Federal Programs to Increase Children’s Access to Educational Technology

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In society today, technology, education, and economic growth go hand in hand. Technological literacy is important not only to children’s own future economic well-being, but also to the economic well-being of our nation. Technology can help expand opportunities for learners to improve their skills, maximize their potential, and ready them for the twenty-first century. Over the past seven years, the Clinton administration has focused on four goals for educational technology: (1) training teachers to use technology effectively in instruction, (2) ensuring that all teachers and students have modern computers in their classrooms, (3) connecting every classroom to the Internet, and (4) integrating high-quality software and online learning resources into every school’s curriculum.¹

New federal programs inspired by these goals—along with changes in telecommunications policy, investments at the state and local level, and support of the high-tech industry—have resulted in great progress. For example, between 1993 and 1999, the percentage of classrooms with Internet access grew from 3% to 65%, and by the end of 2000, 100% of schools will likely be connected to the Internet.² Virtually all full-time regular public school teachers report they now have access to computers or the Internet in their schools, and about two-thirds say they are using the new technology for classroom instruction.³ And yet, despite this progress, more needs to be done. Among classrooms in the poorest schools, for example, only 39% were connected to the Internet. And two-thirds of the same teachers who have access to technology also say they are not well prepared for the task. At the federal level, several programs have been introduced to help meet this challenge (see Table 1). A key program helping to reduce the digital divide is the Education-rate (or “E-rate”) program. Under a provision in the 1996 Telecommunications Act, the Federal Communications Commission is empowered to use the universal service mechanism to provide E-rate subsidies for telecommunications services and Internet connections for schools and libraries. Subsidies provided through this program have benefitted more than 80,000 schools and thousands of libraries, with the greatest assistance going to those with the greatest need. In addition, the U.S. Department of Education’s Community Technology Center program hopes to improve access to technology for both children and their families in underserved communities by supporting the development of 1,000 centers across the country. As of 2000, funding has been provided to develop 450 such community technology centers, and more are planned for the future.

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| School and Library Access | **Education-rate ("E-rate")** program: The E-rate program, administered by the Federal Communications Commission, provides $2.25 billion annually for schools and public libraries to receive discounts on telecommunications services. Discounts range from 20% to 90% depending on poverty and geographic location (the average discount is 60%). The goal of the E-rate program is to ensure that no school (public, private, or parochial) or library is left behind in the information age. See Web site at http://www.sl.universalservice.org. |
| Community Access | **Community Technology Centers:** U.S. Department of Education grants for community technology centers help bring the power of computers and information age resources to students and adults in greatest need, such as those living in low-income communities with no access to home computers, by providing access in public housing facilities, community centers, libraries, and other educational facilities. In 1999, the program’s first year, a budget of $10 million funded 40 grants, creating 100 centers in urban and rural areas, targeted to economically distressed communities such as empowerment zones and enterprise communities. In 2000, $32.5 million will fund the creation of an additional 350 centers. See Web site at http://www.ed.gov/offices/OVAE/CTC/.
| Distance Learning | **Star Schools Program:** For more than 10 years, the U.S. Department of Education’s Star Schools program has supported distance-learning projects. These projects have helped to improve instruction in mathematics, science, and foreign languages, literacy skills and vocational education in underserved areas. The program promotes partnerships that develop, construct, acquire, maintain, and operate telecommunications, audiovisual equipment, and facilities, and partnerships that develop instructional programming. More than one million students and their teachers in 50 states and territories have participated in this program. In 2000, some $50 million was made available for these distance-learning projects. See Web site at http://www.ed.gov/ prog_info/StarSchools/index.html. |
| Professional Development | **Preparing Tomorrow’s Teachers to Use Technology:** Over the next 10 years, two million new teachers will need to be hired and trained to use technology. To better affect the skills and effectiveness of this next cohort of teachers for schools in the twenty-first century, this U.S. Department of Education program awards grants to colleges, school districts, and state education agencies involving more than 1,350 partnerships with high-tech companies and nonprofit organizations. Beginning in 1999, the program’s budget of $75 million funded 225 grants to support planning, implementation, and the development of statewide initiatives and other national efforts to integrate technology into teacher preparation programs. Another 200 grants will be awarded in 2000. See Web site at http://www.ed.gov/teachtech/.
| Capacity Building | **Technology Literacy Challenge Fund:** Under this U.S. Department of Education program, every state is provided funding through formula grants on the basis of population and poverty level for modern computers, high-quality educational software and online applications, trained teachers, and connectivity to the Internet. In addition, competitive grants are provided to consortia of schools, technology developers, and universities for developing new applications of technology and learning and for improved teacher training and teacher preparation. Since 1996, states have received $1.475 billion from this fund to help schools integrate technology to reach challenging academic standards. See Web site at http://www.ed.gov/Technology/TLCF/. |
| Innovation | **Technology Innovation Challenge Grant Program:** In 1995, the U.S. Department of Education initiated a “Technology Learning Challenge” to encourage communities to form partnerships of local school systems, students, colleges, universities, and private businesses to develop creative new ways to use technology for learning. Since then, 96 multidistrict and multistate projects have been funded in 46 states (involving 744 partners, 381 businesses, 220 colleges and universities, and 520 community-based organizations and government agencies) to demonstrate the innovative uses of computers, networking, and multimedia across the curriculum. These grants have generated $1.3 billion in matching commitments. In 2000, some $146 million will fund continuation grants, earmarks, and some new projects. See Web site at http://www.ed.gov/Technology/challenge/.
Appendix A: Federal Programs to Increase Children’s Access to Educational Technology

### Key Federal Programs Supporting Children’s Access to Educational Technology

| Research | Interagency Education Research Initiative: Through this initiative, large-scale, interdisciplinary studies are being supported by an unprecedented partnership between the Department of Education, the National Science Foundation, and the National Institute of Child Health and Human Development. They made their first rounds of grants in 1999, totaling nearly $30 million, and another $38 million will be awarded in 2000. This investment will deepen understanding of how different types of students learn, how new knowledge about the human brain can help improve learning, and how best to incorporate new technology. Strategies for improving instruction will be tested at a scale that can provide statistically significant results, and ensure that research results are communicated effectively to local school districts. The goal of this research effort is to improve prekindergarten through 12th-grade student learning and achievement in reading, mathematics, and science. The work is intended to benefit students who, early on, are deemed to be at risk of school failure and who fail to acquire the higher-level skills needed to compete in the technology-driven workplaces of the twenty-first century. Particular attention will be given to the use of information and computer technologies to promote improvements in teaching and learning. See Web site at [http://www.whitehouse.gov/WH/EOP/OSTP/Science/html/ieri.html](http://www.whitehouse.gov/WH/EOP/OSTP/Science/html/ieri.html). |
| Technical Assistance | Regional Technology in Education Consortia (R*TECs): This program, created in 1995 and funded annually with $10 million through the U.S. Department of Education, supports regional consortia that help states, districts, and schools integrate technology with teaching and learning. The R*TECs provide professional development, technical assistance, and dissemination of information on the types and effective uses of hardware, software, and electronic networks to help students meet challenging academic standards. See Web site at [http://www.ritec.org/](http://www.ritec.org/). |

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http://www.futureofchildren.org
To support better use of technology in the classroom, several programs place a central focus on teachers. The new Preparing Tomorrow’s Teachers to Use Technology program that supports partnerships among colleges, school districts, state educational agencies, and high-tech companies will reach almost one-third of prospective teachers, enhancing their technological literacy and enabling them to integrate technology in their teaching. The Department of Education has also urged states to devote at least 30% of their grants from the Technology Literacy Challenge Fund to train teachers on how to use technology effectively in instruction, especially teachers in high-poverty, low-performing schools.

In fiscal year 2000, funding for educational technology through the E-rate and U.S. Department of Education technology programs reached an all-time high of $3 billion. Despite this significant amount of funding for technology, federal investment in education is small compared to the overall investment at the state and local levels. Thus, each of the Department’s technology programs attempts to encourage a cooperative approach by supporting the involvement and investment of state and local school districts and the private sector with the knowledge and resources held at the national level.

For example, to promote the sharing of information, President Clinton had the U.S. Department of Education create a Web site that serves as a gateway for access to learning resources from dozens of federal agencies. At the Federal Resources for Educational Excellence (FREE) Web site (http://wwwed.gov/free), teachers now can access materials with direct relevance to their classrooms, students, and subjects of study—including images, data, video links, lesson plans, original source materials, and a powerful search engine—from a single Web location. The heavy traffic to this site speaks to its usefulness as a resource for K–12 classes. Along with http://www.ed.gov/technology, FREE is one of the most popular pages on the department’s Web site.

Cooperation between the private and public sectors also is critical to developing high-quality educational technology resources. The Technology Innovation Challenge Grants have enabled school districts to partner with research laboratories, universities, software and hardware developers, and telecommunications entities to develop applications of technology across various subjects in the curriculum. In the Lemon Link Project, for example, the Lemon Grove School District has embarked on a communitywide effort to raise student achievement and students’ and parents’ technology skills by using advanced telecommunications devices that are networked between school and home. In addition, a key goal of the Interagency Research Initiative is to advance the next generation of interactive learning tools through research and development activities that bring together the academic disciplines and front-line technology expertise. Reading instruction is one of the most promising areas for new development, not only because of the substantial knowledge base about the acquisition of reading skills, but also because new technological capabilities, such as speech recognition, are under development.4

Federal programs that work strategically with state- and local-level partners in both the public and private sectors offer the best chance of success. Through such cooperative efforts, all our nation’s children can be provided access to educational technology and the computer skills they need to become productive and engaged citizens in the twenty-first century.

4. Research studies, such as the recent National Research Council report *Preventing Reading Difficulties in Young Children*, can have broad influence, especially if the states and districts bring these findings to the attention of developers and provide clear signals about market demand. See National Research Council. *Preventing reading difficulties in young children*. Washington, DC: NRC, 1998.