



e-rate [*a VISION of OPPORTUNITY and INNOVATION*]



Contents

- 2** *Foreword*
- 3** *Introduction*
- 4** *About the E-Rate*
- 5** *About the Report*
- 6** *Survey Findings*
- 14** *Community Profiles*
- 25** *State by State E-Rate Totals*
- 26** *State Reports*
- 58** *About EdLiNC*
- 60** *Acknowledgements*

for **E** word

Since 1995, it has been Verizon's privilege to be a partner with EdLiNC to promote the E-Rate, which brings discounted telecommunication products and services to the schools and libraries of the United States.

Over the years, Verizon has partnered with EdLiNC to make sure that schools and libraries are aware of the program and has made resources available so that they can apply for

e-rate: 7 years after the telecommunications act of 1996

E-Rate funds. To that end, in the first year of the program, Verizon made 20,000 E-Rate "how to" videos available to schools and libraries all over the country.

Verizon is proud to once again be partnering with EdLiNC to produce this report that describes many of the current school and library success stories from around the country. Big and small; rural, suburban and urban; schools and libraries of every size, location, and economic means are using E-Rate dollars to bring 21st century resources into their institutions.

We applaud EdLiNC and its commitment to making sure that the E-Rate program effectively assists schools and libraries in their pursuit of 21st century telecommunication products and services that will better serve students, teachers, administrators and patrons.

Kathryn C. Brown
*Senior Vice President
Public Policy Development
& International Government Relations*
Verizon

intr duction

It has now been over seven years since the E-Rate program was created as part of the Telecommunications Act of 1996. The program is now commencing its sixth year of providing discounts on telecommunications services, Internet access and internal connections to libraries and public and private schools. In that time, the E-Rate program has helped transform America's schools and libraries into Twenty-first Century institutions, opening-up opportunities for even the poorest and most remote rural areas to take advantage of the vast resources of the Internet and the power of distance learning. Through the disbursement of over \$10 billion in discounted services since 1997, the E-Rate has helped wire the vast majority of America's schools and libraries: as of 2001, 87 percent of all public school instructional classrooms (including 81 percent of all instructional classrooms in schools with 50 percent or higher minority enrollment) have been connected to the

Internet and, as of 2002, 95 percent of all public libraries provide public Internet access. Large numbers of private schools have also increased their access to the Internet as a result of E-Rate discounts. During this period, the E-Rate has delivered fresh educational opportunities and broadened the intellectual horizons of millions of students and community members. This report, the third in a series prepared by the Education and Library Networks Coalition (EdLiNC), a group of public and private school and library associations formed in 1995 to advocate for the E-Rate, examines the program from the view of participants, provides a closer look at the E-Rate, and details how it has made a critical difference to students and empowered communities across the country.

the e-rate program has helped transform america's schools and libraries into twenty-first century institutions

about the -rate

The E-Rate was enacted as part of the Telecommunications Act of 1996 as a new part of the Universal Service program. Historically, universal service has ensured affordable telephone service in rural communities. Recognizing the growing importance of new technologies and the Internet to improve education and access to critical information, Congress voted to create the E-Rate, which provides up to \$2.25 billion annually in discounts on telecommunications, Internet access and internal networking to America's public and private schools and public libraries. In adopting this program, Congress acknowledged the importance of providing the nation's schools and libraries with new telecommunications technology: "The ability of K-12 classrooms, [and] libraries...to obtain access to advanced telecommunications services is critical to ensuring that these services are available on a universal basis. The [program] will help open new knowledge, learning and education to all Americans-rich and poor, rural and urban..."¹

Each year, the Schools and Libraries Division (SLD) of the Universal Service Administrative Company, the E-Rate program's administrator, receives over 30,000 applications from schools and libraries seeking discounts of between 20 and 90 percent on advanced telecommunications services. The discounts are based on each applicant's poverty level and each applicant pays the non-discounted portion of the services. Schools and libraries most in need receive priority in obtaining internal connections services. The Federal Communications Commission (FCC) establishes the rules governing the E-Rate and provides oversight and review of SLD decisions.

Since 1998, the E-Rate fund has provided over \$10 billion in discounted telecommunications services, Internet access and internal networking to tens of thousands of eligible schools, libraries and consortia. At the same time, the E-Rate has encouraged the development of a robust and competitive telecommunications market for schools and libraries and brought the power of new technologies to teaching and learning.

¹ H.R. CONF. REP. NO. 458, 104th Cong., 2d Sess. 132 (1996).



About the report

This report is based on a survey that was conducted in the winter of 2003. A survey instrument was mailed to 19,000 schools, libraries and consortia that filed applications in Year 5 of the E-Rate program. The survey was also distributed by the member organizations of EdLiNC to their members and posted on relevant listservs.¹ Almost 800 surveys were returned (a response rate of over 4 percent), including responses from public and private schools, libraries, consortia and state education agencies. The surveys were reviewed to identify general trends, and respondents were selected for further investigation. Selections were made to ensure both geographic and institutional diversity. Extensive telephone interviews were conducted with almost 90 select respondents and those interviews form the basis for the individual profiles in this report. The findings in the report are based on both the responses to the survey and the in-depth interviews.²

The report consists of several sections: the first section sets out the principal findings of the survey; the second section highlights seven representative schools and libraries and describes the impact of the E-Rate program on those institutions and their communities; the third section presents brief abstracts of 31 E-Rate participants in 21 states that are representative of the whole. The final section briefly describes EdLiNC and its longstanding efforts to build, improve and preserve the E-Rate program.

¹ Copies of the survey instrument are available on the EdLiNC website, www.EdLiNC.org

² The “long form” survey instrument used in the interview process is also available on the EdLiNC website.


Survey findings

Three years ago, when EdLiNC published “E-Rate: Keeping the Promise to Connect Kids and Communities to the Future,” which reviewed the E-Rate after two years of operation, the world was a much different place. The nation’s economy was vibrant, with the technology sector leading the way; broadband access was in its infancy; and there were ample resources for schools and libraries to bring the power of new technologies into classrooms and libraries. The survey participants were excited to be able to bring new resources and new experiences to the classroom over the Internet, but were just beginning to integrate technology into teaching and learning. EdLiNC found, as reflected in the 2000 report, that the E-Rate was:

- increasing involvement in and opportunities for learning;
- fostering greater parental involvement in children’s learning;
- spurring demand for and deployment of the Internet in communities across America;
- leveraging significant new investments in technology in schools and libraries; and
- fostering new partnerships in the community.

the resources provided by the e-rate have become a lifeline for schools and libraries

While most of these findings hold true today, as times have changed, so has the E-Rate. In 2003, as America’s economy continues to struggle, the resources provided by the E-Rate have become a lifeline for schools and libraries, a reliable source of funding for technology in an environment that has seen state and local resources for education technology cut and private philanthropy diminished. For example, according to interviewees, the technology budget for Louisiana’s libraries was reduced this year because of the state’s funding shortfall. Without E-Rate funding, librarians in that state would be unable to maintain key databases. At the same time, it has become clear that technology skills prized in a robust economy are even more important in today’s more challenging job market. The technology skills that the E-Rate has brought to students and lifelong learners no longer simply provide a competitive edge, they are essential to gaining employment. What is more, three years ago, E-Rate participants were just making plans to bring the speed and power of broadband to their schools, libraries and communities. Now, most of the



survey participants are using their E-Rate discounts to bring high-speed Internet access to their classrooms and to build networks that help students, teachers, librarians, parents and communities improve access to education and lifelong learning. Nowhere is that more true than in our nation's rural communities, which report that E-Rate connectivity provides crucial AP courses to students, offers professional development to teachers, and brings the global community into the classroom. Additionally, survey respondents indicate that E-Rate connectivity is helping meet the new mandates placed on public schools by the No Child Left Behind Act (NCLB). Finally, the intervening years have brought America new concerns about its security and ability to respond to crisis. There, too, the connectivity provided by the E-Rate has made a difference by improving communication and information sharing between home, school and local and state governments.

Indeed, the single finding that pervades this new report is that the E-Rate has matured over the past three years, and that the uses to which its connectivity has been put are not just more robust and sophisticated, but also more significant to education and community life.

2003 survey findings

1. the e-rate is an important tool for economic empowerment in underserved communities
2. the e-rate is beginning to bring new learning opportunities to special education students
3. e-rate is transforming education in rural america
4. e-rate technology is helping schools improve student achievement and comply with NCLB
5. schools and libraries are devoting significant resources and exercising great care in completing e-rate applications

finding 1

Students and community members, from America's rural towns to its major cities, are capitalizing on Internet connectivity provided by the E-Rate to secure a foothold in the nation's increasingly competitive job market. Survey respondents around the country report that E-Rate supported Internet access is helping people search for jobs, obtain vocational and professional training, and develop key technology skills that are prerequisites for success in today's job market. For many, the E-Rate is proving to be an economic lifeline to secure online the knowledge and skills not readily available in the isolated or underserved communities in which they live.

From the deserts of Arizona to the farmlands of Illinois and Montana, the E-Rate is opening up economic opportunities to residents caught in the recent economic downturn and those students who may soon face its effects. At the Gila County Library, a small library in Globe, Arizona, patrons seeking work after the local mines shut down are turning to the library's Internet access to uncover new career paths. At the Creston-Dement Library in Creston, Illinois, workers laid off from factories now access training online to prepare them to enter other industries. In Fort Benton, Montana, the public schools' business teacher uses online business development kits to teach students to run small businesses, an essential skill for students who wish to remain in rural Montana and operate one of the area's many small businesses.

**the e-rate
is an important
tool for economic
empowerment
in underserved
communities**

Beyond job searching, survey respondents indicate that the E-Rate has fostered the development of technology skills that can lead to well-paid careers in the technology industry. A number of respondents, including Dos Palos Oro Loma Public Schools in California, indicate that the E-Rate has helped fuel careers in technology by attracting computer and network engineering certification programs such as the Cisco Networking Academy. At Dos Palos, 45 students have been certified by Cisco and are now employed as network engineers. Further south in California, at the Oceanside Public Library, local children are "becoming computer professionals" by learning to design, create, and post websites. In the eastern United States, Baltimore's Enoch Pratt Free Library is also operating extremely popular basic computer classes, helping residents develop core computer skills to improve their job-hunting prospects.

Finally, the at-risk youth who attend the Good Will-Hinckley School in Fairfield, Maine participate in a technology learning lab that provides them opportunities to learn basic computing and accounting skills, research various professions, and perform job searches on the Internet.

For school employees, the E-Rate brings online professional development opportunities not available locally. In remote Bethel, Alaska, teachers go online to take courses in everything from special education to social work. At the other end of the country, in Jefferson County, Florida, district teachers take online courses on subjects such as "Brain-Based Learning for Teachers" through the Panhandle Area Educational Consortium. Teaching support staff also benefit from Internet connectivity. For example, school nurses within the Supernet Consortium in rural Eastern Texas have used online access, funded by E-Rate, to hone their nursing skills and maintain certification through online courses offered by hospitals.

finding 2

For students with special needs, technology can expand opportunities, improve learning, and help them better access the general curriculum. Access to features such as e-mail and instant messaging can transform communication, not only within the classroom, but in the community as well. Most importantly, technology is a powerful tool to help individualize learning, particularly when paired with accessible and universally designed digital curricula and resources.

In EdLiNC surveys of the E-Rate conducted in 1999 and 2000, few respondents described efforts to bring the power of technology to special education students. Now that appears to be changing. For example, at the Rochester School for the Deaf in New York, deaf students and faculty are now able to use e-mail to communicate with each other and the hearing world. Perhaps even more significantly, teachers and parents, many of whom are also deaf or hard of hearing, can more easily communicate via e-mail. At the Wisconsin School for the Deaf, students can sign-on to five online classes per day in American Sign Language.

Access to the Internet is also helping students with cognitive disabilities gain important work and life skills. At the King's Daughters' School in Tennessee, which serves children with cognitive disabilities, students access the Internet in the same way as their non-disabled public school counterparts. With the Internet and computers so infused into everyday life, the school is exposing students to all that the Internet has to offer, including communication and games, to help them become

active and productive participants in society. In addition, parents can closely monitor their children's progress through the school's website as well as communicate more easily with their teachers.

"At risk" students, who have educational, behavioral or special needs, also benefit from technology made possible through E-Rate funding. At the Good Will Hinckley School in Maine, students with personal and educational challenges are becoming more involved in their schoolwork because of the dynamic distance learning courses now available to them, including classes through the "Jason Project," which partners Hinckley students with scientists to examine biological and geological data. Technology access has also greatly improved communication with some of the students' guardians and caseworkers, who require periodic updates on student performance.

**the e-rate
is beginning to
bring new learning
opportunities to
special education
students**

finding 3

Rural schools and libraries continue to suffer from isolation, underfunding, staff shortages and limited resources. But thanks to connectivity funded by the E-Rate, rural students and library patrons are now able to gain access to a broad range of educational and cultural resources once out of reach.

Distance learning has grown up with the E-Rate, and nowhere is that more evident than in rural America. Distance learning is now a critical part of many rural schools' curricula. Indeed, because of teacher shortages, rural schools often are unable to provide broad course offerings. But with E-Rate support, that has changed dramatically. For example, the Kuspuk School District in Alaska has two high schools, one with only three teachers and the other with a single teacher for the entire school. With the Internet, Kuspuk's schools are able to participate in a statewide consortium that provides distance education through shared courseware and teachers. Similarly, in Lower Kuskokwim, Alaska, students are learning basic math from certified teachers because of the availability of distance learning courses. With the impossibility of flying-in teachers to this remote region, the district would be "hamstrung educationally" without E-Rate funding.

For many rural districts, E-Rate is also bringing advanced placement courses and new professional opportunities for teachers. In both Arizona's Fort Thomas School District and New Mexico's Logan School District, distance learning allows students to take advanced placement courses from state universities and online higher education institutions. Similarly, many teachers go online to obtain professional development or, like the teachers at Meyersdale Area School District in Pennsylvania, recertification from the state.

e-rate is transforming education in rural america

The E-Rate is also bringing the larger world to rural classrooms and libraries. Many students are discovering different cultures for the first time, debating new ideas with policymakers, and accessing new educational experiences through E-Rate supported communications. For many military families, including those in Wessington, South Dakota, a library Internet connection is the best and often the only way to communicate with relatives stationed in Kuwait. On the domestic front, E-Rate supported video-conferencing provides students in Chippewa Falls, Wisconsin and Berrien, Michigan with a better understanding of how government operates: Chippewa Falls' students met with Governor Jim Doyle while Berrien's students talked with US Representative Fred Upton and US Senator Carl Levin.

For America's rural educators, the Internet provides a wealth of high quality resources to enhance student learning. For example, in West Virginia's Roane County Schools, high school history students conduct online primary source research at the Smithsonian, the Library of Congress and even the Kremlin. The teachers at the Bridgeport School District in Washington State use the Internet to download video clips from their local public broadcasting station's online archives to enliven and enrich the educational experiences for their children. Some forward-looking rural educators are using the Internet not just to transport their students to far away places but also to gain a deeper understanding of their own communities. The middle school students of Maine School Administrative District #54 are researching local historical archives for photos and documents concerning local Indian tribes and posting the results of their research on a website devoted to Maine's history. Jim Hadlock, Chippewa Falls' Education Technology Director, summarizes the thoughts of many rural educators, "Technology is allowing us to break down geography."

finding 4

The No Child Left Behind Act's (NCLB) establishment of new federal mandates to improve student achievement, particularly in reading and math, ensure quality teaching and measure student academic progress has elevated the importance of technology and Internet connectivity delivered by the E-Rate. As the Logan, New Mexico's School District Business Manager opines, "Without access to the Internet [provided by the E-Rate], I don't think it would be feasible for us to comply with the No Child Left Behind Act."

Improving Student Achievement

Technology and connectivity are being harnessed by many school districts to track student progress, identify problem areas, and direct resources to improve student achievement. Administrators at the Houston Independent School District in Texas have developed an online database, accessible to the district's teachers and students, that tracks everything from student grades to attendance. "This database allows us to better understand the strengths of individual students and trace the areas where they need additional reinforcement," explains Houston's Director of Strategic and Organizational Planning. Similarly, in Washington's Bridgeport School District, administrators are employing online testing, diagnosis, and prescription. The Del Norte County Unified School District in Crescent City, California believes that its online student information system, through which teachers can compare student test results for up to four years, has contributed to improved student homework completion rates.

**e-rate
technology
is helping schools
improve student
achievement and
comply with
NCLB**

Significantly, E-Rate supported connectivity is responsible for bringing measurable academic success to many schools. According to the Treasurer of West Virginia's Roane County Schools, the ability of students to gain access to online courses, videoconferencing, and the Internet's resources has helped raise the county's overall scores on state exams 12 to 15 percent, from below the 50th percentile to the 65th percentile. In Roane County, the Internet "is not just a plaything." Bridgeport, Washington's Superintendent notes, "We have seen an increase in our reading comprehension tests because the computer infrastructure has provided our students the opportunity to harness and integrate technology." This claim is echoed by Del Norte County's Director of Technology and Student Assessment, who believes that the district's E-Rate supported network "has certainly had an impact on test scores as well as completion and accuracy of students' homework."

finding 4, continued

Enhancing Teacher Quality

E-Rate is also providing invaluable support to another NCLB touchstone: teacher quality. NCLB requires that all teachers, by the end of the 2005–06 school year, be “highly qualified,” which it defines as having obtained full state certification, completed a bachelor’s degree and demonstrated subject area competence in each of the academic subjects that they teach. The Act also requires that states make sure that teachers are trained to use technology and are able to apply it to teaching and learning. Numerous survey respondents note that the connectivity provided by the E-Rate is delivering to teachers the resources that they need to fulfill NCLB’s “highly qualified” mandate. In Maryland’s Anne Arundel County School District, for example, certification classes that were taught as night classes will soon be offered online. Additionally, using a new Online Infusion program, teachers will be able to complete courses on subjects such as writing lesson plans and integrating technology into curriculum in their own time, making the process easier for teachers with families. Similarly, Greenville, South Carolina’s teachers are taking online graduate level and certification courses at Furman University. Many teachers in Bridgeport, Washington’s school district are working to meet NCLB’s goals by participating in an online Masters degree program through Western Governors University. Further, Bridgeport’s Math and Science teachers are upgrading their subject area skills through a professional development program organized by the University of Washington. Without the E-Rate, ensuring high quality teaching skills would be difficult, if not impossible, for many of our nation’s educators.

Catalyzing Parental Involvement

E-Rate is not only helping students and teachers academically, it is continuing to improve parental participation in the educational process. Survey respondents report that E-Rate supported infrastructure is helping school districts to meet NCLB requirements to disaggregate and report student data to the states and to provide parents and the public with report cards on the progress of the district and its individual schools. The Horry County District in South Carolina notes that not only are students registering for classes online but their parents can now view their children’s grades, attendance records and any disciplinary issues via the Internet. Schools in Chippewa Falls, Wisconsin now have a secure email system that allows communication between parents, administrators and teachers as well as access to real time information, such as the teacher’s daily electronic grade book. At the Somerton School District in Arizona, a new web-based student management program allows parents to gain immediate access to their children’s grades and gives students a way to track their own progress. As Somerton’s Technology Director concludes, “This has totally changed the way that students and teachers interact, and has gotten parents much more involved.”

finding 5

Schools and libraries around the country describe the E-Rate application process as labor intensive and express some continued frustration with the cumbersome nature of the process. Nevertheless, the survey respondents believe that participation in the E-Rate program is worth the time and care they devote to the process. They also believe that there has been improvement in the application process in the last few years.

For instance, in Miami-Dade County Public Schools in Florida, Tony Machado, Director of the E-Rate Program, reports that Miami-Dade has an extensive and thorough method of completing E-Rate applications. Like other school districts, Miami Dade updates its technology plan every year, and conducts subcommittee meetings to agree on these updates, which are then sent to the Florida Department of Education in Tallahassee. Miami-Dade also conducts pre-bidding meetings for service contracts, and then employs a committee of technical experts to evaluate each bid. Subsequently, the procurement department of the county's schools evaluates the financial aspects of the bids. While the planning and application process takes a great deal of time and attention, Machado believes it is getting easier to navigate. "If you asked me about the E-Rate application process in years one and two, I might have said it was crazy, but now I would say that the program has created a much easier, friendlier application process."

schools and libraries are devoting significant resources and exercising great care in completing e-rate applications

Many school districts report that they conduct extensive surveys of their communities in creating their technology plans for E-Rate approval. In the Logan School District in New Mexico, Julie Bell, the District Business Manager, met with the community and teachers, and took training courses to fill out the E-Rate application. She and her colleagues spent over 100 hours developing their technology plan before submitting it to the New Mexico Department of Education. They also conducted meetings with each bidder, and carefully checked references in order to select the best providers. Likewise, Baltimore County Schools has a highly competitive bidding process that requires written proposals and ongoing contact with potential service providers.

The purchasing office for the county schools then conducts a cost-benefit analysis for each proposal. Overall, it takes six to eight months to complete the entire E-Rate application, reports Rich Ogin, the E-Rate Coordinator.

Some school districts, like Ellington Public Schools in Ellington, Connecticut, also retain legal counsel to assist with the E-Rate application process. Overall, it takes Ellington Schools several months each year to work through committees and budgets to complete the E-Rate application, but the work is worth the over \$7 million in discounts the district has received over the five years it has participated in the program.

the kuspuk and lower kuskokwim school districts *Southwestern Alaska*

overview

Located in southwestern Alaska, the Kuspuk and Lower Kuskokwim School Districts, serving largely Eskimo or Native Alaskan villages, share physical, economic and cultural isolation. Almost exclusively rural, these two school districts span vast frozen acreage and contain schools in remote villages, many of which are only accessible by single engine plane, snowmobile, or boat. These communities have a very low level of economic activity: people here live mainly by subsistence. This isolation makes technology essential for this region's educational and economic development.

In rural Alaska, connecting to the outside world can be difficult and expensive; most families in these school districts do not have either computers or Internet access in their homes. Thus the schools in these villages serve as the students' primary facility for Internet access. With the E-Rate, students and community members have access to the same online resources as their counterparts in the rest of the country. For remote areas like these, technology is a great social and economic equalizer: students who cannot afford books or trips to cultural centers can perform research online, obtain up-to-date information and virtually visit faraway locations.

**for remote areas like these,
technology is a great social and
economic equalizer**

Kim Langton, the Kuspuk School District Superintendent, states, "It is very difficult to maintain a library with our inaccessibility and low numbers of people and funding. We would be extremely limited in our education if we had to depend on paper...E-Rate funds are critical to the schools and to the community; without E-Rate funds we would be hamstrung educationally."

Kuspuk School District

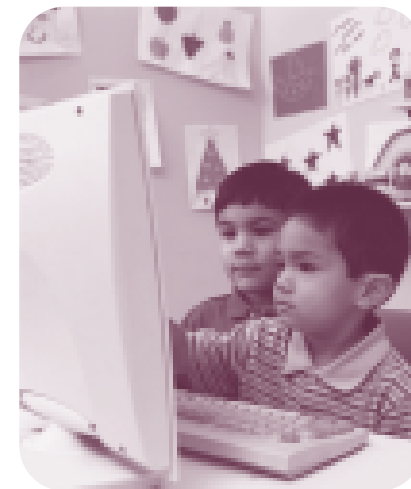
Aniak, Alaska

Year 5 Discount Rate: 72-90%

Total Funding: \$1,510,448.64

In the Kuspuk School District region, home to the Yup'ik Eskimos and Athabaskan Indians, the percentage of residents in the village communities that own a computer or have Internet access is less than 10 percent. Public schools provide the only access to advanced communication and information technology. Largely due to E-Rate funding, 100 percent of instructional classrooms in the district now have broadband Internet connections.

Because of this area's isolated location, there is a severe shortage of qualified teachers in its local schools. For example, one local high school has only one active faculty member; another has three. Consequently, the



Between the initiation of the E-Rate in 1998 and 2001, Internet access in public school instructional classrooms in rural areas has risen from 57% to 89%.

students in the district would be severely disadvantaged without funding for online courses. Kuspuk Schools are planning to put lesson plans on district websites so that teachers may share information with others from around the district and the state. Additionally, Kuspuk District Schools are participating in a statewide consortium that provides distance education through shared courseware and teachers. The consortium offers a wide variety of courses, including one in advanced technology. One district elementary school won a national award for their performance in an Internet treasure hunt.

Superintendent Kim Langton believes that the E-Rate is integral to implementing the No Child Left Behind Act, stating that its teacher quality mandates would be impossible to fulfill without the online professional development courses its teachers now receive. Emphasizing the importance of technology in schools, Mr. Langton says, he was asked by a local teacher, "How can you possibly do school projects without the Internet?"

**Lower Kuskokwim School District
Bethel, Alaska**

Year 5 Discount Rate: 75-81%

Total Funding: \$5,444,357.50

The Lower Kuskokwim School District is one of Alaska's largest school districts, serving a 44,000 square mile area roughly the size of the state of West Virginia. The district's three hundred and forty certified teachers, one fourth of whom are Yup'ik, serve over 3,700 students of mostly Yup'ik heritage themselves, representing the greatest percentage of indigenous educators of any district in Alaska.

Since this district has received E-Rate funding, it has improved its student to computer ratio from 20 to 1 to 3 to 1. Each school has installed a T1 connection and has videoconferencing capabilities. Students learn math, algebra and geometry through distance learning because of the lack of certified math teachers in the district. To further expand their course offerings, the district is looking forward to instituting more on-line learning courses.

The Internet is also providing new opportunities for teachers, who take courses in special education and social work, as well as in technology, including Excel and Microsoft Word. In addition, the school district now broadcasts their school board meetings, which is crucial for so vast a district.

"Technology is bringing remote Eskimo villages into the 21st century," states Ted Berry, the Technology Coordinator for the district. Mr. Berry also notes that E-Rate discounts have facilitated standards-based teaching by allowing school administrators and teachers to maintain district-wide student achievement records.

oceanside public library *Oceanside, California*

Year 5 Discount Rate: 64%

Total Funding: \$532,714.84

Today, E-Rate funding is opening up the resources of the Internet to the 12,000 people who use Oceanside Public Library's computers annually. Oceanside is a medium-sized beach community in Southern California, with three facilities that serve patrons who lack home Internet access, including homeless persons who spend time there. Oceanside provides them with their only access to digital information and e-mail. Donna Arnold, Oceanside Library's Management Analyst, affirms, "The Internet allows people to communicate cheaply and easily, both with written text and pictures. Students and the public can perform research who don't have the resources normally."

Before E-Rate funding, the three facilities that comprise Oceanside's library had three computers with dial-up accounts; now they have 79 public use computers and 17 catalog computers that are Internet accessible. Library patrons use these computers to perform Internet searches for school, personal development and to search for jobs online. Oceanside's staff has also benefited from the E-Rate: there are 48 staff computers connected to the Internet so that staff may perform research.

Over the years, Oceanside has purchased servers and telephone services with E-Rate funding. Next year, Oceanside will connect their bookmobile with public computers and use satellites for Internet access. "This bookmobile will travel into 15 areas of the city where underserved citizens do not have access to the library," states Ms. Arnold. She adds, "The primary goal of bringing the bookmobile with Internet access to these neighborhoods is to bring Internet-based education, health, literacy and employment resources to teens and adults where it is most needed."

Oceanside Library has integrated technology into its well-known youth services and literacy programs. The library has started a computer club where youth learn to design and post websites. Every week, anywhere from 15 to 20 local children attend club sessions where they learn to design, create and post web sites. They recently created a site that provides information about Spanish missions. On the success of the program, Ms. Arnold remarks, "Children from lower income brackets are becoming computer professionals based on their introduction to computer services through this program, an option that they did not have before."

children from lower income brackets are becoming computer professionals based on their introduction to computer services through this program

Another result of E-Rate funding has been the initiation of free, online computer classes at the library. Ms. Arnold says, "Seniors love our classes. They take courses that include very basic skills, from turning on the computer, to researching on the web topics like genealogy, a beloved subject to many of our seniors."

E-Rate funding allowed Oceanside Library to leverage other funds from the city of Oceanside to hire additional staff. Every dollar received by Oceanside for E-Rate signifies more public demand, and more need for additional local funding for extra staff positions within the library. Conversely, Ms. Arnold notes that without E-Rate funding the library would have to reduce Internet access by one-third.

berrien county intermediate school district *Berrien and Cass Counties, Michigan*

Year 5 Discount Rate: 60%–83%

Total Funding: \$983,206.83

Located along the shores of Lake Michigan, Berrien County has been nationally recognized since the early nineteenth century for being one of America's great producers of cherries, apples, peaches and blueberries. Berrien's neighbor, Cass County, is the leading pork producing county in Michigan, raising approximately 160,000 pigs annually. Through their involvement with the E-Rate, Cass and Berrien Counties are quickly also becoming known for their high tech approaches to learning.

The students, teachers and administrators of Cass and Berrien Counties are served by an education service agency, known as the Berrien County Intermediate School District, which is responsible for applying on their behalf for the E-Rate. Jim Bembenek, the District's Director of Technology and Media Services, speaks enthusiastically about how E-Rate support has enabled the District to install an interactive television lab to serve the needs of the 35,000 K-12 students who attend school in the district. The Internet

connectivity provided by the E-Rate has been augmented by video conferencing equipment for the lab that the district purchased with the aid of a \$750,000 federal Technology Literacy Challenge Grant. Mr. Bembenek is confident that the interactive television lab has exposed students to a wide variety of people and unique places they may never have an opportunity to meet or visit again. Every spring, the district's juniors and seniors participate in a virtual field trip to Washington, DC and have the opportunity to meet with US Congressman Fred Upton and US Senator Carl Levin. The field trip is similar to a town hall meeting, with the students posing questions and Representative Upton and Senator Levin responding to them. Mr. Bembenek states, "The virtual field trips have brought to life what students are learning in the classroom about our government. This opportunity allows them to realize that their representatives are real people who value their opinions."

Students taking biology, anatomy, or a medical career class use the video conferencing capabilities of the interactive television lab to witness open-heart surgery. The students are able to watch the surgery in real time and, when appropriate, ask questions of the surgeons performing the operation. Because of this exciting experience, several students have concluded that medicine is a field they plan to pursue.



As of 2002, 95% of all public libraries provide public Internet access.

Berrien's elementary students also use the interactive television lab to participate in Read Across America Day, established to honor Dr. Seuss' birthday and designed to get kids more excited about reading. Read Across America Day has evolved into a national project where classrooms of students with video conferencing capability are reading to one another and acting out the story. Students are getting the chance to read interactively with students from another school across the country and, afterwards, to ask them questions about their lives and their communities.

"The beauty of having video conferencing capabilities is that distance no longer precludes us from sharing important learning opportunities with our students," says Mr. Bembenek. "Students recently used the interactive television lab to visit the Museum of Tolerance in Los Angeles, and were able to talk to a Holocaust survivor. The survivor shared his personal story, and the students asked him questions about what the experience was like, and whether his family survived." Harold Bragg, a teacher at Coloma High School states, "The experience for our students was absolutely outstanding. Nothing can surpass testimony from an actual Holocaust survivor."

in this time of budgetary constraints, school districts are saving a tremendous amount of money because they do not have to pay for mileage, lodging, and meals to send teachers to meetings

The interactive television lab has also had a tremendous impact on the district's teachers and administrators, who have used it recently to conduct No Child Left Behind trainings. According to Mr. Bembenek, "In this time of budgetary constraints, school districts are saving a tremendous amount of money because they do not have to pay for mileage, lodging, and meals to send teachers to meetings. Additionally, it is also a much more effective use of their time." He hopes that in the future they will receive additional E-Rate funding to upgrade their video conferencing capabilities to higher speed Internet access. "With our ISDN connection we now have to pay per minute. If we were able to upgrade, we would save an average of \$50 per hour."

fort benton public schools *Fort Benton, Montana*

Year 5 Discount Rate: 66%
Total Funding: \$89,641.01

Fort Benton is a small, rural farm community located along the Missouri River valley in North Central Montana. "Downtown" Fort Benton consists of one grocery store, one hardware store, one pharmacy, and four restaurants. In order to get to the nearest urban center, residents have to drive more than 40 miles south to Great Falls. With the E-Rate's help, Fort Benton Public Schools is dramatically expanding the horizons of the town's K-12 students.

Since the E-Rate program's inception, Fort Benton has used nearly \$90,000 in E-Rate discounts to support broadband access to all of its classrooms and its 2 computer labs. Prior to the E-Rate, the student to computer ratio was 10 to 1. Today, that ratio is dramatically lower: 1.5 students for each computer is the norm. Significantly, the E-Rate is supporting Fort Benton's efforts to comply with No Child Left Behind by improving parental communication through the school's website. On Fort Benton's homepage, parents can find information about their child's grades, homework assignments and individual teacher reports.

Beyond facts and statistics, the true measure of the E-Rate's impact on Fort Benton's students can be seen in the classroom. The E-Rate has revolutionized the way Fort Benton Public School District's 360 K-12 students learn and access information. Teachers rely heavily upon the Internet as a research tool and as a supplement to the curriculum. Wendy Truax, Fort Benton's Business Math teacher, uses the Internet as part of her Stock Market unit. She asks her students to research companies and monitor their stock prices online. The students also learn about what is

needed to successfully start a business. Additionally, the class uses a business development kit that is available online to simulate building and running companies. Throughout the course, students are able to track whether their businesses have been profitable. According to Mrs. Truax, small business provides a huge job market in rural Montana.

Students in science teacher Shannon Walden's 7th grade Life Science class are using the Internet to research migratory species and track photoperiod changes of various locations around the world. This spring they will use the Internet to research native plants encountered by Lewis & Clark. Ms. Walden is also capitalizing on Fort Benton's E-Rate investment in her 10th grade Biology class, where students are conducting research online about noxious weeds, genetic diseases, DNA extractions and infectious diseases. Of particular benefit, students are using the Internet to communicate with professional scientists as part of their research.

The E-Rate is also assisting students to prepare for future careers. Fort Benton has established a Cisco Networking Academy, which trains students to be certified Cisco Network engineers. In addition, students and faculty are able to access the Montana Career Information System to research information on colleges and universities, learn about financial aid and potential scholarship opportunities, and explore potential career paths.

Just this year, the district was able to lease a wide area network (WAN) connection that enables it to use the same record-keeping and grading program at both its elementary and high schools. According to Fort Benton's Superintendent, Bob Anderson, the WAN connection will streamline the record keeping process and greatly facilitate implementation of the No Child Left Behind Act.

rochester school for the deaf *Rochester, New York*

Year 5 Discount Rate: 80%
Total Funding: \$263,668.58

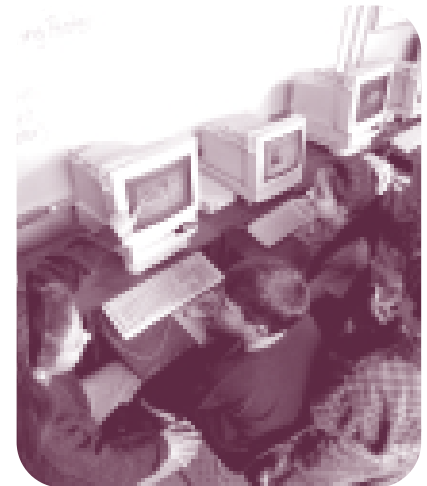
The Internet is proving to be a powerful tool for disabled children and, thanks to the E-Rate, the Rochester School for the Deaf is making excellent use of it. The Rochester School for the Deaf, a school that educates profoundly deaf infants and students to 21 years of age, has served deaf children for over 125 years. The 140 students at the school occupy all levels of the educational spectrum, "ranging from special education students to those seeking their New York State Regents' Diplomas," says Rhonda Parrish, Director of Technology programs for the school. With the Internet access provided by the E-Rate, the school has been able to create new learning opportunities for all of the children it serves.

The Internet has the ability to provide deaf children with learning opportunities that would otherwise be unavailable to them. "Deaf children usually miss out on the incidental learning that other students benefit from," says Ms. Parrish. "The Internet provides equal access. Access to the Internet may in fact be more important for deaf children than children with normal hearing because of the equality it allows."

**the internet provides equal access
for deaf children, who usually miss
out on the incidental learning that
benefits other students**

E-Rate funding came at just the right moment for the Rochester School for the Deaf. "Before the E-Rate, a grant from the National Science Foundation supplied funding for a wireless microwave connection to the Internet," explains Ms. Parrish. "Just as that funding was about to end, the E-Rate was introduced." With program discounts, the school is now connected with a T-1 line.

Teachers at the Rochester School for the Deaf are now able to provide information to their students from a variety of different media. Through video conferencing services, supported by the E-Rate, students at higher educational levels have taken units of study offered by the National Technical Institute for the Deaf at the Rochester Institute of Technology. Students in social studies classes have interviewed a deaf man in Ethiopia via email. Teachers are enriching their curricula by using PBS's Video on Demand program, which allows them to browse PBS's video archives online, choose those most relevant to the day's topic, and download and display them for students. Since many of PBS's programs are captioned, they are ideal resources for the school's students.



Another learning modality for the students at the Rochester School for the Deaf that E-Rate supports is Video Relay. Before Video Relay, deaf students relied on a telephone relay system, where an operator acted as an intermediary to allow deaf and hearing persons to communicate by phone. Video Relay allows the deaf participant to log on to a website to access the conversation translated into sign language. The student can sign back to the operator via a webcam, which is then translated to the hearing participant. This technology, which is much quicker and more efficient than telephone relay, would be impossible without the high bandwidth provided to the school by the E-Rate.

By April 2002, schools and libraries nationwide had received \$10.32 billion in E-Rate discounts.

a great deal of communication between teachers and parents is conducted via email, which is especially helpful for deaf parents

The Rochester School for the Deaf is also capitalizing on the Internet to improve contact between teachers and parents. Teachers can now put class notes, outlines, homework and information about field trips on the website for parents to access. A great deal of communication between teachers and parents is conducted via email, which is especially helpful for deaf parents.

Internet connectivity through the E-Rate has brought numerous educational opportunities to the students of the Rochester School for the Deaf. Along with providing access to a far greater range of educational resources, they, like their hearing peers throughout the country, are learning important technology skills and becoming familiar with tools that are vital in the 21st century.

houston independent school district *Houston, Texas*

Year 5 Discount Rate: 83%–90%

Total Funding: \$145,301,561.51

In many ways, the story of the Houston Independent School District's transformation from a technology poor district to a technology enabled one epitomizes a principal goal of the E-Rate: educational equity. Now, technology is enabling students from Houston's low-income families to experience the same educational opportunities as students from more affluent school districts. While Houston's forward-thinking school leaders, who invested in teacher training as well as technology, are central to Houston's story, the financial resources furnished by the E-Rate play a leading role as well. Jill Duncan, Houston Independent School District's E-Rate Coordinator, explains that E-Rate funds have "helped Houston area schools close the technology gap at an impressive pace."

The Houston Independent School District, which consists of 321 schools spread across a large urban area, matriculates 210,000 students annually. Nearly 90 percent of these students are African American or Hispanic and 68 percent of them are eligible for the federal free or reduced price lunch

technology is enabling students from houston's low-income families to experience the same educational opportunities as students from more affluent school districts

program. Because the district includes a wide range of both high-income and low-income urban communities, the likelihood of a household having an Internet connection varies greatly from one part of the city to another.

Since the E-Rate's inception, Houston has vigorously pursued E-Rate funding and has created a state-of-the-art technological infrastructure for its students. Before the E-Rate program began, only 20 percent of the district's classrooms had Internet connections; now, six years and \$145 million in E-Rate discounts later, approximately 98 percent of all classrooms are wired,

with 90 percent enjoying high-speed connections. Both of these figures are well above the national average. Additionally, with the savings on telecommunications and Internet services realized through the E-Rate, Houston embarked on an effort to provide more of its students with computer access. Between 1997 and today, its student to computer ratio dropped dramatically from 30 to 1, to 4.5 to 1. This figure, too, is lower than the national average of 5.4 to 1.

Houston has been laser-focused on student achievement, and the technology and services provided by E-Rate have been a big part of achieving the district's academic goals. One of the district's major technological innovations has been the creation of a database that includes information on individual students and tracks their progress from year to year.



Internet access rates in minority classrooms have skyrocketed between 1998 and 2001, rising from 37% to 81%.

Teachers and administrators can access this database online to track everything from student grades to attendance. Laura Palmer, Houston's Director of Strategic and Organizational Planning, states that the database has allowed the district to better "understand the strengths of individual students and trace the areas where they need additional reinforcements." As Houston strives to ensure that its students can pass reading, math, and science assessments, as required by the federal No Child Left Behind Act, ready teacher access to this type of data and information will prove a major asset.

Recognizing that streamlining school administrative functions is critical to maintaining a sound educational system, Houston has also leveraged the cost savings from E-Rate to deploy an electronic financial system and an electronic payroll system. Another technological advancement made possible by cost-savings from E-Rate, a district-wide web portal available to all teachers and administrators, allows the district to save time and money by doing tasks online such as human resources management, purchasing of supplies, and bookkeeping. According to Ms. Palmer, "The technology that has resulted from E-Rate dollars has allowed us to better focus on the fundamentals of teaching children."

Beyond connecting classrooms, improving student achievement, and easing administrative burdens, Houston has leveraged its E-Rate funding to increase the speed of local networks, to introduce online training courses for teachers, and to offer district-wide student e-mail accounts, starting in the summer of 2003. In addition, it has automated the school library with modern software applications and a web-based catalog system. Finally, in the near future, it plans to integrate streaming video media for instructional and training purposes, to increase the number of student e-mail accounts, and to strengthen and improve Web filtering technologies.

Houston's incredible success in bringing technology into the classroom has also brought unexpected positive results for teacher recruitment. Like many cities across the country, Houston is facing a shortage of qualified educators, a problem that is magnified by the fact that the city's student population is growing at a steady rate. According to Ms. Duncan, "the city's reputation in terms of utilizing technology has increased the number of top quality teaching applicants from all over the world." Attracting new teachers through technology is yet another example of how Houston's investment in the E-Rate has paid off.

The efficient and innovative ways that Houston has used E-Rate funds contributed in part to its selection last year as the winner of the inaugural \$1 million Broad Prize for Urban Education. This prize, awarded by Education Secretary Rod Paige, honors school districts that are making the greatest overall improvements in student achievement while at the same time closing gaps across ethnic groups and between high and low income students.

roane county school district *Spencer, West Virginia*

Year 5 Discount Rate: 80%
Total Funding: \$247,817.50

Set in an impoverished rural county where home Internet access is a luxury few can afford, the Roane County School District in central West Virginia is leveraging the E-Rate to ensure that its 2500 students are not shortchanged educationally by their geographic and economic limitations. As David A. Kinison, the Treasurer of Roane County Schools, declares, "If a student doesn't have access to the Internet, he would be cheated out of his education."

Over the past five years, the \$247,817.50 in E-Rate discounts received by the district has gone towards wiring all but one instructional classroom in the entire district and connecting 5 of its 6 schools with a T1 line. Roane County has directed the money it has saved from E-Rate discounts back into technology, lowering its student to computer ratio by more than ten-fold since 1996. Additionally, Roane County has used its E-Rate funds as leverage to win a Beaumont Grant, which provides county schools with three mobile carts that contain 30 laptops with wireless connections to the Internet.

Most significantly, Roane County has fully integrated technology into teaching and learning, and that effort is beginning to pay-off in higher test scores. Before the connectivity provided by the E-Rate, reports Mr. Kinison, Roane County students struggled to fulfill state curriculum requirements because the district, like many rural areas, lacked teachers certified in foreign language instruction. With the E-Rate, students attend online courses via satellite in Spanish and math, and Advanced

Placement courses for college credit, offered by the University of West Virginia and Glenville State College, in algebra and history. Ultimately, Roane plans to build a curriculum to graduate high school students with Associates' degrees. In addition to these online opportunities, Roane provides all of its high school history students with their regular textbooks and CD-ROMs that contain hot links to such primary research sites as the Smithsonian, the Library of Congress and even the Kremlin.

The resources made available by the E-Rate are translating into academic success. According to David Kinison, the ability of Roane's students to access online courses, videoconferencing and Internet resources has helped county students improve their statewide SAT9 test scores 12-15 percent, from below the 50th percentile to the 65th percentile of students across the country. At Roane, the Internet represents a gateway to real learning. "It is not just a plaything," avers Mr. Kinison.

Roane County School District labors long and hard to complete the E-Rate application process, but academic successes like the SAT9 scores make the effort worthwhile. David Kinison estimates that up to 40 hours in staff time are expended each year to update the district's technology plan and that completing the entire application process can take as long as 4 months. Mr. Kinison understands how vital the program's discounts are to his district and plans to apply every year. "Since E-Rate pays 80% of our telecommunications costs, without it we would have less wiring, less technology integration, and fewer computers." And, most importantly, less learning.

state -rate discount totals over 5 years

State	E-Rate (All Years)
Alabama	\$139,250,122.83
Alaska	\$63,123,459.99
American Samoa	\$12,874,101.58
Arizona	\$226,781,895.77
Arkansas	\$82,331,267.95
California	\$1,480,035,742.93
Colorado	\$82,676,101.22
Connecticut	\$110,532,724.20
Delaware	\$7,486,877.86
District of Columbia	\$79,279,077.22
Florida	\$313,415,646.94
Georgia	\$344,243,381.46
Guam	\$5,912,418.75
Hawaii	\$19,856,599.41
Idaho	\$21,622,941.32
Illinois	\$544,092,695.52
Indiana	\$115,308,567.52
Iowa	\$39,290,734.20
Kansas	\$58,851,590.85

State	E-Rate (All Years)
Kentucky	\$176,442,608.52
Louisiana	\$154,488,792.62
Maine	\$20,586,218.82
Maryland	\$92,380,708.17
Massachusetts	\$199,391,035.13
Michigan	\$323,061,675.41
Minnesota	\$119,866,815.62
Mississippi	\$157,564,438.10
Missouri	\$225,823,289.93
Montana	\$18,397,068.43
Nebraska	\$32,189,060.42
Nevada	\$21,729,298.98
New Hampshire	\$7,164,673.99
New Jersey	\$256,420,921.95
New Mexico	\$149,595,229.89
New York	\$1,405,341,627.40
North Carolina	\$167,394,600.85
North Dakota	\$13,940,326.19
Northern Mariana Islands	\$4,197,596.05

State	E-Rate (All Years)
Ohio	\$326,451,029.29
Oklahoma	\$164,255,954.23
Oregon	\$59,869,220.04
Pennsylvania	\$346,647,311.53
Puerto Rico	\$203,722,625.08
Rhode Island	\$33,838,569.61
South Carolina	\$230,436,804.02
South Dakota	\$17,916,267.96
Tennessee	\$225,925,142.21
Texas	\$928,924,394.81
Utah	\$30,968,984.05
Vermont	\$8,813,818.09
Virgin Islands	\$11,831,276.76
Virginia	\$122,935,499.45
Washington	\$177,759,441.19
West Virginia	\$40,774,537.77
Wisconsin	\$146,267,745.23
Wyoming	\$10,067,407.51
Total	\$10,320,348,062.82



fort thomas school system *Fort Thomas, Arizona*

Year 5 Discount Rate: 90%

Total Funding: \$648,399.19

The Fort Thomas School System, located in the Arizona desert ten miles south of an Apache reservation, serves predominantly Native American children. The average resident in the area makes less than \$15,000 per year, far below the national average. Physically isolated from the rest of the state, it is at least a three hour drive to the nearest urban center. Fort Thomas students rely on E-Rate funded technology to reach out to the outside world.

Over its first five years, Fort Thomas schools have capitalized on the opportunity afforded by the E-Rate program to connect all seventy-five of its instructional classrooms to the Internet. From the money that the E-Rate has saved the district, Fort Thomas administrators have purchased hardware and software for use by its students and teachers. All of these tools have allowed Fort Thomas students to receive advanced courses in marketing and college-level English, algebra and statistics courses from Eastern Arizona College. Fort Thomas teachers have also benefited: they can take on-line courses through the University of Phoenix for credit.

gila county library district *Globe, Arizona*

Year 5 Discount Rate: 64%–90%

Total Funding: \$108,483.23 for four years

Set in a rural area that is a two hour drive from Phoenix, many residents within the Gila County Library District lack Internet access at home. For some residents in the county, basic telephone service is considered a luxury. The local library is the only place where county residents can receive up-to-date information, perform research, and maintain communication with friends and family. This library district is dependent upon E-Rate for its technology funding.

**to reach young,
arizona, where
one of gila county's
libraries is located,
the intrepid traveler
must drive two hours
on a dirt road**

To reach Young, Arizona, where one of Gila County's libraries is located, the intrepid traveler must drive two hours on a dirt road. However, thanks to E-Rate funding, the Young library is electronically connected to all the other libraries in the District, allowing its patrons the same access to information as their city-dwelling counterparts.

Library patrons use technology not only for communication, but to improve their own economic situations. "Since local mines have shut down, many residents have been performing their job searches online at library

"E-Rate funds are very important for our future technology investments," says Richie Gann, Technology Coordinator for the Fort Thomas School System. With future funds, the district is planning to build a computer lab, which will be available in the evenings. This evening access is essential to the estimated 95 percent of students who do not have Internet access at home. Fort Thomas Schools will also use their continued funding for internal and external connections. Mr. Gann again emphasizes E-Rate's importance: "Without it, we could not afford to purchase equipment."

fort thomas students rely on e-rate funded technology to reach out to the outside world

computers," says Yodona Pennell, Systems Specialist for the District. Library staff also have access to training and educational opportunities at the libraries.

local residents are capitalizing on the e-rate by building knowledge as well as job skills

Local residents are also capitalizing on the E-Rate by building knowledge as well as job skills. For example, local birdwatchers e-mail each other reports of bird sightings in the area, people who come to Arizona from colder weather states keep in touch with family and friends, and the local youth groups use library computers as part of their programs. In addition, local emergency services use the library to get weather reports to check the status of a local creek, where waters can get high and impassable.

Ms. Pennell says, "If we didn't have E-Rate, we couldn't do all of this."



dos palos oro loma unified school district *Dos Palos, California*

Year 5 Discount Rate: 85%–90%

Total Funding: \$1,103,500.06

Dos Palos Oro Loma Unified School District employs telecommunications technologies in innovative ways in classrooms, using cooperative learning and distance learning to improve education for its 2,600 primarily Hispanic students. Located in a highly impoverished rural district, Dos Palos Schools depend on E-Rate to help provide services directly to classrooms. Before E-Rate funds were received, perhaps one percent of instructional classrooms were connected to the Internet; now all instructional classrooms have Internet capability. And students are taking full advantage of this classroom resource: they are taking

otherwise unavailable on-line advanced placement courses in physics, statistics, U.S. history, and economics.

The district is also creating exciting projects for its students using telecommunications technology. In one class, students created a mock commodities brokerage using technology funded by E-Rate. In another project, the E-Rate united a class of 30 English learners in Kosovo with a similar class of 30 students in the Dos Palos District. The interaction between the Kosovars and the Californians increased everyone's understanding of technology and their command of English. In an Economics class, Dos Palos students connected with students in New Zealand to create profiles of each locality's economy.



jefferson county school district *Monticello, Florida*

Year 5 Discount Rate: 80%–87%

Total Funding: \$957,723.14

With funding from E-Rate, the Jefferson County School District has created a technological infrastructure that supports online learning. Situated in Florida's Panhandle, Jefferson County's rural, low-income students have seen every classroom in their district's schools connected by a T1 line to the Internet. Moreover, the money freed up by E-Rate has helped the district invest in computer hardware and slash its high student to computer ratio in half. In fact, through a special program, as of the 2003–2004 academic

year, each of the district's 450 middle school students will have access to a laptop. Technology is so important to Jefferson County that its new high school, which is currently under construction, will have the latest technology.

The Jefferson County School District is part of the Florida Virtual High School (FVHS), through which it offers its students and teachers a wide array of courses that the District could not otherwise provide. The FVHS provides free online classes and instruction to any student in Florida with a computer and Internet service. The interactive lessons provide a learning experience different from the traditional classroom setting as they promote

before e-rate funds were received, perhaps 1% of instructional classrooms were connected to the internet; now all instructional classrooms have internet capability

Another important program available in Dos Palos's Schools because of E-Rate funding is the Cisco Networking Academy, where four semesters of classes enable a student to qualify as a Network Engineer. Paul Chounet, the Information Systems Director for the Dos Palos District, comments, "Through these college level courses, students can become highly employable as network engineers. We leveraged E-Rate funds to bring on this program, which is in its third year."

For the future, the Dos Palos District plans to use E-Rate funding to deliver enhanced instruction to students in the classroom. It is planning video streaming and video teleconferencing to provide instruction to remote

schools that cannot support a full class for specific subjects, such as algebra and geometry at the middle school level.

Mr. Chounet states, "Since we are in a high poverty area, the program has enabled us to build a network infrastructure that rivals more affluent areas. Now our students can benefit from content delivered to the classroom through technology. And this technology is a great equalizer for our students."

students actively sharing and participating in their education. Through FVHS, students may take algebra, Latin and computer programming, as well as advanced placement courses such as Calculus and Advanced Physics.

The District is also a member of the Panhandle Area Educational Consortium, which offers online professional development courses such as "Critical Issues in American Education," and "Cooperative/Collaborative Learning in Today's Classrooms." One course, "Brain-Based Learning for Teachers," introduces teachers to recent studies of brain functions and learning and offers practical suggestions for applying this information in classroom instruction.

Another way in which Jefferson County is using technology to improve student achievement is the FCAT (Florida Comprehensive Assessment Test) online program, which allows students who do not pass the FCAT to access practice materials online to review and improve in challenging areas.

With all of these benefits from the E-Rate, it is no surprise that Jefferson County's E-Rate coordinator feels that the 160 staff hours devoted to preparing a technology plan, the six months it took for the state department of education to review and approve it, and the six months to complete the application process have been worth it.

the FHVS provides free online classes and instruction to any student in florida with a computer and internet service

miami-dade county public schools *Miami, Florida*

Year 5 Discount Rate: 74%–90%

Total Funding: \$53,758,508.75

Miami-Dade County Public Schools (M-DCPS), the fourth largest school district in the country, educates 365,000 students from 168 countries. Using E-Rate funded resources, Miami-Dade teachers use technology to support their entire curriculum, which has helped to increase student engagement, promote cultural understanding, and expand the horizons of Miami-Dade's youth.

Since 1998, M-DCPS has received over \$40 million in E-Rate discounts, along with another commitment for \$10 million for Program Year 5. With these funds, Miami Schools have established a Wide Area Network

that connects every classroom to the Internet, via wireless connections and advanced T1 telephone lines, and frame relay services and PBX telephone systems that allow for better utilization of telephone lines throughout schools. The improved connectivity is enabling teachers, parents, and students to take advantage of first class communications and educational resources.

Indeed, the Miami-Dade school system serves as a prototypical example of how E-Rate funded technology can engage and motivate students. For instance, at the district's Herbert Ammons Middle School, built four years ago, students are jumping to utilize the

latest technology purchased through E-Rate monies. Dr. Tony Machado, Director of the E-Rate Program for Miami Schools, exclaims, "It is so obvious, when you see what is happening in the classrooms, that our E-Rate funded technology has raised the level of interest of students to participate, and consequently, students have an increased knowledge of their materials." Students at M-DCPS have also increased their technology competency through use of their school's connectivity. In fact, Dr. Machado reports that students at the Ammons Middle School have even begun creating their own websites, winning first place in a competition.



creston-dement public library *Creston, Illinois*

Year 5 Discount Rate: 50%

Total Funding: \$960

The Creston-Dement Public Library, located in a high unemployment area about seventy miles from Chicago, has been able to use the wireless Internet access made possible by the E-Rate to better the lives of its patrons. The residents of Creston make ample use of the library's computers and Internet to search and apply for jobs, engage in distance learning and develop new skills.

Through the Creston-Dement Library, residents are gaining valuable and marketable skills by taking on-line courses such as "Web Structures and Information

Architecture" and "Computing in the Humanities," provided in conjunction with the local community college and the University of Illinois, Urbana-Champaign. Some of these courses even allow Creston residents to earn college credit without ever setting foot inside a higher education institution. One patron is relying on the library's online facilities to complete his masters at DeVry University.

The library also serves as a community center where patrons can gather for special programs. With the help of E-Rate funding, the library offers technology tutorials for seniors, taught by local student volunteers who tutor senior citizens in the ins-and-outs of the Internet and on how to operate various software programs.

In addition to increasing technology competency and student engagement in the classroom, students are using technology to connect with classrooms across the world, which is promoting cultural understanding, and enhancing their grasp of world events. For example, on the afternoon of September 11, 2001, Miami-Dade Schools issued a curriculum of age appropriate websites for students to research the dangers of terrorism. Additionally, district students, even in elementary school, have since used web resources to communicate with students in the Middle East and across the world regarding war and other pertinent current events. "In these times, a standard curriculum would be outdated in minutes," says John Shuster, Media Relations Coordinator for M-DCPS.

Using technology, parents can more easily maintain contact with teachers. With Miami's varied cultural and ethnic makeup, there is more freedom in connecting over e-mail than over the phone. A simple, basic request from a non-English speaker is far easier over e-mail. Furthermore, Dr. Machado explains, "It is too difficult to communicate with teachers when parents are working twelve hours a day and teachers are busy in the classroom during school hours." For this reason, the E-Rate's fostering of communication between parents and teachers has proven invaluable.

The funds from E-Rate have also allowed Creston's library to expand its hours each week, increasing accessibility for its local patrons. The library plans to use its E-Rate funding to add another phone line with which they can network with the local school. In this way, students may access their school resources after hours even if they do not have Internet access at home.

Of the E-Rate program, Ruthann Yeaton, the Director of the Creston-Dement Library, declares, "Without E-Rate funding, we would have to limit Internet access. In a low-income rural community, public internet access is a priority. Before E-Rate, our voice phone and dial up access shared the same line, which was an impossible situation.

E-Rate has made it possible to have a voice phone and satellite Internet access! Patron use and circulation has increased significantly (approximately 300 percent) because of this program."

Having Internet access at the library, which they are only able to afford with the help of E-Rate funds, "helps bring patrons in the door," says Ms. Yeaton. And bringing patrons into public libraries is the key to opening residents up to the world of education and opportunity that a public library can offer.

residents make use of the library's computers and internet to search and apply for jobs, engage in distance learning and develop new skills



east feliciana parish school district *Clinton, Louisiana*

Year 5 Discount Rate: 88%

Total Funding: \$963,292.43

The East Feliciana Parish, with a population of about 21,300, is located in the heart of Louisiana's Plantation Country, where cotton was once king. Approximately 85 percent of the students in East Feliciana's eight schools, including one alternative school for troubled youths, are African American. Only about 10 to 15 percent of the student population has Internet access at home, making access to technology in the schools of the utmost importance.

East Feliciana Schools have used their E-Rate funding through the years to supply schools with telephones and Internet service, internal connections, wiring, servers and routers. Currently, all East Feliciana classrooms are connected to the Internet through a T1 connection funded by the E-Rate.

Using its E-Rate funds, the District has made distance learning available to its students and teachers. Over 55 students have taken courses such as "Algebra I," "Webmastering," and "Survey of the Arts." Students have also availed themselves of the advanced math classes and foreign language courses offered online.

the state library of louisiana *Baton Rouge, Louisiana*

Year 5 Discount Rate: 75%

Total Funding: \$4,978,649.25

Located in Baton Rouge, the State Library of Louisiana serves 4.2 million people through 330 libraries. The state library has received almost \$5 million in discounts over its five year history with the E-Rate program.

Several years ago, the State Library of Louisiana started "Louisiana Libraries Connect" with the goal connecting all of the libraries in Louisiana to the Internet. Over the last five years, the Library has used E-Rate funds to make

louisiana is one of the poorest states in the nation; the e-rate has resulted in greater accessibility of information and opportunities for all of its residents

this dream a reality: all public libraries in Louisiana are now not only connected to the Internet, but also have broadband capabilities.

The results of this project have been greater accessibility of information and opportunities for all Louisiana residents, one of the poorest states in the nation. Because no Louisiana citizen lives more than twenty miles from a public library, the access afforded by E-Rate assistance ensures ready Internet availability to each state resident.

In addition to an increased ability to access the Internet, the State Library has used funds freed up by E-Rate to

only about 10–15% of the student population has Internet access at home, making access to technology in the schools of the utmost importance

Similarly, East Feliciana’s teachers have been going online to take professional development courses. Finally, the wiring of East Feliciana’s schools has helped connect parents with their children’s teachers.

In the future, East Feliciana plans to supplement its telecommunications and Internet access with additional switches for classrooms. They are also planning to purchase additional servers and back-ups for the infrastructure. Douglas Beauchamp, Jr., the Technology Coordinator for East Feliciana, says, “Without E-Rate, we would have no ability to do half of these things. Because we have limited state funds, thankfully E-Rate can pay for our wiring and telephones.”

automate its inter-library loan and delivery system, which includes university libraries, thus providing Louisianans with an extensive array of resources.

Danny Gillane, library consultant for the Louisiana State Library, confirms that the state budget for technology has gone down this year, creating an urgent need for E-Rate moneys. He further states that without E-Rate funds, the state would not be able to absorb the additional \$1.3 million in Internet costs, and a lot of state library branches would lose broadband access to the Internet.

e-rate funds have been used to network inter-library loan and delivery systems, including university libraries

louisiana



the good will–hinckley school *Fairfield, Maine*

Year 5 Discount Rate: 90%

Total Funding: \$1,426,328.05

The Good Will-Hinckley School in Fairfield, Maine provides a warm, nurturing, educational and residential environment for “at risk” students that have educational, behavioral and/or special needs. Many of these students came to Hinckley from educational institutions that weren’t designed to address their personal and educational challenges and, as a result, perceived learning as a frustrating, negative and even demoralizing experience.

At Good Will-Hinckley, technology and the Internet play major roles in awakening the joy of learning in students. The curriculum is designed to pique student

interest in learning by meeting their special needs and accommodating their individual learning styles. According to Gregg Dowty, Hinckley’s Executive Director, “Technology is a major component of that effort because it supports self-discovery, and ultimately builds their confidence. Using technology in innovative ways helps us reach that objective”.

With help from E-Rate funding, middle school students at Hinckley are able to participate in the Jason Project, which exposes students to leading scientists and allows them to work with them in real-time to examine the planet Earth and study its biological and geological development. Other Hinckley students are working in a web

maine school administrative district #54 *Skowhegan, Maine*

Year 5 Discount Rate: 67%

Total Funding: \$366,128.17

Thousands of years before the first explorers ever arrived at Skowhegan Falls, the Red River and Abnaki Indians settled along the banks of the Kennebec River to spear salmon and trout, and to raise corn on the rich land. Hundreds of years later, the area was given its current name, Skowhegan, which means “A Place to Watch” or the “Watching Place” in the native language. Today, Skowhegan is primarily a mill town and is home to 9,000

hardworking Mainers. And although the days of the Red River and Abnaki Indians have long since past, modern technology has enabled this community to keep its rich history and culture alive.

The Skowhegan Area Middle School is one of the 11 schools that comprise the Maine School Administrative District #54. With the help of the Maine Learning Technology Initiative, which has put laptop computers in the hands of every middle school student across the state, and support from the E-Rate for Internet connectivity, students at the Skowhegan Area Middle School are currently involved in a unique local partnership to help preserve the area’s local history. Using their laptop computers, students are working

hand-in-hand with historical volunteers to conduct Internet research on local tribes as well as upload and scan photos and documents from hard copy at the Skowhegan History House, one of the school’s partners in this project. Upon completing these tasks, Skowhegan’s students are saving the entire project on the Maine Memory Network, another project partner that allows free access to its collection of historical information. When all of the work is complete, the Skowhegan Area Middle School students will share their experiences with other students in the district, teach them about the features of the Maine Memory website, and ultimately gain an appreciation for and knowledge of their local history.

design class to build a local businessman's website. Also with support from the E-Rate, the Good Will-Hinckley School will be able to implement a federal technology grant that they recently received from the Department of Health and Human Services to create a transitional living program for runaway and homeless youth. A major component of the grant is the creation of a technology learning lab that will provide an opportunity for at-risk youth to learn basic computing and accounting skills, research various professions, and perform job searches on the Internet.

The E-Rate has also tremendously benefited Hinckley administrators by greatly improving their ability to communicate with state caseworkers that often serve as a

student's legal guardian. Mark DeRoche, Hinckley's Case Manager Supervisor, states, "Beyond academics, we are bound by the state to work with youth to develop specific goals, monitor those goals and finesse any program changes. This requires that we communicate with multiple parties incessantly by phone and e-mail. Case managers e-mail caseworkers and direct care staff daily, sharing vital information about our students, which allows us to respond to changes and circumstances more effectively." In the past, in order to comply with the state agency requirements, administrators had to resort to sending documents via mail, or phoning caseworkers repeatedly

until they were able to get a hold of them. The Internet access paid for by the E-Rate has changed all of that.

Mr. Dowty believes that the E-Rate has made a tremendous impact on the overall quality of the school. "Because of the technology we have been able to afford with the support of the E-Rate, we are much more efficient at communicating information, providing timely feedback, and exchanging ideas," he states. "This has had a powerful effect on how we work. We make better use of our time, we have a clearer understanding of the total picture, and we are able to focus on relevant issues. This leads to better decision making, a better overall climate, and ultimately better services for our students."

our T1 line's maximum available bandwidth is being used every single day, which is a testament to how much the internet is being used in our classrooms

David Person, the Director of Technology Services at the Skowhegan Area Middle School, realizes that Maine's laptop computer program, although an invaluable educational opportunity for the district's middle school students, would not be nearly as effective if the students could not access the Internet. And that is the reality the school would face if they were to lose E-Rate funding. According to Person, "the maximum amount of bandwidth available through our T1 line is being used every single day. This is a testament to how much the Internet is being used in the classroom by our students and teachers. There is no way we could support this level of Internet connectivity without support from E-Rate."

maine



anne arundel county public schools *Annapolis, Maryland*

Year 5 Discount Rate 45%

Total Funding: \$1,390,224

Anne Arundel County serves 74,798 students in 120 schools from the suburbs of Baltimore to the state capitol in Annapolis to small communities on the Chesapeake Bay. E-Rate-supported technology is helping unite this diverse community.

The communities of Anne Arundel County benefit in many ways from the use of technology. Students are enjoying virtual fieldtrips to places the county could not otherwise afford to send them. Science classes are collecting real time data on the weather and using spreadsheets to track patterns and draw conclusions.

Anne Arundel County Public Schools is also taking advantage of their proximity to federal government agencies based throughout Maryland, coordinating projects between their students and federal agencies like the National Security Agency (NSA) in Columbia and the National Aeronautics and Space Agency (NASA) at the Goddard Space Flight Center in Greenbelt.

One of the technologies that Teresa Tudor, Business and Program Manager for the school system, is most excited about is video conferencing. “[With this technology] students can experience culture not just in their textbooks, but by communicating with people around the world.” Everyone from 3rd graders conducting virtual chats with

enoch pratt free public library *Baltimore, Maryland*

Year 5 Discount Rate: 39%–78%

Total Funding \$4,943,718.85

The Enoch Pratt Free Public Library in Baltimore, Maryland has had its doors open to the public for more than 120 years. And with 23.7 percent of the Baltimore population living below the poverty level, the library provides essential public services for community residents trying to further their education, improve their technology skills, and connect via the Internet to the rest of the world. Pat Wallace, Enoch Pratt’s Assistant Director for

Library Services, speaks passionately about the critical role the library plays for the residents of Baltimore: “The library is a tremendous equalizer. If you want to keep urban poor in the game, they need to be able to keep pace. This library is the lifeline to this community.”

And the numbers support her statement. In this year alone, the Library’s own website and electronic resources have logged over 27 million hits. These calculations far outweigh the reported 1.2 million books that were physically checked out this year, and are a strong indication of the extent to which the public

relies on the library’s electronic services. States Wallace, “Everything we do is technology based. If we did not have E-Rate support, library services would be extremely limited.”

But fortunately, Enoch Pratt has benefited greatly from the E-Rate, receiving over \$4.9 million over the program’s first five years. With the help of this E-Rate support, the Library has created a local broadband network to meet the needs of its neighborhood branches and, in its role as the State Library Resource Center for Maryland, maintains numerous services, including the

children in other countries to high school students learning foreign languages are getting involved. "Foreign language teachers are communicating with their colleagues in other countries and arranging chats for their students, sometimes for whole classes and sometimes one-on-one," notes Ms. Tudor.

The county has many future plans for technology in their system. Along with a plan to update their current T-1 connection to a fiber network, professional development is also set to undergo major changes as a result of the new prevalence of technology throughout the school system. In the near future, certification classes that are currently taught as night classes will be offered online. Using this

new Online Infusion program, teachers will be able to complete courses on subjects such as writing lesson plans and integrating technology into curriculum in their own time, making the process easier for teachers with families and other obligations.

E-Rate funds are becoming even more important to Anne Arundel County Schools as state and county budgets become tighter. "We realize that we must be able to move technology forward in order to advance the knowledge of our students," says Ms. Tudor. "E-Rate funding is important as we set priorities in the present environment of budget cuts."

students are enjoying virtual fieldtrips to places the county could not otherwise afford to send them

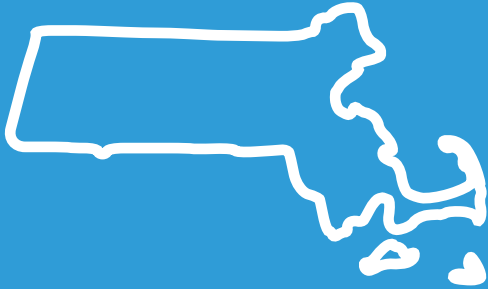
SAILOR network, the state's public information and telecommunications network and central resource about anything related to Maryland. The SAILOR website and its resources logged over 280 million hits last year.

Support from the E-Rate has also served as the foundation for the creation of several significant public-private partnerships that provide valuable services to the community. One such service, made possible by a generous grant from the Gates Foundation, has enabled the library to open the Pratt Center for Technology Training, a 24-PC classroom, and two other computer labs in Baltimore to teach computer basics. When this course

was initially offered to Baltimore residents in February of 1999, there was a yearlong wait list. Five years later, the classes are still packed, and are offered in English as well as Spanish. The Verizon Foundation has also given the Enoch Pratt Library a grant for a "Kids Corner Service" that is designed to engage young children in the areas of math and reading, and serve as a preparation for school. According to Wallace, "the Library has been very successful in getting matching funds from local companies and foundations. This Library is a great example of a beneficial triple handshake between private, city and federal funding sources."

Local high school students rely on the library's Internet connectivity to perform college searches, take virtual tours of colleges and universities, and apply for financial aid and scholarships online. The demand is great enough that the library dedicated a special area called "Student Express" to serve only teen students. Thanks to the help of the E-Rate, the needs of patrons of all ages are being served.

massachusetts



archdiocese of boston catholic schools *Boston, Massachusetts*

Year 5 Discount Rate: 88%–90%

Total Funding: \$2,968,271.38

Teachers and administrators from the Archdiocese of Boston Catholic Schools vividly remember the days when their students didn't have computers at school, let alone Internet access. And many of their buildings were so antiquated that just performing an electrical upgrade to install the necessary internal wiring was beyond their financial capability. So, when they had an opportunity to apply for E-Rate support, they decided to apply as a consortium beginning first with the high poverty schools in the 90 percent discount level. Students from this particular cluster of 34 schools

live in high poverty areas within the inner city, and a high percentage speak English as a second language. Prior to the E-Rate, these students were not in a position to compete in the 21st Century. In their first year applying for the E-Rate, these 34 schools received \$2.5 million in E-Rate discounts, which they used to connect all of their students to the Internet.

According to Anne Metrick, the Archdiocese of Boston Catholic Schools' Director of Instructional Technology, the Archdiocese met the other technology and training needs of these schools by leveraging E-Rate discounts to obtain significant charitable contributions, including funds to upgrade the schools' electrical infrastructure.



michigan

detroit public schools *Detroit, Michigan*

Year 5 Discount Rate: 82%–89%

Total Funding: \$92,948,714.80

A recent study conducted by the US Department of Education concluded that 47 percent of adults in Detroit are functionally illiterate, meaning they read at levels below basic reading comprehension—or not at all. The Department of Education's study defines adults as residents age 16 and above. Unfortunately, illiteracy is not the only problem. Detroit also has high poverty, unemployment and incarceration rates. In fact, in some sections of the city, the average income is as low as \$12,000 per year. The problems plaguing the city's youth also place additional stress on the

Detroit public school system to offer opportunities for their students to overcome their environment. According to data from the year 2000, 70 percent of students in the Detroit Public School System receive free and reduced lunches, compared to the 26 percent state average. Although E-Rate alone may not be the answer, it provides the critical funding the schools need to be in a position to provide their students with the tools they need to compete in the 21st Century.

Roland Moore, Detroit Public Schools' Chief Information Officer, speaks optimistically about the positive changes that have taken place in the Detroit Public School system as a result of E-Rate funding. The school system has been

One donor supplied free factory space to headquarter needed hardware refurbishing, and several local corporations, including Fidelity, Storage Networks and EMC, adopted particular schools, providing them with computers, technology training, and technical expertise. The school system also received a grant from the Boston Foundation to send one teacher from each of the archdiocese's 34 low-income schools to a 4-day training in order to become the school's IT troubleshooter. Over the past 5 years, the Archdiocese of Boston Catholic Schools has received more than 700 donated computers and is still receiving more. Today, the Archdiocese's 34

schools with a 90 percent discount rate have at least 55 computers, and the student to computer ratio, which was previously astronomical, is now approximately 4 to 1.

The teachers in the Archdiocese's schools have been working hard to gain the skills necessary to integrate technology into the curriculum. This summer they will take a workshop at Emmanuel College on ways to integrate technology into the science curriculum. Also this year, every teacher training course incorporates a technology training component.

The students in the Boston Archdiocese's 34 lowest-income schools are receiving instruction that connects their schools' traditional curricula with the vast resources of the Internet. Anne Metrick is thrilled about the positive changes that have taken place in the classroom as a result of E-Rate funding. "Since we've been connected, the enthusiasm and excitement among students about learning have been unparalleled."

able to install a robust network that has enabled them to provide videoconferencing capabilities between the district's classrooms, making it possible for students to take classes in any instructional area. Currently the district is working on creating the ability for parents to view their child's grades, homework, and attendance records online and to communicate by e-mail with teachers. The district's teachers will also be able to look at a child's test data and take note of weak and strong areas so that they can target future instruction.

The Detroit Public School system is also very excited about a wireless initiative it is currently pursuing that combines E-Rate funding with a state "Learning Without

Limits" grant it was awarded in January of this year. Entitled the "Freedom to Learn Project," the initiative will help sixth grade students at Malcolm X Academy and McMichael Middle School become proficient users of technology wirelessly. The sixth graders will learn to use individually assigned laptops and pocket PCs and how to access the Internet, and their use of technology will be completely portable and free of geographic constraints. The curriculum will be available online so that parents and students can access it from home. The laptops will also allow teachers and students to log on to the district-wide network from every sixth grade classroom.

the district is working to give parents the ability to view their child's grades, homework, and attendance records online

mackinac island public school *Mackinac Island, Michigan*

Year 5 Discount Rate: 60%

Total Funding: \$29,268.67

Mackinac Island is a tourist town with only 500 year round residents, 5,000 residents throughout the summer, and about 10,000 visitors every day from the end of June through Labor Day. The island is accessible only by plane or boat and is approximately 150 miles from the nearest small city, and 300 miles from Detroit. Mackinac Island may be rural, but because of funding from E-Rate, they have been given a window to the rest of the world.

Renowned for its innovative use of technology, Mackinac Island Public School is able to provide its students with educational opportunities typically limited to private

and/or urban schools that have a wealth of course offerings and resources. E-Rate funding has enabled Mackinac Island Public School to install an interactive television laboratory that provides access to online courses from both other high schools within the Intermediate School District as well as Lake Superior State University. Students are also able to take advantage of online coursework through the district's partnership with Michigan Virtual High School and Michigan Virtual University.

According to Gary Urman, Mackinac Island Public School's Superintendent, the television lab is used frequently both by Mackinac students as well as community members. "One of Mackinac's freshman students

the island is accessible only by plane or boat, but because of funding from e-rate, it has been given a window to the rest of the world



logan school district *Logan, New Mexico*

Year 5 Discount Rate: 85%–90%

Total Funding: \$173,071.58

Logan, New Mexico was initially established as a trading post and station on the Rock Island Railroad. Today, Logan has a population of approximately 1500 residents, and owes its economic growth to its proximity to Ute Lake, which in warmer months attracts tourists interested in fishing, sailing or water skiing. In addition to tourism, Logan's economy is dependent upon producing wheat and ranching cattle.

Located approximately 2 hours from the nearest city, Logan's residents depend upon the Internet to access information about and communicate with the rest of the world. Since the E-Rate's inception, the Logan

School District has received approximately \$173,000 in discounts, without which they would be unable to provide technology access and invaluable educational opportunities for its students. Prior to receiving E-Rate discounts, the Logan School District's 260 K–12 students shared 15 computers, none of which were connected to the Internet. Today, the district's students have 125 computers at their disposal, all of which are wired to the Internet.

Each day, students and teachers in the Logan School District take advantage of opportunities available to them because of E-Rate funding. A number of students take advanced placement classes in an interactive television studio, which earn them high school and college

is taking 2nd year Japanese, and enjoys it so much that he enrolled in a Shiga Exchange program that will take him to Japan this summer to live with a family. The Japanese student will then come visit us on Mackinac Island. This particular student is even considering signing up for a year abroad to continue his study of the Japanese language and culture," stated Urman.

And elementary students at Mackinac Island Public School participated in an online social studies project with other elementary students throughout the state. As part of the project they used the Internet to conduct research, and then posted their findings online. At the

conclusion of the project, elementary students from Grand Rapids came to visit the students at Mackinac Island Public School.

Mackinac Island Public School has been successful in leveraging the technology purchased with E-Rate funding to apply for state and federal grants. Through a consortium effort involving 10 other schools, Mackinac Island School District received a federal grant from the US Department of Education for \$800,000 per year to build a 21st Century Community Learning Center that will provide valuable after-school programming for its students. In addition,

that same consortium received a "Learning without Limits" state grant for \$1.5 million that is providing Palm Pilots for Mackinac Island Public School students in the 4th through 8th grades.

michigan

credits concurrently in Chemistry, History, English, Spanish, Psychology, and Math, among others. Teachers at the Logan School District also rely on the interactive television lab to take for-credit professional development courses and collaborate on projects with colleagues throughout the area.

Although the E-Rate has already brought the Logan School District into the 21st Century, the district is hoping to get additional E-Rate funding to purchase a district wide email service that will enable parents and teachers to interact more frequently regarding their children's homework and overall progress.

Administrators and teachers at the Logan School District realize that they will also depend on their technology access in order to comply with the federal mandates of the No Child Left Behind Act. According to Logan School District's Business Manager, Julie Bell, "We depend on E-Rate discounts to provide technology access to our students. Without access to the Internet, I don't think it would be feasible for us to comply with the No Child Left Behind Act."

**located approximately
2 hours from the nearest city, logan's residents depend upon the internet to access information about the rest of the world**



st. casimir school *Albany, New York*

Year 5 Discount Rate: 90%

Total Funding: \$783,181.66

St. Casimir School, a K–8 school in Albany, NY, has been recognized many times over in recent years for its use of technology in education. The 106-year-old school serves a majority minority population in an impoverished area where, although available, only 50% of students have Internet access at home. Through the E-Rate, all of St. Casimir’s instructional classrooms enjoy high-speed access to the Internet and all students can participate in unique learning opportunities provided only through the school’s commitment to technology.

At St. Casimir’s, technology is not just an add-on to the curriculum; it is an integral component of the learning experience of each of its 150 students. Indeed, all students attend computer class every day, where they learn to use the Internet, software programs like PowerPoint and other multimedia tools. Additionally, many traditional subject area classes integrate technology, and the resources it can deliver, into their curricula. Video-conferencing has been one of the many ways that St. Casimir’s has been able to use their E-Rate-funded technology to enrich learning. The school’s two video-conferencing stations have allowed 7th graders to talk



portland public schools *Portland, Oregon*

Year 5 Discount Rate: 64%–90%

Total Funding: \$3,900,000

As the largest district in the state, Portland Public Schools has taken a lead role in infusing technology into all aspects of education. The district’s overall goal, to utilize the power of technology to increase student achievement, is becoming a reality through its participation in the E-Rate program. Through the nearly \$4 million that Portland has received in E-Rate discounts over the past 5 years, it has been able to connect nearly every classroom to the Internet via a T1 or 100mb line, thereby ensuring that its 53,000 students have fast access to the Internet’s resources.

Portland’s E-Rate discounts represent only a part of the community’s commitment to technology. In 1996, the voters of Portland passed a \$49 million bond initiative to fund the building of the schools’ infrastructure, including computer hardware and local network connectivity. While the bond provided the necessary infrastructure, without the continuation of funds from the E-Rate, “we would not be able to support our existing investment in technology given the status of our local and state funding,” explained Scott Robinson, Chief Technology Officer.

For Portland, technology has become an integral part of classroom learning and administrative management. Its new web based student information system allows

technology is not just an add-on to the curriculum, it is an integral component of the learning experience of each of its 150 students

to their peers in London; 4th graders to view animals located nearly 5 hours away by car at the Buffalo Zoo and ask questions of the zoo's experts; and many students to learn about the experiences of Holocaust survivors. "If not for the E-Rate, many of the services that St. Casimir's provides to its students, such as remediation and technology education, would just be too expensive," states James Leveskas, principal at St. Casimir's.

Since 1998, St. Casimir's has been a New York Wired for Education School Demonstration site. In 2002, it was named one of the Top 12 Schools in the

United States for the innovative application of technology in the classroom and in staff development. Also in 2002, the school received the Catholic Schools for Tomorrow Innovations in Technology Award from Today's Catholic Teacher Magazine.

information to flow online between the district and schools, informational channels made possible with the assistance of the E-Rate. In addition, this system allows for electronic interchange of student data for students who move from one school district to any other school district in Multnomah County. Its students are using the Internet and technology to conduct online research, publish online reports, and engage in distance learning. In fact, in one Portland high school, science students developed a model of how contagious diseases could spread in the area by using online resources and data exchanges with government entities. Lastly, its teachers benefit from the district's connectivity through online professional development courses, and access to streamed video curriculum support materials, including tutorials.

One recent innovation undertaken by Portland and the Oregon Department of Education is online testing. Students in Portland can take state standardized tests online. This new capability goes straight to the heart of the accountability mandates of the No Child Left Behind Act. One principal explained that online testing has been a major breakthrough for our students. "The ability to get immediate feedback to students and instructors has helped focus intervention strategies, resulting in increased test scores," noted Scott Robinson.

While technology has changed the way that students are taught, it is also beginning to change the way that schools and the district communicate with parents. Where parents formerly only received periodic updates

on their child's academic progress, Portland is investing in portal technology, which will allow parents to keep abreast on an almost daily basis of their children's academic progress. Parents in Portland will be able to view their children's homework assignments on the school's website and e-mail teachers with any questions and concerns. Furthermore, parents will be able to view student grades on the web site. The continuation of E-rate funding is critical to the completion of this work. With these new technology resources, Portland's parents will be hard-wired into their children's education.



meyersdale area school district *Meyersdale, Pennsylvania*

Year 5 Discount Rate: 60%

Total Funding: \$106,917.35

The Meyersdale Area School District is located in the mountains of south central Pennsylvania, where, as locals note, there are more cows than people. Meyersdale is proud of its maple sugar industry, but is famed throughout the United States for two tragic recent events: the crash of Flight 93 in the Meyersdale area on September 11, 2001 and the rescue of the Que Creek miners the following year. Both events were very sobering for the area, but the community seems to have grown stronger as a result.

The Meyersdale Area School District consists of 1200 students (350 at the elementary level, 425 in the middle school and 425 in the high school) in 3 schools, all housed in one building. Before the E-Rate, none of the classrooms in the building were connected to the Internet, and the best connection to be had in the area was dial-up access. Through the E-Rate, a T-1 line now connects the entire District. This not only connects students to "the outside world," in the words of Supervisor of Curriculum and Instruction Francis Meyers, but teachers as well; one in particular is able to email her daughter in Kuwait, where she is serving in the military.



school district of greenville county *Greenville, South Carolina*

Year 5 Discount Rate: 55%

Total Funding: \$2,900,000

With 100 schools and 64,000 students, the School District of Greenville County is one of the largest in South Carolina. The district encompasses 800 square miles and serves both urban and rural areas, providing its administrators with a wide array of technological challenges. The nearly \$3 million in E-Rate discounts that Greenville has received over the program's first five years have proven critical to overcoming obstacles of size and distance. To date, the E-Rate has provided sufficient support for Greenville to allow it to wire 88 percent of its classrooms, with only

portable classrooms or those being reconstructed not wired. "Without the E-Rate we would never have been able to wire our schools and provide the proper infrastructure to foster technology. It likely would have taken us a hundred years to do for ourselves what the E-Rate has done for us in five years. We are extremely satisfied with the program," stated Lori Larsen, Greenville's Instructional Technology Coordinator.

Many of the districts' teachers have integrated the Internet into the curriculum. In Pelham Road Elementary School, the 4th and 5th graders used information about Greenville that they harvested from the Internet to create a CD that highlights Greenville's economy, culture, and

Meyersdale's high school students take advantage of the E-Rate through their participation in the South Central Regional Consortium for Distance Learning. With their membership in this consortium, 10 students take Calculus via video conferencing with students in rural Salisbury County. Meyersdale hopes to offer more advanced courses not offered on their campus through the consortium next year. Teachers also use the Internet to access the many recertification courses the State of Pennsylvania offers online.

Parents are also benefiting from the school district's connectivity. They can access their children's homework assignments and check on class lesson plans online.

Mr. Meyers also noted that parents would be able to review their child's grades online in the near future.

The Meyersdale Area School District is currently looking into upgrading their connection speed to make it even easier for students and teachers to use the technology that has already become so vital to the classroom experience. "If the [E-Rate] program is taken away, then we, and many other rural schools, are going to get way behind technologically and our graduates will not be able to compete with graduates of other public and private systems who are not dependent on the E-Rate for technology and telecommunications funding," declares Mr. Meyers.

climate. The school then provided the CD to its local Chamber of Commerce to use to disseminate information about the community. In addition, the Parris Elementary School's students went online to research local nature trails and collaborated with the local park service on a comprehensive, publicly available pamphlet about a specific nature trail in the community. This program was so successful that the school and local park service are working with other state parks to replicate the idea. At the high school level, students in Mauldin High School's Freshman Academy research a particular geographical site or location from four points of view, or in terms of the four core subjects: English, math, science and social

**all 3,700 teachers
in the district are
required to develop
a website that pro-
vides information
to the parents about
what is going on
in the classroom**

studies. Each individual subject has a specific set of criteria, or requirements, that are compiled into one final presentation created by students.

Greenville has also used its E-Rate supported Internet access to deliver high quality distance learning opportunities to students and teachers. The county's Science Center provides distance learning courses on science topics such as biology to students, and its Science Plus

(continued at top of next page)

school district of greenville county *(continued)*

Institute provides professional development courses for teachers. Additionally, some teachers are taking online graduate level and certification courses at Furman University.

Technology has been a major driving force to raise parental involvement. All 3,700 teachers in the district are required to develop a website that provides information to the parents about what is going on in the classroom. Teachers put up course syllabi and homework assignments on their sites. Some teachers have even initiated e-mail groups to keep parents better informed. Additionally, each school has its own website where parents can access school information.

the appropriate use of technology, the use of the internet, and professional development are increasing student achievement

In Greenville, the E-Rate is becoming a major force in teaching and learning, and the advent of the Internet is already paying significant dividends. According to Lori Larsen, "The appropriate use of technology, the use of the Internet, and professional development are increasing student achievement." And, at the end of the day, student academic improvement is the primary mission of both the E-Rate and Greenville's schools.



wessington public library *Wessington, South Dakota*

Year 5 Discount Rate: 67%

Total Funding: \$1,934.14

The Wessington Public Library is located in the rural town of Wessington, South Dakota, population 260, which is about a 3^{1/2}-hour drive from Sioux Falls. Most of the people in the community work in nearby towns, and the area is known for agriculture, livestock, corn and soybeans. Although broadband has reached Wessington, it is too expensive for most residents. The library, which receives between 500–600 visits a year, is beginning to fill that technological void.

Before the E-Rate, from which the library receives a 67 percent discount, the library lacked basic phone service. With the advent of the E-Rate, the library has been able to leverage its funding over the last five years to connect two computers to the Internet via a DSL line. None of this would have been possible without assistance from the South Dakota State Library, which helped Wessington and other small library systems apply for the E-Rate. With the South Dakota State Library's assistance, Wessington worked together with other libraries on various parts of the application process, including the formulation of technology plans.

horry county school district *Conway, South Carolina*

Year 5 Discount Rate: 71%–90%

Total Funding: \$6,719,270.28

The Horry County School District covers the Atlantic coast region of South Carolina known as the Grand Strand, a popular summer tourist destination. The district serves 30,000 children in 46 schools.

Over the 5 years in which Horry County has been participating in the E-Rate program, the district has received almost \$7 million in discounts. With these discounts, they have been able to supplement the high-speed connections provided by the state with E-Rate supported phone service, including a phone in every

classroom and T1 Pri-Rate telecommunication services in all schools. For the first time this year, students registered for classes online, and parents can go online to view their children's grades, attendance and discipline records. Teachers are taking online courses for academic credit, including classes in technology, software, teaching methodology, course content and robotics, and can take advantage of online peer mentoring and coaching.

Unfortunately, budget constraints in recent years have caused cutbacks in other advances that Horry County had made in areas like distance learning. Prior to this year, the district had been expanding its capabilities

in this area, providing distance learning in 8 schools through E-Rate funding. Now, however, a lack of district funds is forcing the program to be terminated.

"We have been very pleased with the program and the professional help we receive from [Schools and Libraries Division] staff," says Deborah Maxson, Horry County School District Technology/Media Services Coordinator. "Our dissatisfaction only comes from the fact that there is not enough money to fund internal connections for 80 percent and below schools."

Librarian Donna Runge believes the Internet is delivering significant benefits to her community, pointing to patrons using the library's computers to perform research, engage in business and even develop marketable skills. Some are even making significant discoveries. "Recently

before the e-rate, the library lacked even basic phone service

a woman came into the library after seeing her name in the paper concerning unclaimed property. She used the Internet to find out that she had money owed to her from a previous job," says Ms. Runge. Other patrons have gone online to look for information concerning sons and daughters currently stationed in the Middle East. With the connectivity provided by the E-Rate, the Internet is rapidly becoming a part of the everyday lives of Wessington's residents.



the king's daughters school *Columbia, Tennessee*

Year 5 Discount Rate: 90%

Total Funding: \$57,788.62

The King's Daughters School, which serves children with cognitive disabilities from around the country, educates 78 students with IQs between 60 and 74. The goal of this residential year-round school is to enable all of its students to reach their full potential as independent and productive citizens. The E-Rate is helping attain this goal.

Through the E-Rate, the school has been able to support wiring all classrooms, installing a new phone system and high-speed access to the Internet. And

the money that the King's Daughters' School has been saving on the E-Rate is helping it purchase other, complementary technology such as hardware. Before the E-Rate, the school had a student to computer ratio of 13 to 1; it now has a much lower ratio, with 2.5 students for every computer.

"Just the fact that mentally challenged students are regularly using the computers and the Internet is unique," says Sara Wiles, the school's Network Administrator, "whether they are getting information or playing games." In a normal public school classroom, children with cognitive disabilities would not be exposed to the

watauga regional library *Johnson City, Tennessee*

Year 5 Discount Rate: 52%–62%

Total Funding: \$221,216.91

The Watauga Regional Library system consists of 17 libraries in six counties that cover much of eastern Tennessee. The system's 168,152 registered patrons are spread throughout urban, suburban and rural communities.

"Through E-Rate funding," notes Teddy Malone, Acting Director of the Watauga Regional Library, "the library system became the first in Tennessee to offer access to a

combined library management system at all of its libraries, regardless of the size of the community or library." In an area where the cost of Internet access is often prohibitive, even for those with computers, the connectivity provided by the library system's network, which operates on T-1 lines, has proven extremely beneficial. Access to the Internet helps staff with reference work and distance learning, and patrons especially enjoy conducting genealogical research online as well as being able to search library catalogs from their residences.

the online catalog not only allows patrons to access more information more easily than ever before, but it also saves the system a significant amount of money

just the fact that mentally challenged students are regularly using the computers and the internet is unique

Internet, but computer use has become so commonplace in today's society that these students can only benefit from such exposure. Students love using the computers after they finish their usual school work, and sometimes Internet use is a part of their weekend activities as well. Parents are amazed that children at the school have connectivity. They are also directly benefiting from the school's access—they can access information about their child's activities at the school's website, as well as exchange e-mail with their child and teachers.

Before the E-Rate, the Watauga Regional Library depended on a bookmobile and book deposits served by van delivery to supplement the collections of the system's smaller rural libraries. With the connections funded through the E-Rate, the library has established an online inter-library loan program to allow patrons access to the combined catalog from their home or from PCs in a library and to request a book from any of the region's libraries, which is then delivered to the patron's nearest public library within two days. As of July 2003, bookmobile service will be discontinued altogether. This catalog, as well as Tennessee's online book program,

Tenn-Share, and information from area college and university libraries, are available both at the libraries and at home through the system's website.

The Watauga online catalog not only allows patrons to access more information more easily than ever before, but it also saves the system a significant amount of money. "The shared catalog has enabled libraries to conserve and share resources and concentrate on developing special collections that can be shared among all the 17 libraries without the duplication of expensive materials," says Ms. Malone.

tennessee



sacred heart elementary school *Rockport, Texas*

Year 5 Discount Rate: 70%

Total Funding: \$38,572.77

Sacred Heart Elementary School, a member institution of the Catholic Diocese of Corpus Christi Department of Schools, is located in the southeastern portion of Texas near the Gulf of Mexico, thirty miles north of Corpus Christi. For the past 22 years, the Sacred Heart has provided the only full-day parochial schooling available to low-income students in the area, the majority of whom are minorities. More than 40 percent of the residents of the area live at or below the poverty line, and Sacred Heart provides direct tuition assistance to more than 50 percent of its students.

The funds from the E-Rate program have greatly contributed to the school's ability to deliver a well-rounded education to its students. Students are navigating the web for in-class projects. Their teachers are engaging in online professional development to undergird their knowledge of subject areas. "Technology has lit a fire under our students. Students are now more engaged than they ever were," says Randy Barnes, Development Coordinator.

Prior to the E-Rate, the school did not have Internet access and the student to computer ratio was 30 to 1. By Year 5 of the E-Rate, the school had all its instructional classrooms connected to the Internet and the student

supernet consortium *Whitehouse, Texas*

Year 5 Discount Rate: 47%–90%

Total Funding: \$693,023.81

Before the 17 rural districts and 91 schools that comprise the Supernet Consortium began to take advantage of the E-Rate, none of the 45,000 students in these east Texas districts had access to the Internet in their classrooms, and only one student at a time could use the dial-up access provided in the Consortium's school libraries. Beyond limited Internet access, students matriculating at the Consortium's districts had almost no computers available to them: back in 1996, the Consortium's student to

computer ratio stood at 50 to 1. The E-Rate discounts received by the Consortium and its effective leveraging of money saved by the E-Rate to purchase other technology has turned what was once a technology-poor area into a thriving technology hub.

Over the five years of the E-Rate's existence, the Supernet Consortium has received approximately \$4.5 million in discounts, and has utilized these discounts to connect all classrooms in these 17 districts to the Internet with a T1 line. Additionally, it has invested more than \$1 million in additional technology, including hardware, and has lowered the student to computer ratio from 50 to 1 to 5 to 1. According to Debi

effective leveraging of e-rate funds has turned what was once a technology-poor area into a thriving technology hub

to computer ratio was down to 4 to 1. "These gains would not have been possible without the E-Rate," stated Barnes.

Although Sacred Heart does not receive millions of dollars from E-Rate each year—in fact, it received less than \$4,000 in Year 5, it still invests significant time in meeting the program's requirements because it values what it does receive. Randy Barnes estimates that the school expended over 4 months and 300 staff hours in developing the school's technology plan and 100 hours to complete the application process. Additionally, Sacred Heart has spent \$50,000 for technology to improve the value of the telecommunications services that it receives

technology has lit a fire under our students. they are now more engaged than they ever were

courtesy of the E-Rate. "While there is no question that the E-Rate's paperwork is time-consuming, overall we have been very pleased with all that the E-Rate has provided," Mr. Barnes stated.

Crawford, the Consortium's Executive Coordinator, E-Rate is especially valuable to the Consortium now that Texas's Telecommunications Infrastructure Fund, which had supported school district telecommunications, may find its resources tapped to fill large holes in the state's budget. "The E-Rate is essential to what we are doing," says Ms. Crawford.

Aside from connecting its 17 districts to the Internet and furnishing adequate technology for its teachers and students, the Supernet Consortium delivers high quality educational and professional development courses. Students are now participating in distance education, including online courses from higher education institutions and

videoconferences with NASA. The Consortium's teachers are also learning online, with many engaging in professional development courses, receiving online mentoring and, for school nurses, receiving instruction from The University of Texas Health Center at Tyler.

For the Supernet Consortium, though, the greatest benefit of the E-Rate has been that it has helped draw together these 17 districts into a single learning community. With all of the districts networked together, the opportunities for cross-district collaboration on major initiatives, such as a virtual high school, are limitless.

the e-rate's greatest benefit has been that it has helped draw together these 17 districts into a single learning community

texas



louisa county schools *Mineral, Virginia*

Year 5 Discount Rate: 60%–70%

Total Funding: \$641,071.17

Louisa County Schools has received almost \$700,000 in E-Rate funds over the past five years for the benefit of its 4,300 students. In Louisa County, which is located 40 miles from the nearest urban center, almost 19 percent of children live below the poverty line, and only 50 percent of Louisa County students have Internet access at home. For this reason, E-Rate dollars for Internet services at Louisa County schools are critical.

With E-Rate funding, Louisa County has created a robust technological infrastructure, with its secondary school classrooms connected to the Internet via a DS3 line, and its elementary schools through a DS1. Louisa's students, who can readily gain access to computers in schools owing to a small student to computer ratio (2.5 to 1), receive online instruction that features streaming video. Louisa's teachers use their Internet connections to pursue graduate courses at the University of Virginia and Old Dominion University.

The connectivity supported by the E-Rate has also been a boon to parent-teacher communications. Teachers are now able to post information on the school website as



bridgeport school district *Bridgeport, Washington*

Year 5 Discount Rate: 90%

Total Funding: \$158,354.92

Comprised of 4 schools and 600 students, the Bridgeport School District serves a small rural area in Eastern Washington where the main industry is apple farming. Many of the students in the district are the sons and daughters of migrant workers, and the district's student population is over 86 percent Hispanic. The community's average income level is less than \$11,000 and its unemployment rate, at approximately 11 percent, is double the national average. With these dire economic figures, it is not surprising that the vast majority of residents cannot afford Internet access at home, and broadband service, though available, is rarely purchased.

Although the district only began participating in the E-Rate program in Year 3, it has made major strides technologically with the almost \$160,000 in discounts that it has received over the last three years. Prior to the E-Rate, the district could not afford to make a significant investment in technology and was only able to provide its administrative staff, not its students or teachers, with dial-up access to the Internet. The recent infusion of E-Rate funding has dramatically changed all of that. Today, all classrooms are connected to the Internet with fiber optics connectivity and the district has made strenuous efforts to lower its student to computer ratio from 30 to 1 to 4 to 1.

more and more parents are keeping track of their children's academic lives by logging on to the school's website

well as e-mail parents directly about their child's progress. Bruno Sestito, Director of Technology for Louisa County Schools, confirms that more and more parents are keeping track of their children's academic lives by logging on to the school's website.

While Louisa County is already reaping the rewards of its involvement with the Internet, it plans to continue to make full use of the opportunities afforded by the program. In the future, it hopes to install a second T1 line for each elementary school, further improving the online services that its students currently receive.

The ready availability of the Internet's resources has allowed Bridgeport's students and teachers to acquire knowledge and skills previously unavailable to them. Because of the district's connection to the Internet, it has been able to develop a relationship with Tacoma's public television station, which allows Bridgeport's teachers to mine the station's program archives and bring relevant materials into their classrooms. And Bridgeport's teachers have been able to upgrade their own academic knowledge and credentials through the district's access to the Internet: a number of them are participating in a Masters degree program through Western Governors University, a wholly online undergraduate and graduate

institution. Also, the math and science teachers in the district are participating in a professional development program with the University of Washington.

Bridgeport's investment in technology and the Internet is also paying dividends in its efforts to meet the requirements of the No Child Left Behind Act. Seeking to improve student achievement, it is conducting online testing, both diagnosis and prescription. Gene Schmidt, Superintendent, states that the district is already seeing strong academic results from the integration of technology into the curriculum: "We have seen an increase in our reading comprehension tests because the computer infrastructure has provided our students the opportunity to harness and integrate

technology. Our test scores are going up. Our rural district would not have had the capacity to reach these new goals without the E-Rate."

The district was one of 15 schools in the state of Washington to be chosen to participate in the Washington Digital Learning Commons (WDLC), a state initiative that provides online professional development courses to teachers and students. Since the program requires districts to have broadband, the district's participation in this program is only made possible by E-Rate funds.

seattle public schools *Seattle, Washington*

Year 5 Discount Rate: 61%–90%

Total Funding: \$8,098,262.71

Back in 1996, Seattle Public Schools, located at the epicenter of America's technology boom, was barely ahead of the curve technologically. Approximately five percent of its classrooms were connected to the Internet, far below the 1996 national average of 14 percent. And those connections were very slow—no more than dial-up in most cases—at a time when a number of public schools were already transitioning to high-speed Internet access lines. The combination of the E-Rate, a local levy initiative and funds from the Bill and Melinda Gates Foundation enabled the Seattle Public Schools to catch-up technologically to others in the region.

Serving an incredibly diverse student body, the Seattle Public School District encompasses 100 schools and educates over 46,000 students annually. Since 1996, Seattle has received more than \$8 million in discounts from the E-Rate program. That sum, plus a 1998 \$40 million levy initiative to improve Seattle's school technology infrastructure, was utilized by the district's administrators to transform Seattle's classrooms. Today, 100 percent of Seattle's classrooms are connected to the Internet by T1 lines or fiber, and the student to computer ratio stands at 4.7 to 1, all figures that now place Seattle way ahead of the technology curve. In addition, all classrooms have telephones and all teachers have unique phone numbers and

voicemail. But the upkeep on all this technology is expensive, estimated at over \$1.7 million in voice and data services and equipment, plus additional funds for nine full time information technology staff to keep the phones and associated networks running. So, while Seattle's total E-Rate funds are dwarfed by the levy initiative's funds, they are nonetheless essential to pay for operating and maintaining this impressive infrastructure.

Seattle is also ahead of many of its counterparts in recognizing the importance of ensuring that teachers can use the technology and integrate it into everyday



Instructional Technologists are available to provide personal help and guidance to teachers in the use of technology in the classroom.

The district has also begun to harness the power of the Internet for curriculum development, school libraries, research and online testing. "We believe that technology will help our students succeed and will increase the effectiveness and efficiency of all district employees. We have a new financial system and have just implemented a

web-enabled HR/Payroll system. We are migrating to an online approach to all district functions," stated Mr. Rowlands.

One group benefiting from this approach is school librarians. In partnership with the University of Washington, the librarians were given special training and laptop computers so that they can serve as the 'Chief Information Officer' in their school. The school libraries have become a focal point for student access to electronic and hard copy information.

Another group that is benefiting from the use of technology is parents, who can now communicate directly

with their children's teachers by e-mail and see their children's homework assignments online. During the summer the district will begin implementing a new student information system that will make a wealth of information available to teachers and key administrators. Future additions to that system include online progress reports for parents and enhancements to support instruction and assessment. As John Rowlands notes, "The E-Rate was a catalyst for Seattle's technology mission to accelerate the integration of technology into instruction and management. But we never lose sight of our central mission: academic achievement for every student in every school."

today, 100% of seattle's classrooms are connected to the internet by T1 lines or fiber, and the student to computer ratio stands at 4.7 to 1

learning. "In the not too distant past, some students were ahead of some teachers on how to use technology; to a certain extent the students were showing the teachers how to use technology," stated John Rowlands, Director of Information Services. In order to address this deficiency, the district has made it a priority to put computers and software into the hands of teachers and to provide them with technology training to make proper use of these new teaching and learning tools. In fact, Seattle budgeted more than \$500,000 this year to train its 3,200 teachers on their new computers. This includes eight hours of technical training to introduce the teachers to the suite of software tools pre-installed on their computer,

which includes Microsoft's Office, Outlook and Internet Explorer. Additional software gives teachers access to powerful web-based applications and tools such as on-line Professional Practice Standards and templates, student information, and a new Parent/Teacher Communication system. These latter tools will give teachers the ability to design classroom curriculum, view key information about their students, and post homework assignments on the web—all while in their classrooms. The student information is only accessible from the teachers' classroom computer, but teachers do have access to the other tools from any location via the web. The classes are being taught by Instructional Technologists that are experienced classroom teachers. In addition, the



chippewa falls area schools *Chippewa Falls, Wisconsin*

Year Five Discount Rate: 40%–47%

Total Funding: \$364,961.83

The Chippewa Falls Area School District serves the city of Chippewa Falls, Wisconsin, an urban fringe community in western Wisconsin with an average income of slightly under \$25,000 and unemployment approaching 6 percent. Located 70 miles from the Twin Cities of Minneapolis/St. Paul and a part of the Eau Claire, Wisconsin metropolitan area, the community numbers 13,000 and 4,500 students attend school in the district.

The district primarily utilizes E-Rate funds to ensure that every classroom has a high-speed broadband connection to the Internet. Chippewa Falls receives its Internet access through WiscNet, a non-profit Internet provider serving the Chippewa Falls area and the majority of public schools and libraries throughout the state of Wisconsin. Shawn Abshere, WiscNet's Associate Director, observes that the federal E-Rate program has proven to be an excellent complement to the state's

(continued at top of next page)

chippewa falls area schools *(continued)*

TEACH initiative, which helps local communities fund technology initiatives. "The success of the E-Rate program has been two-fold. It has been a tremendous success in terms of bringing high-speed connections to the classroom, but it has also allowed local school districts to stretch limited education dollars to other previously under-funded areas," said Abshere.

technology has allowed us to break down geography

E-Rate funding has given this relatively small community access to educational and cultural opportunities previously only available to students in urban settings. For example, Chippewa Falls was able to participate in a statewide program designed to spark student interest in civics and local history. The program brought Governor Jim Doyle into about 80 distance education classrooms throughout the state. Chippewa Falls School District linked the program to the local cable company public access channel, thus allowing fourth grade students to view and interact with the Governor and have a digital conversation about state government institutions and Wisconsin history.

the district has implemented a system that shares the contents of teachers' grade books with pupils' parents via the internet

park county public library *The City of Cody, the City of Powell and the town of Meeteetse, Wyoming*

Year 5 Discount Rate: 52%–70%

Total Funding: \$13,858.09

The Park County Library system consists of three libraries that serve the cities of Cody and Powell and the town of Meeteetse, Wyoming. The 25,000 people in rural Park County live in a remote area located more than 100 miles from the nearest urban center in Billings, Montana. The county has an average income of approximately \$22,000 and about 50 percent of the homes are connected to the Internet. Dial-up

Internet connections are available through the local long-distance provider, however, broadband access is generally unavailable in the area.

With the E-Rate, Park County is able to provide its underserved residents and visitors with high-speed access at library facilities. The Park County Library serves approximately 17,000 people per year, with a large number being summer tourists who visit to access their e-mail accounts or to catch up on work while touring nearby Yellowstone National Park. According to Arlene Ott, the Library's Director, hundreds of families from across the



Many teachers have used the Internet in the classroom to improve writing skills and develop relationships with students worldwide through the ePALS program. ePALS is an online classroom community that allows students to correspond via e-mail with students from other countries and other parts of the United States. Because the online program allows instant translations, many area students have developed longstanding e-mail relationships with students in Europe and South America. "Technology has allowed us to break down geography," says Jim Hadlock, Chippewa Falls' Education Technology Director.

Chippewa Falls Area high schools have also been utilizing the Internet to begin offering Advanced Placement (AP) courses via the distance education network to other schools in the state. Some teachers have been trained using video classroom resources, thus allowing smaller schools to offer advanced coursework such as fifth-year Spanish and French, which had been previously unavailable in the school district. The availability of these courses at the high school level offers tremendous advantages to students seeking to pursue foreign language training at the college level.

Most significantly, E-Rate is helping to ensure that parents are plugged in to their children's academic lives by allowing them to communicate via e-mail with teachers and administrative staff about lesson plans and homework assignments. "The district has fully implemented, in a secure environment, a system that shares the contents of a participating teacher's daily, electronic grade book with the pupil's parents via the Internet," says Hadlock.

wisconsin

United States visit the library each year and "are so pleased that they are able to come to the library and easily communicate with their families while on vacation."

In fact, Ms. Ott has noticed a substantial increase in the number of people visiting the library since the inception of the E-Rate program. Donations from many of these visitors helped provide the library with a new public address system. Completion of this project would have been far more difficult had it not been for E-Rate funds that cover a percentage of the basic yearly telecommunication costs.

Savings from the E-Rate have allowed the library system to make additional technology improvements. For example, when the local Rotary club saw how the E-Rate dollars helped provide the community with Internet access, they were encouraged to raise funds for additional technology upgrades. Enough funds were ultimately raised to replace the library's aging computer monitors. Like so many other library systems throughout the country, E-Rate funds have provided economic stability in Park County and allowed scarce dollars to be stretched further to meet growing community needs.

about EdLiNC

The Education and Libraries Networks Coalition (EdLiNC) was formed in 1995 to advocate for the interests of schools and libraries in the 1996 Telecommunications Act and the subsequent FCC rulemakings that implemented the E-Rate. Since that time, the Coalition's mission has been threefold: to educate the school and library community about the opportunity presented by the E-Rate and to facilitate widespread participation in the program; to inform and educate policymakers about the value of the program; and to advocate for continuous improvement in the administration of program. To that end, EdLiNC provides current information about the E-Rate on its web site, closely monitors the administration of the E-Rate and advocates for changes in rules and procedures that will limit the burden on applicants, ensure fair and equitable distribution of program benefits and ensure program integrity. EdLiNC has participated in every FCC inquiry and rulemaking related to the E-Rate since the program's inception. EdLiNC also provides information and analysis about the E-Rate program to Congress and the Administration.

EdLiNC has been instrumental in shaping the E-Rate program at the FCC. Among other things, the Coalition successfully advocated for the inclusion of Internet access and internal connections as eligible services. It also urged the FCC to allow for flexibility in the eligible services and functions in order to meet the diverse needs of schools and libraries and to adopt the principle of competitive neutrality to promote robust competition among service providers. Finally, EdLiNC also promoted a graduated discount rate to ensure that those low income and rural communities most in need were able to take advantage of E-Rate discounts.

Today, EdLiNC continues to advocate for the program and for policies and procedures that limit the administrative and procedural burdens on schools and libraries. To this end, EdLiNC seeks to simplify the program and allow for local control and flexibility. Most importantly, EdLiNC has been a consistent voice for maintaining the Congressional focus on equity in the E-Rate program and for ensuring the program's integrity.¹

¹ A complete set of EdLiNC's filings at the FCC is available on the EdLiNC website.

[members of EdLiNC]

American Association of School Administrators

American Federation of Teachers

American Library Association

Association of Educational Service Agencies

Consortium for School Networking

Council of Chief State School Officers

International Society for Technology in Education

National Association of Elementary School Principals

National Association of Independent Schools

National Association of Secondary School Principals

National Association of State Boards of Education

National Catholic Educational Association

National Education Association

National Education Knowledge Industry Association

National PTA

National Rural Education Association

National School Boards Association

Organizations Concerned about Rural Education

Rural School and Community Trust

United States Conference of Catholic Bishops

[acknowledgements]

This report was authored by Leslie Harris & Associates in Washington, DC (www.lharris.com) and made possible through the generous support of Verizon Communications.

EdLiNC wishes to express its gratitude to the many teachers, administrators, librarians, local community leaders, and members of EdLiNC who graciously reviewed the materials in this report.





