provide educational opportunities for students and parents at more convenient times and more accessible places. Over five years, approximately 174,000 students in 48 schools and 19 community sites will be served by the consortium.

This project builds on a previous Louisiana Goals 2000 effort and a Louisiana Networking Infrastructure for Education (LaNIE) grant received from the National Science Foundation to integrate Internet resources and K-12 instruction at five pilot sites across the state. Staff from both projects have been working jointly to develop an overall state educational technology plan.

Building on the work of the pilot sites, the new project is developing transferable models for providing underserved students access to technology, increasing student achievement, and documenting successful practices for widespread use in other communities across the country. Each of the five pilot sites, guided by a district technology advisory committee, is developing, implementing, and evaluating a comprehensive district plan for using educational technology to increase student achievement and to meet local educational goals.

To improve student achievement, the project will address school readiness and provide professional development activities for educators and community partners; it will also involve parents in the learning process and concentrate on the transition from school to work and life-long learning.

Project staff are giving special attention to: 1) the obstacles limiting access for underserved populations; 2) training for additional school personnel, parents, and community program leaders; and 3) the development of materials to support parent and community programs.

Each district is increasing access to educational opportunities by opening school sites after hours and by expanding access to places more often visited by community members.

The five districts are developing standards-based curriculum materials for all content disciplines, and expanding access locations to include community centers, playgrounds, libraries, and churches. Priority subject areas are mathematics, science, language arts and literacy. Professional development activities for teachers, students, parents, and administrators of community organizations are being offered. Dissemination plans and public awareness campaigns are also being developed (electronic mail, home page at each site, regional conferences, etc.). During the second and third years additional community sites will be added and teacher-developed curriculum materials will be disseminated on-line through the International Society for Technology in Education Gopher server and World Wide Web server. During the fourth and fifth years video conferences will be used to transfer model practices to other parts of Louisiana. In addition, the project will work with the

Louisiana Board of Elementary and Secondary Education and the Board of Regents to develop technology standards for pre-service and in-service education.

Professional development courses for educators and community members are being developed collaboratively by consortium members, and will be offered at each of the following cooperating universities: Northwestern State University, Natchitoches Parish; Northeast Louisiana University, Ouachita Parish; the University of Southwestern Louisiana, Lafayette Parish; the University of New Orleans, Jefferson Parish; and McNeese State University, Calcasieu Parish.

Consortium Partners

BellSouth Telecommunication
Calcasieu Parish School System
Governor's Office of Women's Services
Governor's Office: Louisiana Goals 2000/LaNIE
Greater New Orleans Free-Net, Inc.
International Society for Technology in Education
Jefferson Elementary School PTA
Jefferson Parish Public School System
Lafayette Natural History Museum
Lafayette Parish School Board
Louisiana Association of Computer Using Educators
Louisiana Bd. of Elementary & Secondary Education
Louisiana Board of Regents
Louisiana Department of Education
Louisiana Department of Public Safety and Corrections
Louisiana Networking Infrastructure for Education
McNeese State University
Monroe City School System
Natchitoches Parish Library
Northeast Louisiana University
Northwestern State University
Our Lady of Lourdes Regional Medical Center
Shell Oil Products Company
University of New Orleans
University of Southwestern Louisiana

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Baltimore City Public Schools

Baltimore, Maryland

Baltimore Learning Communities

The Baltimore Learning Communities project is a multi-faceted education program that utilizes distance learning, interactive cable TV and the Internet to connect schools to homes, places of work, and the community at large. The program provides extensive professional development training for teachers, directly involves parents in the education process, and extends a wide range of new educational opportunities to over 38,000 students at the middle and high school levels. This is a replicable program that addresses recommendations of the Goals 2000 Act, promotes life-long learning, and has strong school-work, school-home, and school-community components. The program has four main elements:

1) School

School-based activities focus on mathematics, social studies, science, communication, and the arts. They complement findings of the Secretary's Commission on Achieving Necessary Skills (SCANS), and emphasize competencies required by the job market. Students learn to plan schedules and budgets, improve interpersonal skills, conduct research, communicate information, locate career data, and use technology to facilitate learning. The Johns Hopkins University Center for Technology in Education and the Institute for Policy Studies, and the University of Maryland at College Park coordinate training in which teachers use new technologies to create customized curriculum products.

2) Work

The Baltimore Learning Communities project connects schools to the workplace through two-way interactive video connections and digital networks. Through this system, work supervisors at retail stores, supermarkets, restaurants, and other places of business interact with school professional staff to learn how to transform work experiences into learning experiences. Participating businesses develop learning-rich tasks that lead to "Service Certificates" for student employees. Supervisors receive guidance from Bell Atlantic instructors adept at the change process, and are supported by Johns Hopkins University staff knowledgeable about adolescents and the transition from school to work. In addition, "Magic Me," an AmeriCorp national service and learning organization, is recruiting and training parents to participate in this element of the program.

3) Connections

The Baltimore Learning Communities project utilizes Internet connections to provide school and career information. Students query existing labor market databases to explore opportunities and salary structures in a wide range of occupations; teachers use electronic resources in planning and building curriculum products; and parents provide assistance at schools and community centers where interactive video and computers are available. This element of the Baltimore Learning Communities project contains job opportunity benefits for both students and their parents.

4) Digital Video on Demand

Discovery Communications, Inc. (The Discovery Channel and The Learning Channel) is providing about 100 hours of educational video material for use in the project. This information, which is specially selected and indexed, includes professionally produced documentaries and other programming with valuable instructional content. It also contains professional development material created for programs such as "Teacher TV," which has aired on the Learning Channel. DCI is digitizing this programming to permit on-demand retrieval and high quality display via the Internet. All content is indexed to state and local learning goals, and can be located by keywords and phrases. Teachers may select segments of

video material to meet specific instructional needs. Materials from other sources, such as the National Archives, are also available.

Partners in the Baltimore Learning Communities project contribute to the program's success in a variety of ways: Apple Computers and Bell Labs are providing significant contributions in hardware and resources. Learning Matters, Inc. is producing CD-ROM's in support of the SCANS element. The Maryland Business Roundtable is facilitating the use of two-way video to allow students to "shadow" workers in a variety of occupations. The Maryland Institute College of Art is helping middle school students produce TV programming through Baltimore Youth Television. The American Training Standards Institute, a non-profit organization, is linking school local area networks with a wide area network. The Educational Film Center is providing interactive multimedia, software, videodisks and video/print curriculum series. The Pelavin Division of the American Institutes for Research will perform ongoing evaluations, covering all four major elements of the project. Results of the evaluations and educational materials developed for the project will be disseminated through the Internet, professional publications, and documentary television.

Consortium Partners

AIR/Pelavin Associates, Inc.
American Federation of Teachers
American School Counselors Association
American Training Standards Institute
Apple Computers, Inc.
Bell Atlantic
Citizens Information Technology Education Center
COMCAST, Inc.
Discovery Communications, Inc.
Educational Film Center
Johns Hopkins University
Learning Matters, Inc.
Magic Me
Maryland Business Roundtable
Maryland Institute College of Art
Maryland Public Television
Maryland State Department of Education
Maryland State Teachers Association (NEA)
National Archives
NEA Center for Innovation in Education
Restaurant Association of Maryland
Space Telescope Science Institute
University of Maryland at College Park

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Newaygo County Intermediate School District

White Cloud, Michigan

Newaygo County Advanced Technology Service

The Newaygo County Advanced Technology Service (NCATS) consortium has been established to develop and maintain an advanced fiber optic cable telecommunication network that will enrich the education process throughout the county. The network's education program enhances educational opportunities for over 9,000 disadvantaged students and adults; improves the training and mutual support of the teaching staff in county schools; provides a delivery mechanism for improved curricula; and supports a unified effort among all county service agencies to coordinate their actions in dealing with the social, educational, and economic needs of local families. The network supports data, video, and voice communications capabilities that are available to all county residents. It connects all the county schools, the county seat, the hospital, libraries, private non-profit agencies, and area businesses. It provides student access to higher level curriculum in science, mathematics, and modern languages, and it supports professional development opportunities for teachers. NCATS is a replicable program with strong school-home, school-community, and school-work components. The program was specifically designed to help meet student outcomes envisioned in the Goals 2000 Act.

The need for this program is urgent. Newaygo County is one of the most rural, isolated and poor counties in Michigan, and almost half of its students live in poverty. The students of this county consistently score below state averages on the Michigan Educational Assessment Project (MEAP) in the fourth, seventh, and tenth grades. The consortium's program, which reaches over 9,000 students and their teachers, utilizes educational technologies and specialized program content designed specifically to help overcome these problems.

Specific objectives of the program include:

- Providing teachers and students access to network technology
- Increasing student achievement levels to state averages on standardized tests
- Giving parents and community members tools to assess student readiness for work
- Establishing a "single point of intake" system for County service agencies
- Creating a centralized data bank of student assessment tools and lesson plans for teachers
- Providing a county-wide profile of student achievement for use in professional development activities for teachers
- Creating electronic work groups where teachers collaborate to meet student needs
- Creating a delivery system for advanced courses in higher education
- Building an automated management system for teachers
- Establishing county-wide student outcomes in math, language arts, science, and social studies that conform to the Goals 2000 Act and the Michigan Core Curriculum for High School Graduation
- Creating new partnerships within the county that address educational and employment needs of area businesses.

The Fremont Area Foundation, the largest rural-based community foundation in Michigan, provides funding for the construction of the fiber optic network. The Gerber Companies Foundation provides support for the video distance learning component of the network. At appropriate locations throughout the county, the Newaygo County

government provides network access points where members of the public who do not have access to computers can pursue personal interests, check their children's school records, and obtain access to County services.

As the program grows, every teacher in Newaygo County will be provided a personal classroom workstation, and there will be a minimum of four workstations in each class for student use. Each school will be provided two computer lab settings where large class projects can be conducted. Video transmissions of specialized courses and other educational support products will be delivered through a broadband CATV network. The school district is equipping classrooms, a broadcast studio and a video production facility to coordinate video distribution, maintain production archives, and capture educational programming via satellite.

The District has entered into an agreement with Western Michigan University to conduct an evaluation of this project. The evaluation uses a variety of techniques, such as test scores, portfolios, focus groups, and surveys, to collect information pertaining to the effectiveness of the program. Data on qualitative and quantitative measures are collected, and feedback information is made available to project staff and stakeholders about the strengths and limitations of the project. This information is used to ensure that revisions and improvements are made in programs and processes.

This project brings together a strong consortium of public, private, and nonprofit institutions to implement a comprehensive plan to improve the education process in a rural school district.

Consortium Partners

Fremont Public Library
Fremont Public Schools
Gerber Memorial Hospital
Grant Public Schools
Hesperia Public Schools
Newaygo County
Newaygo County Multi-Agency Consortium
Newaygo Public Schools
White Cloud Public Library
White Cloud Public Schools

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Westside Community Schools

Omaha, Nebraska

The Community Discovered

"The Community Discovered: Integrating Art and Technology in K-12 Education" is a multi-element education program that uses technology to bring art museums and other educational resources to K-12 classrooms in Nebraska and 10 other states. The program targets over 40,000 students in rural and urban settings. Its main goal is to strengthen a nationwide community of educators engaged in creating integrated art-focused curricula in all core subject areas. The program contains a strong professional development component, fits within the framework of the Goals 2000 Act, and offers a broad range of extended learning opportunities. There are five major components:

1) The Electronic Art Museum in the Classroom

The Smithsonian Institution, the Getty Museum, the Joslyn Museum, the Sheldon Museum and the Museum of Nebraska Art are making more than 750 art images available to schools through the Internet, along with curriculum and contextual information for use by educators and students. Museum educators are providing educational outreach programs that use technologies such as the Internet, kiosks, and interactive multi-media.

2) Computer-Based Educational Strategies

In collaboration with private companies, educators of disadvantaged and underrepresented students are evaluating educational software for applicability to classroom settings and instructional objectives. In addition, a technology mentor cadre of 13 educators is producing a comprehensive Internet guide to arts and technology resources available in print, and through ARTnet, an electronic communications network managed by the Nebraska Department of Education and Prairie Visions: The Nebraska Consortium for Discipline-Based Art Education. These mentors conduct workshops to promote project activities, provide technical assistance via the Internet or telephone, and provide guidance in the selection of computer hardware and software.

3) Professional Development and Support for Educators

Through this program, educators of rural and urban disadvantaged students participate in two-week museum-based institutes to enable them to design curricula that use technology to integrate art and other core subjects. Students use electronic portfolios to record progress, and evaluators review the portfolios to provide guidance in improving art curricula. Participants access curriculum modules, digitized images and other museum resources through ARTnet. Through these activities, teachers gain valuable experience in reviewing, analyzing and integrating resources via the Internet. The program includes a comprehensive mentoring system, in which each teacher is assigned a technology mentor to assist with hardware, software and networking, and a curriculum integration mentor to assist with curriculum development and implementation.

4) Curriculum, Instruction and Assessment Strategies

A minimum of 632 curriculum modules are being developed and implemented, with a target of 90% teacher participation. The modules incorporate Internet digitized images and museum resources, multi-media projects, electronic portfolios, and other computer applications. Target student goals include improved attendance rates, improved student attitudes, and higher student performance. Students from up to 100 Nebraska districts will experience art modules developed through project activities.

5) Nationwide Community for art and Technology Integration

The program is stimulating cross-state partnerships with the goal of replicating project activities throughout the country. The project is

supporting four learning communities of educators and students. Each community is engaged in educational activities which integrate the arts and technology with other core subjects to enable students to achieve high academic standards. The communities are: 1) Nine Nebraska school districts serving isolated and disadvantaged students; 2) The nearly 100 school districts, nine colleges and universities, and four museums and art centers that comprise Prairie Visions; 3) Teams of arts education leaders in Colorado, Utah, Wyoming, Montana and Kansas; and 4) Regional institute grantees sponsored by The Getty Center for Education in the Arts at universities in California, Florida, Texas, Ohio, and Tennessee. A comprehensive evaluation of the entire project has been arranged through the Far West Laboratory in San Francisco.

The Westside Community School District has organized an effective consortium of museums, educational institutions and private industries that is using modern technology to bring some of the world's finest art into classrooms throughout the country.

Consortium Partners

ArtsEdge Arts and Education Information Network
Apple Computer, Inc.
Digital Visions, Inc.
Far West Laboratory for Educational R&D
Getty Center for Education in the Arts (and Grantees)
J. Paul Getty Museum
Joslyn Art Museum
Lexington Public Schools
M Power Multimedia Design Corporation
Museum of Nebraska Art
Nebraska Art Teachers Association
Nebraska Department of Education
Nebraska Educational Service Units #3, #7, & #13
Nebraska Indian Community College
Pacific Imaging Center
Prairie Visions: The Nebraska Consortium for
Discipline-Based Art Education
School District of Grand Island
Sheldon Memorial Art Gallery & Sculpture Garden
Smithsonian National Museum of American Art
The Kennedy Center
Winnebago Public Schools

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Manchester School District

Manchester, New Hampshire

The Manchester Challenge

The Manchester Challenge is a large-scale education reform effort that is integrating instructional technologies into the curricula of elementary, middle, and high schools in the greater Manchester, New Hampshire area. The project is being implemented in collaboration with the Manchester municipal government, nearby school districts, colleges, businesses, industries and technology vendors. Project technologies include instructional television, satellite broadcasts, multimedia telecomputing, and administrative applications. The program addresses recommendations of the Goals 2000 Act, and has strong school-community and school-work components. Over 28,000 students benefit from project activities.

The program is designed to provide all students equitable access to information technology, facilities and training. All participating educators are provided the equipment, training, time and on-going support to enable them to use information technology effectively. All schools throughout the district are being interconnected with a state-of-the-art network for voice, video, and data. Educators and students enhance the learning process with two-way video and audio distance learning classrooms, workstations in all classrooms, instructional television via cable, video production/reception via building institutional loops connected to media centers, multimedia workstations, high speed telecomputing, and a variety of other learning technologies. There are four major program elements:

1) Professional Development

The first year of professional development activities is directed at the high school level, and the remaining years are directed at both middle and elementary school levels. The program offers teachers a series of sequential professional development programs leading to the successful operation of multi-media workstations for classroom instruction. Teachers form learning teams in which more proficient teachers provide instruction and support for the less experienced. Training activities include instruction in the use of the Internet, the World Wide Web, and other technologies.

2) Curriculum Development

University faculty and education consultants assist Manchester teachers with curriculum development. Teams of teachers work independently to carry out curriculum development needed for interdisciplinary, thematic student projects. Teams are developed around common planning time and common student course enrollments. Curriculum units and projects are shared among teacher teams in all participating schools.

3) Technology Implementation

Utilizing the Manchester Challenge telecommunication network, students at all project schools may participate in distance learning classes that would not otherwise be offered due to low enrollment. Each distance learning classroom is equipped with multiple cameras, video displays, and a teacher control station. These classes are augmented by data networks through which faculty and students can share text materials and access relevant databases.

4) Partnership Activities

Consortium members contribute to the Manchester Challenge in a number of ways. The Manchester School District and the municipal government have made a strong commitment to the purchase of new hardware and software. All the other project partners contribute funding and/or in-kind services.

Goals of the project include better teaching, increased learning, organizational efficiency, enhanced communications, improved accountability, and reporting, improved community development, support for life-long learning, access to learning programs by citizens, sustained partnerships between educational and business

organizations, the exchange of information with other educational organizations, shared resources with business and public institutions, and an improved economic viability for the community

Consortium Partners

Audubon Society of New Hampshire
Bedford School District
Cabletron
Central Paper Products
CHAMPS-Parent Group
Coca Cola
Community Improvement Program
Computer Learning Center
Continental Cablevision
Cyber-Space
Goffstown School District
Gossler Park Parent Teacher Group
Granite State Credit Union
Hallsville Parent Teacher Group
Lavallee/Brensinger Professional Associates
Manchester Chamber of Commerce
Manchester School of Technology
McLane, Graf, Raulerson & Middleton
Memorial High Booster Club
Morgan Press
Multimedia Systems Inc.
New Hampshire College
New Hampshire Department of Education
New Hampshire Public Television
Northwest Parent Teacher Group
Notre Dame College
NYNEX
Optima Health, Inc.
Parkey-Varney Parent Teacher Group
Public Service of New Hampshire
Queen City Sound
State Department of Education
Tech PC
Telephone Network Technologies
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Pueblo of Laguna Department of Education

Laguna, New Mexico

Four Directions

"Four Directions" is an education reform project that blends American Indian culture with new educational technologies to revitalize curricula and instruction in Bureau of Indian Affairs (BIA) schools. Based on their urgent need, eight schools representing tribal groups in eight states have been selected as pilot sites for the project. Within five years the program will expand to include 24 BIA schools in locations throughout the country. The project involves K-12 students, parents, and members of their communities. The program has strong School-Home and School-Community components, promotes extended time for learning, and provides extensive professional development opportunities for teachers. Project activities include:

- Restructuring curricula to incorporate local cultures and values
- Collaborating across sites through on-site training, on-line tutoring, and cooperative teaming
- Creating networked "virtual communities" with Internet presence
- Encouraging life-long learning by extending technology support to communities surrounding project schools
- Maintaining a network database of teaching, assessment, professional development, and student-created resources
- Creating a research-based evaluation model

As the core of this project, each school develops an advisory team consisting of students, parents, teachers, paraprofessionals and community members. It is the responsibility of each team to develop authentic learning tasks that are relevant to students and that are drawn from the unique cultural context of each tribe. These tasks are then developed into "thematic cycles," central components of core curricula that allow the presentation of subject matter within a cultural context, and allow the cultural theme to be integrated into other subjects. As members of the team, parents and community members, including elders, are involved in the development of curricula and are involved in the evaluation of the project and its relevance to the traditions of the tribe. Targeted curriculum areas include art, mathematics, science, social studies, economics, geography, language arts and fine arts.

An integral part of this program are communications services provided through the Educational Native American Network (ENAN), an Internet communications service for all BIA schools. Each school is utilizing ENAN to produce World Wide Web (WWW) home pages that describe the school, its history and current activities. Technical support for the WWW effort is provided by the University of Kansas through the Unified Network InformaTics for Education (UNITE) system. The WWW pages also contain information about each American Indian group participating in the project. This information is shared with other schools and with non-Native American schools via the Internet. The WWW pages offer a look at the unique aspects of each American Indian group from the perspective of its own people. This provides students with a focal point for problem solving and for sharing the important cultural contributions made by each of the tribes. The project uses the WWW to disseminate project tasks, curriculum ideas, school information, tribal histories, and project results. Project technologies are used by students to perform research on thematic issues, develop learning activities on the themes, explore other disciplines that are part of the theme cycles, and provide access to their results for authentic assessment. Information and programs developed through Four Directions are available to a wide audience

through the Internet. Access to project technologies is available after school hours to students and their families, in a program to extend learning opportunities to the entire community.

This project contains a strong professional development component. Teams from each of the schools attend a 10 day training session held at the Southwest Indian Polytechnical Institute in Albuquerque, New Mexico. This training covers the development of thematic units based on authentic tasks, the integration of these units into the curriculum, and the use of technology. In addition, the project sponsors two technology training workshops annually at each of the schools.

Best practices reports, as determined by ongoing evaluation of the project, are made available through national conferences, the Educational Resources Information Center (ERIC), the National Clearinghouse for Bilingual Education (NCBE), the Eisenhower National Clearinghouse, and the World Wide Web.

The Four Directions project is a unique program that uses modern technologies to create enriched, integrated learning environments designed around Indian children's real life experiences.

Consortium Partners

Ahfachkee Day School, Clewson, FL
Dilcon Boarding School, Winslow, AZ
Fond du Lac Ojibwe School, Cloquet, MN
Hannahville Indian School, Wilson, MI
Heard Museum of Native Culture & Art, Phoenix, AZ
Indian Island School, Old Town, ME
Intel Corporation
Laguna Elementary/Middle School, Laguna, NM
Mathematical Association of America
Microsoft Corporation
Museum of Northern Arizona, Flagstaff, AZ
Quileute Tribal School, LaPush, WA
Sandia National Laboratories, U.S. Dept. of Energy
Southwest Indian Polytechnic Institute,
Albuquerque, NM
Takini School, Howes, SD
University of Kansas, Lawrence, KS

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Summit County Educational Service Center

Cuyahoga Falls, Ohio

NEW³: New Technology, New Knowledge, New Work

NEW³ is a broad consortium of educational institutions, government agencies, private businesses and philanthropic organizations dedicated to the goal of transforming teaching and learning in Summit County, Ohio by the year 2000. To meet this ambitious objective, the consortium has developed a program through which students use technology to complete substantive *new work* that meets high educational standards set forth by new local curricula, and the Ohio K-12 Competency Based Education standards. Utilizing the talents of business and community representatives, the project promotes life-long learning, through the use of technology, fits within the framework of Goals 2000 objectives, supports school to work principles, and has a strong professional development component. More than 88,000 students benefit from the program.

The NEW³ project addresses the needs of approximately 88,500 students in 18 school districts in and around Akron, Ohio. Six of the school districts have high percentages of economically and educationally disadvantaged students. The project centers on transforming the tasks used in learning and will include all grades, K through 12. NEW³ requires the collaborative efforts of the entire community, including educators, parents, and students.

A critical premise of the program is that school work needs to be redesigned so that it engages students in learning that they view as relevant to their world today and tomorrow. The Challenge Grant enables the Summit County Educational Services Center consortium to develop and implement a plan to design *new work*, to support a Technology Academy for teacher development, and to develop and implement a Technology Work Experience Program for high school and college students.

The first and primary goal of the program is to design *new work* for students -- work that engages, work with which children persist, and work that results in a sense of accomplishment. Learners develop competencies by engaging in authentic, meaningful and rewarding experiences that are valued by parents, community, and society at large. *New student work* is being designed and developed jointly with learners, communities, and the Center for Leadership in School Reform of Louisville, Kentucky.

The second goal is to expand teachers' understanding of how to create *new work* in partnership with students through coursework at the Summit County Office of Education's nationally acclaimed "Technology Academy." Here teachers learn about using technologies in the context of what children do, not what machines do. More than 2300 teachers will graduate from the Academy's intensive one year, 73 hour course of study in the five years of the NEW³ project.

The third goal is to design, develop, and operate a Technology Work Experience program through which high school and college students participate in educational and work experiences while maintaining and operating the classroom technologies supporting the NEW³ project. This program enhances school-to-work transitions by providing authentic technology-related experiences for participants. NEW³ has arranged for a major upgrading of school and classroom technology infrastructure. Improvements include computer network installation, electrical upgrades, new computer workstations, and acquisition of video equipment. The Work Experience Program is formed as a nonprofit company, operated by students, and dedicated to rapid response support for

this classroom technology. Funding for the classroom hardware is provided largely by the Ohio SchoolNet program.

The fourth goal is to develop educational software to support *new work*. Partnership with LOGAL of Cambridge, Massachusetts on the development of simulation-based, *new work* software is an important component of the NEW³ project.

A final goal is to provide teachers the opportunity to acquire the skills and knowledge needed to instruct students. Professional development activities are supported by the University of Akron, Kent State University and Ashland University. This includes developing performance standards relating to *new work* and technology. These standards are to be used in considering the employment of new teachers.

In addition, national panels of experts in mathematics, technology, language arts, science and other content areas are involved in assessing curricula and effectiveness. Ameritech, a cellular telephone service provider, is funding and operating two community-based computer centers in the City of Akron in support of NEW³.

By the year 2000, students will use technology to complete substantive *new work* that meets high standards; resulting in transformed schools, and, ultimately, self-sustaining communities of life-long learning.

Consortium Partners

Akron Regional Development Board
Ameritech Ohio
Ashland University
Center for Leadership in School Reform
Eighteen School Districts (Akron Area)
Galen A. Roush Foundation
Kent State University
LOGAL
Summit County Educational Service Center
Summit Education Partnership Foundation
University of Akron

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School District of Philadelphia

Philadelphia, Pennsylvania

Philadelphia's Technology Challenge Consortium

Philadelphia's Technology Challenge Grant Consortium has developed a comprehensive program to invigorate K-12 and adult education programs through the imaginative use of educational technologies. Incorporated within the Philadelphia School District's systemic reform effort, "Children Achieving," the program utilizes many of the latest developments in telecommunication, multimedia, and computer instruction to build new teaching and learning processes within small learning communities. The resulting "Virtual Schools" represent a fundamental and radical transformation of teaching to emphasize interaction and inquiry in the learning process. Over 55,000 students will benefit from the program in the first two years, and in the following three years the program will be expanded to include more than 210,000. The program encourages the development of infrastructure and partnership among the municipal government, the local school district, community service providers, and educational institutions at all levels. This is a replicable program with strong school-home, school-community, and school-work components. It provides effective support for professional development activities, addresses targets of the Goals 2000 act, and offers unique opportunities for extended learning. There are four primary goals:

1) Infrastructure/Networking (Universal Access)

This initiative builds an electronic communications system to connect students, parents, teachers and community members. The system enables citizens to enjoy easy access to the administrative and instructional staff of the School District of Philadelphia, and other local, national and global on-line information resources. The system may be accessed at three key school locations: library areas for parent and student access; teacher areas for faculty and support staff access; and office areas for administrative access.

2) Access to Information

There are two major components of the program's on-line resources: The Teaching and Learning Network (TLN) and the Family Resource Network (FRN). The TLN is a key link to an "effective practices" database which includes information on local and national curriculum resources, sample lesson plans, information on standards and assessment, discussion group opportunities related to teaching and learning issues, cross-referenced lists of all teaching and learning resources on the Internet, and on-line homework assistance. The FRN assists schools in identifying and providing health, mental health and social services to students and families.

3) Professional Development

Each school in Philadelphia employs a Subject Area Specialist in technology (SAS) who is responsible for organizing and supporting education technology efforts in schools, leading the effort to integrate educational technologies throughout the curriculum, and training other teachers at each school in how to use educational technologies effectively. A portion of the funding from this grant will be used to purchase additional professional development services, and to provide professional leave days for teachers to receive training from their school's technology SAS.

4) Virtual Schools

Using the new communications system implemented through this grant, the program distributes curriculum, instruction, and assessment information electronically through on-line centers of instruction called "Virtual Schools." These electronic classrooms offer services to adults seeking diplomas, homebound students, prison inmates, and other hard-to-reach populations. With the cooperation of Consortium partners such as Public Television Station WHYY, the Private Industry Council of Philadelphia, the Community College of Philadelphia, and others, Virtual Schools

offer General Education Degree (GED) coursework, English as a Second Language (ESL) coursework, and other curricula.

The other Consortium partners support "Effective Practice Sites" established within six clusters of high schools and their feeder schools. These sites are demonstration and evaluation laboratories for technology systems and educational strategies developed as part of the project. At one high school, the University of Pennsylvania and Bell Atlantic are developing an Internet communications system to support voice mail, E-mail, professional development, and curriculum development. Temple University is helping students at another school learn how to use the Internet as a resource for English, social studies, and other subjects. IBM is working with three schools to utilize new technologies to assist special education students and students for whom English is a second language. Public Television Station WHYY is lending another school its expertise in production, communication and technology to create a "virtual school." Drexel University students are assisting schools in the integration of new technologies across the curriculum, and emphasizing improvements in math education through the use of computer labs. Moore College of Art is enabling students to develop a wide variety of curricula on CD-ROM, utilizing student-edited video, still images, recorded sound and text. Materials can be distributed via a city-wide network that can support small electronic learning communities.

This project brings together a powerful consortium of public, private and nonprofit institutions to implement a comprehensive plan to improve the education process in an urban school district.

Consortium Partners

Bell Atlantic
City of Philadelphia
Community College of Philadelphia/Private
Industry Council of Philadelphia
Drexel University
IBM
Moore College of Art
Philadelphia Education Fund
School District of Philadelphia
Temple University
Unisys Corporation
University of Pennsylvania
WHYY Public Television

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Towanda Area School District

Towanda, Pennsylvania

New Vision

"New Vision" is a consortium of school districts, post-secondary institutions, museums and private industries that demonstrates the dynamic ability of emerging technologies to expand and improve educational opportunities in rural, remote, poor school districts. Under the leadership of the Towanda Area School District, New Vision is establishing "distance learning centers" at 23 local education agencies (LEA), six post-secondary institutions, and the State Museum of Pennsylvania. These sites are being linked electronically to a network of 40 schools and agencies committed to sharing local educational resources through interactive videoconferencing. Through its network, New Vision can offer high-level classes that are not commonly offered due to low enrollment; use exemplary teachers to cover hard-to-fill positions in several districts at once; conduct unique student workshops; and offer advanced placement courses. The project is establishing one of the largest interactive networks in the country, involving over 54,000 students in Pennsylvania, New Jersey and New York. Each of the LEA's has demonstrated its commitment to the project by agreeing to match 50% of all equipment costs with local funding. This program addresses recommendations of the Goals 2000 Act, emphasizes school to work training, and contains strong professional development and evaluation elements.

New Vision builds upon the success of the Northern Tier Rural Distance Learning Consortium, a distance learning organization established in 1992. This model program consists of six rural school districts in Northern Pennsylvania, and it is funded by a grant from Commonwealth Telephone Company. (No Technology Learning Challenge funding is being used to support Northern Tier programs.) The basic governing bylaws of the Northern Tier Consortium have been adapted for New Vision to form a network of regional consortia alliances consisting of the Cape May Consortium (New Jersey), the Adirondack Consortium (New York) and the Southeast Consortium (Pennsylvania). These organizations have agreed upon a four-phase implementation plan for New Vision:

1) Establishing Distance Learning Centers

Equipment purchases and inventory controls are centrally managed through the Northern Tier Consortium. All equipment purchased through New Vision is the property of each individual school district. All learning sites are fully equipped with the technology required to support distance learning classes.

2) Linking Schools

In cooperation with College Misericordia and the Northern Tier Consortium, New Vision provides a training program for coordinators at all sites to ensure understanding and proficiency in using the system. Training conferences create opportunities for all schools to define strategies for expanding participation of other districts and to modify the program to meet the needs of schools new to the program.

3) Sharing Resources

Each post-secondary participant provides services, programs and activities that can be shared cost-effectively with LEA's. Service components include adult evening programs, career counseling, academic counseling, dual credit high school courses, electronic field trips, peer tutoring programs, staff development, pre-college and pre-technical education, and curriculum development projects.

4) Linking to State Museums

The Pennsylvania State Museum offers electronic field trips, a teacher-to-historian information exchange program, curriculum development initiatives, and program packages that deal with issues and developments in state history and culture. New Vision is working with New York and New Jersey to develop a tri-state exchange agreement

between museums, historic sites, science centers, and participating school districts.

Each of the partners in the New Vision consortium provides a unique contribution to the program. College Misericordia conducts dual-credit college level courses. Penn State (Wilkes-Barre and Harrisburg campuses) offers college courses for adults, professional development, career counseling, and guest lectures. Lackawanna Junior College presents Adult Basic Education programs over the network, and provides network connections to the National Tele-Consortium and the Mid-Atlantic Consortium. Commonwealth Telephone company provides free bridging access and is assisting in linking the full consortium. The Pennsylvania Rural Electric Association is helping to disseminate information on New Vision throughout the country. Mansfield University is promoting post-secondary educational opportunities through the network. Atlantic County Community College (New Jersey) is providing technical/vocational training opportunities via New Vision. The PictureTel Corporation is establishing a videoconferencing system at the State Museum of Pennsylvania, assisting with network optimization, and helping to adapt the network for connection to such resources as historic battlefields, zoos, aquariums, science centers, and performance centers. The Center for Rural Pennsylvania is supporting a staff position to operate a networked cultural awareness program. Also, through the network, the State Museum of Pennsylvania provides links to its exhibits, planetarium, and other comprehensive educational resources.

New Vision is a comprehensive, replicable program that utilizes the technology of telecommunication to expand and improve educational opportunities in isolated school systems in Pennsylvania, New York and New Jersey.

Consortium Partners

Atlantic Community College
Center for Rural Pennsylvania
Claverack Rural Electric
College Misericordia
Commonwealth Telephone Company
Community Education Council
Harrisburg Area Community College
International Paper Company
Lackawanna Junior College
Mansfield University
Northeast Pennsylvania Tech-Prep Consortium
Penn State University (Wilkes-Barre & Harrisburg)
Pennsylvania Rural Electric Association
PictureTel Corporation
State Museum of Pennsylvania
Towanda Area School District
and 28 other school Districts in PA, NJ, and NY

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Black Hills Special Services Cooperative

Sturgis, South Dakota

Technology in Education Challenge for Rural America (TEC-RAM)

South Dakota's "Technology in Education Challenge for Rural America" (TEC-RAM) consortium has organized a state-wide, community-focused education program to advance the effective use of technology in restructuring schools by: 1) introducing innovative educational technologies in a statewide redesign of K-12 curricula, instruction and assessment; and 2) capitalizing on new technologies to promote student achievement. The program will impact over 14,000 rural students in the first year, and over 35,000 throughout its duration. Designed to respond to the Improving America's Schools Act, the Goals 2000: Educate America Act, and the School-to-Work Opportunities Act, this program integrates technology into a systemic educational reform effort that improves teaching and learning and leads to the attainment of challenging standards by all students. There are six critical elements of the program:

1) Restructuring

The initiative builds upon efforts by local school districts and communities to restructure school programs to conform with challenging state education standards and locally determined student outcomes. Through the integration of technology into this process, a broad cross-section of community leaders will participate in the articulation of a shared education mission.

2) Utilization

The project uses a collaborative approach for the design and evaluation of technology-enhanced curricula, instruction, and performance assessment. Teams of teachers, curriculum specialists, technology specialists and private software developers identify and implement interdisciplinary projects and strategies that engage students as active learners involved in authentic, community-based learning experiences. Some of the technologies being utilized include CD-ROM and other "open architecture" applications for student-directed learning experiences; interactive, multimedia applications developed by private business partners; multimedia educational materials developed by student/teacher teams; and inquiry applications that utilize the Internet.

3) Professional Development

TEC-RAM collaboration teams work directly in classrooms to model, involve, and support teachers in the process of integrating technology into effective standards-based curriculum and instruction. The collaboration teams include pre-service teachers, so that a major portion of both in-service and pre-service educational technology training can take place in actual classroom settings.

4) Replication

The program is designed to encourage replication in other rural school districts in South Dakota. The initial six demonstration districts serve as models for an additional 12 replication districts that will participate in TEC-RAM through an RFP process.

5) Inclusiveness

The program design is fully inclusive of all students, reflecting an even geographic distribution across the state. One of the initial demonstration districts serves an Indian reservation, which is located in one of the 10 poorest counties in the nation.

6) Access

TEC-RAM emphasizes access to innovative, cost-effective technology and telecommunication resources that enhance teaching and learning. This requires the development of cost-effective, interactive, multi-media applications that extend experiential

learning beyond the limits of the classroom and small rural communities. For schools located in isolated settings with limited communications access, TEC-RAM is implementing packet radio as an alternative to telecommunications via telephone line.

All partners in the TEC-RAM consortium contribute substantially to the human resource capability of the project. Based on their proven readiness, six local school districts have been selected as the initial TEC-RAM consortium demonstration sites. These districts contribute the time and expertise of administrative and specialist staff, along with the substantial, uncompensated time of direct educational staff. The Black Hills Special Services Cooperative, Technology and Innovations in Education (TIE) provides services through its Technology Demonstration and Training Center, the TIE Preview Center, and the TIE Curricula Center. TIE also provides access to South Dakota's Rural Development and Educational Network and several statewide programmatic resources. The South Dakota Department of Education and Cultural Affairs provides access to South Dakota's Rural Development Telecommunications Network. Spring Creek Productions provides video production expertise for the development of products to support project activities and for video-related training activities at the local sites.

The TEC-RAM project brings together a broad range of school systems, communities, state agencies and private industry for the purpose of introducing innovative educational technologies into a rural school system.

Consortium Partners

Aberdeen School District 6-1
Black Hills Special Services Cooperative
Black Hills State University
Dakota State University
Douglas School District 51-1
Hot Springs School District 23-2
Huron School District 02-2
Lake Central School District 39-2
South Dakota Dept. of Education & Cultural Affairs
South Dakota Dept. of Labor
Spring Creek Productions
Todd County School District 66-1

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Socorro Independent School District

El Paso, Texas

A Community of 21st Century Learners for El Paso

"A Community of 21st Century Learners for El Paso" is an ambitious program using technology to rejuvenate the schools in El Paso, Texas. The program goals are to produce within five years: 1) Ten restructured partner schools and a teacher preparation institution, fully connected to the Internet and its resources; 2) 120 teachers who integrate acquired technologies and national standards into the curriculum, and who serve as teacher trainers at 70 other schools; 3) 10,000 students from impoverished neighborhoods who bridge the academic performance gap in state and national standardized tests; 4) 1,000 Hispanic parents utilizing laptop computers in a program to provide technology knowledge and skills; 5) 100 business partners serving as mentors for 200 disadvantaged elementary and high school students; and 6) A "Community of Learners" development change model with emphasis on access to technology to be exported to the 55 schools that are members of the "El Paso Collaborative for Academic Excellence." The program has a strong School to Work component, integrates objectives of the Goals 2000 Act, and ensures ongoing professional development of teachers, administrators and university faculty. There are five major components of the program:

1) Connectivity

Through this grant, the consortium provides computer network connections in 110 classrooms in 10 partner schools. These connections are supported by appropriate software and hardware which includes CD-ROM capability, scanners, color printers, LCD projection panels, video cameras, VCRs, Newton notebook computers, and QuickTake cameras. Additional laptop computers are borrowed by low-income parents for use at home. Technical support is provided by two educational technology experts employed as non-tenure faculty.

2) Staff Development

The program provides resources for 120 teachers to obtain university certification in either of two programs: the Texas Technology Endorsement, or the Instructional Specialist Master's Degree program with emphasis on educational technology and curriculum integration. Each participant will train at least three other teachers in the effective use of educational technologies to improve academic achievement. Funding from this grant will enable the University of Texas at El Paso to provide a course of study uniquely structured for the needs of the participants.

3) Technology Access for Low Income Parents

Each participating school is developing a Parent Center designed to provide parents with training opportunities in English speaking skills, parenting skills, computer use, and instructional support skills. Families may borrow computers for extended periods of time in order to stimulate student achievement, promote parent awareness of the education process, enhance job potential for parents, and involve parents in school activities.

4) E-Mail Business Mentors

The consortium has organized a "Community and Business Liaison" project that is developing a business mentor program at each participating school. Each school is assigned 10 mentors from local businesses, and each mentor is assigned two students. Mentors will

demonstrate the many uses of electronic communications, and will maintain E-mail contact with students throughout the year, providing assistance with school work, and serving as a role-model example of the value of a good education.

5) Sustainability

At the end of five years, all participating schools will have established an advanced level of network connectivity that will remain useful long after the project has ended. The program's post-graduate instruction opportunities will continue to be available at the University of Texas El Paso, and university faculty will continue the integration of technology and standards into their course curricula. Parent development activities will continue, including the role of parents as trainers of teachers for home visits. The El Paso Collaborative for Academic Excellence will disseminate information about the program.

The project provides for a detailed assessment of participants' performance within the university training programs, teacher performance in the school faculty development programs, and student achievement within the core curricula. Student performance is measured against national content standard guidelines for the arts, civics and government, English, foreign languages, geography, history, math and science. The project also provides for evaluations of parent participation and business mentoring support.

The El Paso Challenge Grant consortium is part of a city-wide collaborative for academic excellence, taking advantage of school, home, government and business resources. The program promotes a major systemic reform agenda for education in the El Paso region.

Consortium Partners

El Paso Chamber of Commerce
El Paso Collaborative for Academic Excellence
El Paso Community College
El Paso Hispanic Chamber of Commerce
El Paso Independent School District
El Paso Interreligious Sponsoring Organization
Region XIX Education Service Center
University of Texas at El Paso
Ysleta Independent School District

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Southeast Education Service Center

Price, Utah

State of Utah Resource Web (SURWEB)

The State of Utah Resource Web (SURWEB) is a telecommunication project providing educational opportunities for Utah students who live in poor, rural, or culturally disenfranchised communities. The program was conceived and implemented by a consortium of public and private agencies including Utah's educational service centers, institutions of higher learning, the Far West Laboratory for Educational Research and Development, museums, state parks, national parks, and Native American tribal councils and agencies. The program fits within the framework of the Goals 2000 Act, encourages school reform, and provides comprehensive professional development opportunities. More than 400,000 students will eventually be impacted. There are five major goals of the program:

1) Building Connectivity

SURWEB is a natural extension of two existing educational telecommunication projects in Utah: the Southeast Utah Regional Wide Area Network (SURWAN) and the UtahLink Project. Both networks have a proven record of providing dependable service to schools. The SURWEB project builds on these networks, and adds a World Wide Web capability that enables schools to develop on-line educational resources and applications.

2) Developing Curriculum Applications

A Curriculum Advisory Committee (CAC) guides the development of units of study supported by SURWEB. The CAC is composed of teachers, parents, business representatives, a Utah State Office of Education curriculum specialist, university curriculum specialists, educational service center directors, and information specialists from state agencies. Using state and national school reform goals as a guide, the CAC develops thematic instructional units which integrate subject matter disciplines, introduce real-life issues, and capitalize on local and state resources. Unit subjects include dinosaurs, red rock formations, Native American cultures, ecosystems, pioneering history, and other topics related to the region. This educational material is made available to Utah schools and schools throughout the country via SURWEB and other state networks connected to the Internet.

3) Providing Staff Development

SURWEB is developing and piloting a teacher training program called Utah Internet Institutes that provides instruction in utilizing the resources of the Internet. The Institutes train teachers to access resources via telecommunication, integrate resources into teaching and learning, and evaluate student projects completed over the Internet. In addition, the teachers learn to create their own Internet resources for dissemination on-line. The technical production laboratories at Southern Utah University and the College of Eastern Utah provide training components for the Institutes and assist in the production of related WWW resources.

4) Scaling Up SURWEB

As SURWEB's lead agency, the Southeast Education Service Center (SESC) is working with the other Utah education service agencies to expand the program throughout the state. In the first year of the project, the other service agencies are conducting a series of planning meetings in each of their regions to strengthen regional educational technology planning, coordinate planning across agencies, and integrate the SURWEB project into their plans. In subsequent years, SURWEB will install WWW servers at appropriate sites in each service center, so that these organizations may utilize SURWEB applications in educational technology programs.

5) Evaluating SURWEB

The Far West Laboratory for Educational Research and Development has developed and will implement an evaluation plan for SURWEB. The evaluation design calls for focus group reviews of the program, and large scale mail surveys of students, faculty, parents and community members. The evaluation process is designed to measure the value of SURWEB in changing in the way people seek information, the way they teach, and the way they learn.

Members of the SURWEB consortium are providing support for the program in numerous ways: the Southeast Education Service Center has contributed hardware and software acquired through a Rural Electrification Administration grant; Southern Utah University provides facilities and content specialists in support of professional development activities; the Utah Education Network is contributing the services of an Internet specialist; the Utah State Office of Education is providing ongoing high school maintenance support and Internet training for all teachers in the state; Far West Laboratory is developing and implementing an evaluation plan; the national and state parks and the Indian agencies are providing information specialists; US West is providing technical assistance for a user friendly WWW network. Novell, Inc. will extend education discounts to maximize funds and give more students access to the project

Consortium Partners

Dinosaur National Monument

Far West Laboratory

Indian Councils/Agencies

National Parks System

Arches

Bryce Canyon

Canyonlands

Capitol Reef

Zion

Novell, Inc.

Office of Museum Services

Service Centers:

Central Utah Educational Services

Northeastern Utah Educational Services

Southeastern Educational Service Center

Southwest Educational Development Center

Southern Utah University

US West Communications

Utah Education Network

Utah State Office of Education

Utah State Parks System (includes 45 parks)

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Montpelier School District

Montpelier, Vermont

The WEB Project

The WEB Project, subtitled "Creating a WEB of Evidence of Student Performance in Nonverbal Inquiry and Expression," is a consortium of state agencies, private industries, and educational institutions that are utilizing new technologies to effect systemic reform in school systems throughout Vermont. The project utilizes multimedia telecommunication 1) as an educational environment for student inquiry and expression, 2) as a medium for presenting and evaluating student work, and 3) as a virtual faculty room for fostering professional discussions about standards of excellence in education. The focus of the WEB Project is the arts, humanities and the social sciences. More than 200 students are participating in the first year, and within five years the program will expand to involve over 2,000 students throughout the state. This program fits within the framework of the Goals 2000 Act, promotes professional development, contains strong evaluation and dissemination components and is designed to merge with the overall state education reform initiative. The program has three major elements:

1) Cooperating School Districts

In three pilot Vermont school districts, the WEB Project is demonstrating the connections between educational standards, curriculum, instruction and assessment. Each school district is provided five "computer suites" for use in central locations within schools. Students use these high performance computers to digitize text, graphics, and full motion video files for use by other students in a variety of educational projects. The program enables classes to:

- Focus on the articulation of K-12 standards of performance
- Prepare students to create multimedia presentations and electronic portfolios to demonstrate learning
- Digitize images of student performances as benchmarks of standards, and publish the images on the World Wide WEB (WWW) for assessment and feedback
- Increase student understanding of the roles of technology and its application
- Introduce or upgrade multimedia authoring technology and provide training in its use

2) Professional Organizations

With the cooperation of the Vermont Arts Assessment Project and the Vermont Alliance for Arts Education, the WEB Project is providing educational standards-based training to teachers who represent school systems across the state. These teachers receive computers and video cameras that are used to digitize educational materials for review, and they learn to assess student work according to the Vermont Arts Assessment standards. Their training and expertise are shared with other teachers in their districts.

3) Action Researchers

The WEB Project trains instructors to utilize multimedia in teaching dance, music composition, multimedia authoring, and other skills. Training is conducted by "action researchers," stationed at "action research sites" throughout the state. Action researchers provide technical support for the WEB Project, keep journals of student activities, and digitize performance information.

Through the WEB Project, students use technology to build on their knowledge and skills, and they are provided opportunities to practice what they have learned. They come into contact with a wide range of adults in teaching and mentoring roles, particularly working artists, writers, composers, videographers, dancers, historians and others. They expand peer relationships through

sharing work and reflecting on the work of others. They learn to evaluate their own work based on objective standards of quality. They learn specific skills related to using telecommunication and multimedia, designing World Wide WEB (WWW) pages, presenting their work via telecommunication, writing, problem solving, and making valuable connections between art, humanities, sciences and social sciences.

Through the WEB Project, teachers are provided numerous opportunities for professional development. Local schools release teachers for professional training, and provide time and resources needed to take advantage of the local capacities being built by the program. A core group of teachers in each participating school is given time every day to support project activities. Statewide partners include WEB Project schools in summer institute plans, follow-up activities and networking support.

The IBM corporation is working closely with the state of Vermont to support its educational reform initiative. Each of the WEB Project schools is receiving educational technology funding from IBM, as well as technical assistance in developing record-keeping software that may be marketed nationwide. The Vermont Institute for Science, Mathematics and Technology (VISMT), through a National Science Foundation grant, is helping to coordinate WEB Project activities with other education reform projects in the state, and conducting statewide professional development programs to promote the use of technology in education.

Through the use of technology, the WEB Project is helping to renew the teaching of arts and humanities, promoting systemic education reform, and encouraging professional growth in school systems throughout the state of Vermont.

Consortium Partners

Franklin Northeast Supervisory Union
IBM
Montpelier School System
Proctor Junior-Senior High School
Vermont Arts Assessment Project
Vermont Institute for Science, Mathematics, and Technology (VISMT)

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