

Colorado Commission on Higher Education

**2000 Report
Technology Learning Grant and Revolving Loan
Program**

Prepared by the Colorado Commission on Higher Education
Submitted to
Colorado General Assembly
January 31, 2000

1. Introduction

Thirty of 43 projects funded under the Technology Learning Grant and Revolving Loan Program (TLC) have been completed and final reports submitted. Descriptions of the goals and outcomes of these projects are presented in [Table 1](#). [Table 2](#) lists projects still in process.

To work with technology is to master a hierarchy of concerns. There are four stages involved in deploying technology: obtaining the technology, applying the technology, integrating the impact into existing systems to produce desired outcomes, and influencing policy decisions necessary to provide and sustain technology.

The goals established for TLC program follow this model. Through its Request For Proposals, the TLC program established five objectives: access, equity, connections, content and training. As is apparent, these objectives move from the fundamental of obtaining technology to the more sophisticated questions of its use.

Results from the TLC program to date also follow this model. Most of the projects focused on deploying technology. At the inception of the program, most applicants did not have basic access to technology. For many, access was a primary objective – and the primary achievement. Some were able to advance to higher layers in the hierarchy, and many explored the application and integration of the access and connectivity they had achieved. As for policy, it is up to the program itself and to its sponsor, the General Assembly, to address the issues involved in sustaining access and application of technology in our schools, colleges, libraries, and communities.

2. Findings

The Technology Learning Grant and Revolving Loan Fund has moved forward the agenda for using technology in our schools, colleges and libraries for access to information, instruction, and learning. The grant program has been a catalyst for isolated communities to come together to develop strategies for moving forward into the Information Age. A large number of the grants were successful, particularly in achieving access and connectivity goals, but also in exploring the integration of technology, in

providing training, and in making both financial and organizational long-term commitments to technology and its role in achieving the goals of their institution.

The preponderance of project activity, funding, and outcomes focused on access and connectivity. In addition, substantial achievement was made in applying the technology, specifically in its integration into the curriculum, in the development of distance learning courses, and in the establishment of technology committees. The broad objectives of the 30 projects completed to date may be summarized as follows:

FOCUS	PROJECTS
LAN or WAN and Internet Access	18
Library	5
Curriculum	3
Content	1
Distance Learning	1

2.1 Access and Connectivity

The program had its most dramatic impact in access to the Internet in classrooms, libraries, community centers, and homes throughout Colorado. Sample statements drawn from Table 1 include:

- "Access was more than double, from about 40 students per Internet computer to 20."
- "Provided Internet access to all classrooms in all schools."
- "Access to the Internet is now universally available."
- "Connected at least one computer in each high school classroom to the Internet."
- "Increased access to families who do not have access to computers either at home or at work."
- "All teachers in the district now have Internet Access. Prior to this grant, the Internet was not available to students at all."
- "Prior to the grant, there was essentially no access ... "
- "Each student and community member have access to the Internet and e-mail."

Colorado institutions made dramatic strides toward connectivity during the past three years due to this program. This is a very fortunate outcome as it was precisely this timeframe when the Internet became a universal component of modern life.

2.2 Sustainability

Almost universally, the final reports indicated an institutional commitment to sustain the advances made. The commitment is both financial, through continuing budget allocations, and organizational, through technology committees. Sample statements include:

- "This district has an ongoing commitment to maintaining the curriculum."
- "The district has formed a Technology Committee to provide ongoing guidance."
- "The district will allocate funds for continued operation."

2.3 Training

Training was one of the desired outcomes established by the program. The final reports document that training was in fact a substantial component of grant activity. However, the testimonials also document the need for ongoing training, and in part, the difficulty of providing adequate training:

- "Project training goal was over-ambitious given available resources, but the college is committed to supporting needed ongoing training to its faculty and staff."
- "Provided training to over 500 patrons who never used the Internet before."
- "Keeping up with technology is a challenge, including teacher training."

2.4 Technology Integration

The whole purpose of technology is to be applied toward useful ends. To what extent did the TLC grants reach this goal? This higher level objective of the program, which reaches beyond access and connectivity, has been harder to address. This is understandable. To use technology, first it must be installed (not to mention understood). As the program began, most applicants did not have the technology in place, and understandably, they put much of their energy and efforts into access and connectivity. These efforts were largely successful as documented above. However, the full use of these new tools in the curriculum and by the communities involved, while addressed in good measure, still requires further development. Examples from Table 1 include:

- "Most of the partner schools were still dealing with access issues at the end of the grant."
- "The extent to which the technology had been used by students and other community members was not yet fully realized; the potential for improved services and greater service integration is significant."
- "Remaining challenges are to better integrate the technology into the curriculum."
- "The district's goal of at least 50 percent of their students using technology to meet one or more content standards was premature and not attained during the duration of this grant."

Given these examples of the challenge of technology integration, several projects did report success in this area:

- "Much was learned about how, through technology, the teacher-centered classroom can be reoriented to a student-centered one."
- "Students focused more of their time on understanding projects rather than manual manipulation of data."

- "Five percent of the student body are utilizing the technologies in place."
- "Specific instructional outcomes have been established, such as: students publishing their own work on the Internet, students viewing others' work, students will complete at least one research project in which they utilize the Internet, and students using the Internet to communicate with someone outside the classroom."

Several projects focused directly on use, by developing and delivering distance learning:

- "Thirty-six students enrolled in graduate level Nurse Practitioner and Certified Nurse-Midwifery programs on the Western Slope."
- "A completely new curriculum for industrial technology was developed."
- "Developed four distance learning courses in Geographic Information Systems."
- "The college now uses the network to deliver over 40 online courses."

2.5 Regional Cooperation and Awareness

Several of the larger projects had tremendous geographical scope. These led to the formation of alliances that will have a lasting legacy in the history of technological advance in Colorado. Already it is apparent that the planning occurring with regard to House Bill 99-1102, the "Beanpole Bill," is based on the regional alliances developed through this program.

2.6 Material Impact on Telecommunications Infrastructure

It is clear that telecommunications infrastructure is critical to the achievement of the objectives set forth in the proposals generated by this program. It is equally clear that, with one significant exception, the program, focused mainly on educational institutions, lacked the scope and scale to materially impact private sector investment in telecommunications infrastructure. This is not a fault of the program, for improving the infrastructure was not one of its goals. However, given the successful results of program, the importance of infrastructure to the goals of the program is clear. One program demonstrated the potential to stimulate infrastructure improvements, Connect Colorado.

Connect Colorado

The Connect Colorado project is in the Arkansas Valley region of southeastern Colorado. There, after discovering that the project's goals could not be met through the existing infrastructure – primarily due to cost – the program catalyzed a public-private partnership that resulted in the deployment of 600 miles of state-of-the-art fiber optic telecommunications infrastructure to over 80 educational, library, and medical facilities in 23 separate communities. Moreover, this partnership created a residual capacity available to provide similar services to homes and businesses in these communities. In a sense, Connect Colorado has served as a test-bed or pilot case for the strategy embodied in the Beanpole Bill. That strategy is to use the combined purchasing power of the public sector to aggregate sufficient demand to attract to a region the necessary investment

needed to make material improvements in the telecommunications infrastructure. Importantly, the investment made in infrastructure through Connect Colorado is available for further development under the Beanpole Fund.

3. Background on The Technology Learning Grant and Revolving Loan Program

This is the third annual report on the Technology Learning Grant and Revolving Loan Program as required by Senate Bill 96-197. Prior reports, filed in January of 1998 and 1999, detailed the establishment of the program, proposals received, awards made, and impacts to date. In capsule form, this is what was reported (please refer to the prior reports for full details):

- 178 proposals were received, 57 from the northeastern region of the state; 19 from the southeast; 83 from central Colorado; 2 from the southwest; and 17 from the northwest. Applicants requested approximately \$100 million in grants and \$4 million in loans. The program's staff interpreted this strong response as an indication of the outstanding needs in Colorado for educational technology support and assistance.
- Expenditures sought were \$60 million hardware; \$14 million telecommunications; \$10 million software or databases; \$6 million installation; \$4 million professional development; \$5 million other. Proposals ranged from \$12 million to \$6,000. Requests were received from 43 school districts; 40 schools; five BOCES; 18 libraries; 55 higher education institutions.
- Funded projects submitted reports in 1997 and 1998 which, quoting from the 1999 Annual Report on the program, "indicated that award recipients implemented their projects in accordance with the proposal they submitted and their original or revised budget projections." As reported in 1998, the projects resulted in:
 - 80,000 new technology users, growing to 110,000 by program end
 - 800 new local area networks
 - 146 new wide area network nodes
 - 12,000 new computers

4. Background on Related State and Federal Programs

An appropriate assessment of the impact of the Technology Learning Grant and Revolving Loan Fund cannot be made in isolation from other relevant programs of state and federal government with complementary objectives.

4.1 The Multi-Use Network

The State, through the Division of Telecommunications of the Department of General Services is currently implementing a strategy to stimulate telecommunications investment in under-served regions of the state. The approach is to aggregate the purchasing power of State government into one state-wide procurement with the aim of guaranteeing enough business to the winning vendor to justify upgrades in infrastructure required in

the procurement. At present, the Request For Proposals has been issued, several competitive bids are expected, and an award is anticipated in April. The effect of this strategy will be to establish in each county seat "point of presence" capable of carrying high-speed ("broadband") digital traffic suitable for voice, data, and video.

4.2 The Beanpole Fund

In a way analogous to the Multi-Use Network, the Beanpole Fund, established under House Bill 99-1102 (the "Beanpole Bill") seeks to implement the same "demand aggregation" at the local level, aggregating the demand of specific local communities. Communities will act as procurement agents for the traffic of the public offices in the community. To help communities implement this strategy, the State has established a fund to which communities may apply for matching dollars to help stimulate a scale of demand necessary to attract investment.

If the Beanpole Fund and its companion program, the Multi-Use Network, are successful, they will in the long-run, reduce the cost to local communities for access to information networks such as the Internet. This will enable them, from the savings realized in the cost of bandwidth, to put more of their resources into content development and training. The Beanpole Fund serves as a short-term catalyst to stimulate the capitalization of information networks. Working separately, rural institutions do not have sufficient resources to fund this capitalization, but working together, their aggregated demand stands a better chance of attracting the needed investment from the private sector. After this investment is made, the institutions, separately, will have the operational funds to maintain ongoing connectivity. An important benefit of this strategy is that the newly established infrastructure will also be available to homes and businesses, fostering community and economic development throughout the state.

4.3 The Technology Quality Indicator of the Colorado Commission on Higher Education

The Colorado Commission on Higher Education has established a goal of integrating the use of technology into 50 percent of all courses. One reason for this policy is that technology has the potential to increase the effectiveness and reduce the cost of instruction. Another reason is that, in an increasingly technological society, it is important to integrate technology into teaching and learning to keep pace with how technology is becoming a part of how we work and play. To reach this objective, the tenants of the Technology Learning Grant and Revolving Loan Fund must be met: colleges, communities, and homes (from where students may access distance learning programs) must have access and connectivity, teachers and students alike need training in the use of technology, and instructional content is needed to support learning outcomes. The integration of technology into courses will occur in the traditional classroom, but also in the new online classrooms served by distance learning programs.

Distance learning enables students to learn when and where it is convenient for them, increasing their access to higher education. There were 27,000 distance learning class

enrollments across all public higher educational institutions in 1999. Distance learning will be a principal tool of the Colorado Institute of Technology to provide education and training services to help meet the work force needs of the growing information technology industry in Colorado. Because of the importance of distance learning to the future of higher education, the Colorado Commission on Higher Education (as documented in its 2000 HB 99-1289 report, in the chapter on distance education) supports the efforts of the state to ensure the availability of telecommunications infrastructure in all regions of the state, making it possible for rural residents to access higher education.

4.4 Federal Technology Literacy Challenge

The U.S. Department of Education funds the Technology Literacy Challenge program. Annual appropriations from this fund have been received by Colorado based on our Title 1 student population. The present year has provided \$3.7 million. The fund is expected to continue for several more years. Managed through the Colorado Department of Education, these funds have been used to increase and sustain access to modern computers and the Internet, to provide effective online resources and software, and to provide training resources. To reach these broad goals, the department has allocated eight \$100,000 grants to regional groups for professional development, one \$1.5 million multi-year grant, \$700,000 in infrastructure grants for schools and school districts that do not have at least the minimal dedicated connectivity (56 kbps) to the Internet, and three \$150,000 grants content and online courses utilizing the Internet or interactive video.

4.5 Federal E-Rate Program

The E-Rate program is a special program created through the 1996 Federal Telecommunications Act. It is designed to establish a parity in access to modern telecommunications networks among all schools in the nation, whether metropolitan, suburban, or rural. The program provides a subsidy for schools in high-cost areas so that their net cost of connecting is the what is commonly available in metropolitan areas. In this way, rural schools are not disadvantaged by location. The funds may be used for telecommunications cost, professional development, access to Internet service providers, and internal wiring for the poorest schools. The E-rate has and is helping Colorado schools tremendously. Overall, Colorado schools and libraries have received \$10.7 million dollars in relief from the E-rate.

4.6 Status of Colorado Public Schools

At present, about 50 percent of Colorado school districts have dedicated connectivity. As for applications, a few K-12 groups have been formed to develop content, but this new area is having to compete for funds with other district priorities, including capital construction. At present, the K-12 system lacks a universal policy directive to embrace technology, such as the Quality Indicator for technology under consideration for higher education. K-12 also faces challenges not faced by higher education in that its students do not pay tuition and cannot be charged differential tuition for access to distance learning

K-12 courses. In spite of this, a number of districts have distinguished themselves as leaders in the use of technology, including Academy School District 20 in El Paso County, the Poudre School District in Fort Collins, and school districts in Boulder, Delta, Eagle, and Rifle.

5. Recommendations

Having described the outcomes of the Technology Learning Grant and Revolving Loan Program and the context established by other, complementary programs, two key recommendations are possible and appropriate at this point as the program's activity nears an end:

5.1 Follow through with the Multi-Use Network and the Beanpole Fund designed to assure adequate telecommunications infrastructure in under-served parts of the state.

As described above, the demand of a single sector, e.g., education, was, with certain exceptions, not sufficient to attract investment and materially improve the basic telecommunications infrastructure. But the state has in place two strategies that greatly broaden the scope of demand for services that together stand a good chance of causing the material improvements needed to provide broadband network connectivity to our schools, colleges, libraries, communities, homes, and businesses. This strategy is at risk because the local community level (the Beanpole Fund) is unfunded beyond the present fiscal year budget (FY2000). In view of the good that has been demonstrated through the Technology Learning Grant and Revolving Loan Program, and the parallel initiatives in secondary and higher education critical to the future of Colorado, the General Assembly should strongly consider continuation funding, for the Beanpole Fund be incorporated in the coming fiscal year budget.

5.2 Reauthorize the Technology Learning Grant and Revolving Loan Fund for a second phase of funding.

The Technology Learning Grant and Revolving Loan Fund was able to only accomplish part of its ambitious slate of objectives. This does not mean it failed. On the contrary, as is clearly documented in Table 1, it succeeded in laying the foundation for further development of technology applications. The failure would be to stop at this juncture and not follow through with additional support to the recipients and those like them who, now with a modicum of access and connectivity in hand, need additional support in the truly more challenging task of integrating that technology into their missions. Access to technology is no longer an option, but a requirement for the full participation in our economy, society and future. The state must examine its obligation to support technology advancement in its institutions, through its own resources and in concert with federal and local funds. The cross-disciplinary funding strategy (higher education, K-12, and libraries) in the first round of the TLC has stimulated many useful partnerships among these institutions and with the communities they serve and should be retained as the model in future funding cycles. We therefore recommend the General Assembly consider

reauthorization of the grant and revolving loan program, through the Colorado Commission on Higher Education. The funds would be allocated for a second round of projects. The initial grant and loan program funding was \$20 million.

The benefits anticipated from a reauthorization of this program – especially in the achievement of objectives that lie at higher levels of the technology hierarchy than access and connectivity - include:

- For libraries, increased development on-line catalogs, increased training for citizens on the use of the Internet, increased use of digital media as a source of bibliographic material.
- For schools, integrating technology into the curriculum, that is, using technology as a learning tool, and using this tool to shift from teacher-centered pedagogy to learner-centered. This also means more focus on learning about technology per se, as information technology and the knowledge worker increasingly become the primary economic engines of our society.
- For colleges and universities, dramatic increases in the provision of online, distance learning instruction, and in the incorporation of technology into the traditional classroom. But the effective use of technology will require accommodations in the way we teach and learn. For example, it means sharing courseware development across institutions, especially for popular, large enrollment courses.

TABLE 1
Year 2000 Report on the Technology Learning Grant and Revolving Loan Fund
Summary of Completed Projects

Recipient	Project Title	Award Amount	Project Type	Project Description
CCCOES	Connect Colorado in Arkansas Valley	\$3,323,713	WAN/Internet Access	Leveraged state resources over 2-to-1 to install a 600 mile, high-capacity fiber-optic system spanning 23 communities in the Arkansas Valley area of southeast Colorado. Serves schools, colleges, libraries, and medical facilities in the valley through 12 fiber-optic strands and leaves 24 additional strands available for commercial, private sector use. While the project goals included integration of technology into the curriculum and instructional delivery, most of the partner schools were still dealing with access issues at the end of the grant period. Purchased 230 new computers. Affects about 3,900 students at present.
Community College of Denver	Denver Metro Technology Learning Partnership	\$1,433,313	PCs, WAN, Broad Urban Partnership	Connects and provides services to clients of six interrelated institutions: the Community College of Denver, the Adams County Employment Center, Adams Count School District 14, the Denver Housing Authority, the Denver Public Library, and the Mayor's Office of Employment and Training. In all, 280 PCs were purchased and installed. Partnership also installed a two-way interactive video network among the sites. By the end of the grant period most partners were operating the new technology to provide education and employment services, although the extent to which the technology had been used by students and other community members was not yet fully realized; the potential for improved services and greater service integration is significant.
Fort Lewis College	Southwest Colorado Interactive Learning Network (SCILnet)	\$1,000,000	WAN/Internet Access	Provides Internet access to more than 14,500 K-12 students and schools, libraries, and colleges of 12 southwest Colorado communities. Each is now connected to the Internet and equipped with hardware. Access was more than doubled, from about 40 students per Internet computer to 20. Access was coupled with an aggressive training program; measures of perceived skill level of teachers increased significantly. Remaining challenges are to better integrate technology into the curriculum, to implement high school post-graduate programs through distance learning, and to implement a K-12 master teacher training program.
Univ. of Northern Colorado	Colorado Union Catalog	\$ 640,000	Library	Merged and made available online bibliographic records of the sixteen academic, public, and special libraries in Colorado permitting access to over 10 million books, journals, sound recordings, films, videotapes, and other materials held in these libraries.

				With a single search, users can identify and borrow materials from collections and have them delivered to a local library.
Adams Twelve Five Star Schools	Adams County Partnership	\$ 494,457	WAN/Internet Access Distance Learning	Networked and provided Internet access to all classrooms in all schools. Acquired 279 new computers and added 6,747 new users. Districts have budgeted to sustain their current systems and provide online access to their combined 29,595 students. All schools have developed plans that address technology equipment, connections, training, and the integration of technology into the curriculum. All software acquired directly supports the curriculum. The districts' goal of at least 50 percent of their students using technology to meet one or more content standards was premature and not attained during the duration of this grant.
Arapahoe Community College	Arapahoe Comm. College Technology Initiative	\$ 426,232	WAN/Internet Access	Internet technology infrastructure was installed at the college to support over 800 users. College now uses network to deliver over 40 on-line courses. A parallel effort to explore two-way video delivery of college classes to a near-by high school was not successful; most students preferred attending the college classes in person. However, the college did successfully join the state-wide community college videoconferencing network. Project training goal was over-ambitious given available resources, but the college is committed to supporting needed ongoing training to its faculty and staff.
Red Rocks Community College	LEARN	\$420,465	Video Network/ Internet Access/ Computers/ Distance Learning	Linked community college with high schools in service area. Provided variety of services, from library access, to child care, to interactive video distance learning. All students have e-mail accounts for interaction with instructors. Collaborated with area universities in providing distance learning classes, including Physician's Assistant class, introductory class on DNA in teacher enrichment program, Introduction to Computer Applications, and Teaching in the Digital Age. Established complete computer labs at each participating school. Employed videoconferencing network to support meetings for faculty and staff. Provided training.
University of Northern Colorado	Excellence in Learning Through Technology	\$ 342,000	Curriculum	Leveraged National Science Foundation curriculum development grant in chemistry. The purpose of the NSF grant was to explore a learner-centered, project-oriented, inquiry-based pedagogy through the incorporation of computers into the chemistry curriculum. State funds were used to provide the necessary equipment to set up model high-technology science classrooms in each of ten Colorado schools. Then, in these classrooms the NSF ChemQuest curriculum was piloted. All of the ten schools now have Internet access, some as a result of this grant. Much was learned about how, through technology, the teacher-centered classroom can be reoriented to a

				student-centered one. The adjustment to project-based, independent learning was not easy for some students, who preferred to be told what to do. The teacher's role changed from that of lecturer/director to one of guide or facilitator. ChemQuest students worked at computers 37 percent of the time accessing a rich set of electronic materials. 150 new computers purchased. Affects about 8,000 users.
University of Colorado Health Science Center	Excellence in Health Education through Technology	\$ 341,000	Video Network Distance Learning	Increased access to graduate and professional level health education on Western Slope. Expanded the University of Colorado's Area Health Education Center capacity by establishing telehealth learning centers in Craig, Montrose, and Cortez. Connectivity between the Denver-based Health Sciences Campus and the Western slope sites was facilitated through the CIVICS (Cooperative Interactive Video In Colorado State Government) System, a video network connecting some 47 educational institutions, state offices, medical facilities, and corrections facilities. During the first five months of 1999, utilization of the network averaged 120 hours per month at the Health Sciences Campus site, 6 hours per month at the Craig site, 6 hours per month at the Montrose site, and 55 hours per month at the Cortez site. Usage trends at all three sites are growing. Thirty-six students enrolled in graduate level Nurse Practitioner and Certified Nurse-Midwifery programs on the Western Slope. The Cortez site now serves the Four-Corners region. Two faculty "reverse" commute from (one from Montrose, one from Craig) to teach in Denver at Red Rocks Community College.
Thompson R2-J School District	Industrial Technology	\$ 329,886	Curriculum	Five schools made "quantum leap" from classic industrial science to new industrial technology program. A completely new curriculum for industrial technology was developed. Then the necessary equipment needed to support the equipment was procured. Every year, an estimated 2,500 students will be involved in the new curriculum. This district has an on-going commitment to maintaining the curriculum and has installed a technology lab in a sixth school at its own expense.
Colorado State University	Virtual Library Connections	\$ 281,475	Library	Infrastructure and equipment to support electronic transmission of journal articles over the Internet among 30 libraries in rural and mountain areas of Colorado.
Pikes Peak Libraries	Community Access to the Web	\$ 207,000	WAN/Internet Access	Upgrade Internet circuits, cable public library buildings, and install public Web browsing stations at 11 public library locations. Provided Web access to library catalog. Provided training to over 500 patrons who had never used the Internet before. Trained over 100 staff.
Poudre School District	Colorado Modelnet Project	\$ 202,125	WAN/Internet Access	Provides 5,000 students and teachers with high speed, high capacity access to online resources. A wide area network was installed between numerous schools in the district, including three mountain schools, three high

				schools, and three junior high schools. For parts of the network, wireless technology was used.
Wiggins RE-50J	Creation of WAN	\$ 190,000	WAN/Internet Access	Networked all district's computers. School building complex was connected together using fiber optics. Access to the Internet is now universally available to the district's 530 students and 82 employees. The district has allocated ongoing budget for technology. Keeping up with technology is a challenge, including teacher training, software compatibility, acceptable use policies, supervision, and maintenance.
Colorado State University Mechanical Engineering Department	Video Over Internet Protocol	\$ 183,466	Curriculum	Equipment and hardware to support chemistry and physics classes.
Platte Canyon School District #1	Excellence in Learning Through Technology	\$ 180,000	WAN/Internet Access	Connected at least one computer in each high school classroom to the Internet. Computer labs in the middle and elementary schools were enhanced. Seven video units for Platte Canyon High school were purchased. Library automation systems were installed at the middle school and public library. Difficulty was encountered in access to adequate telecommunications infrastructure in Fairplay, which precluded linking the school, county offices, and library.
Fort Collins Public Library	Electronic Literacy Connection	\$ 175,000	Library	Upgraded overall library technology, increasing access to families who do not have access to computers either at home or at work. "This small computer lab has been a godsend for them." The grant has been an important catalyst in expanding access to technology in the Fort Collins Community. Affects 7,378 students.
Lincoln Alternative High School	Lincoln High School Network Building Project	\$ 142,461	LAN/Internet Access	Twenty-eight computers were acquired for student and staff use. The school now has at least one Internet station in each classroom. Software and courseware purchased to support student instruction. Training was provided to staff, student, and parents. The school is continuing to address the use of technology in the educational program.
Brush Public School, Morgan County RE2J	Excellence in Learning Through Technology	\$ 133,667	WAN/Internet Access	Installed wide area network connecting the high school, middle school, two elementary schools, and the administration to the Internet. As a result, all teachers in the district have Internet access from their classroom computer; and 62 percent of teachers have received formal training in the use of this new technology. Prior to this grant, the Internet was not available to students at all. Further, the district offers use of their equipment to the public and other institutions. The district has formed a Technology Committee to provide ongoing guidance.
University of Northern Colorado	UNC Technology Initiative	\$113,048	Computer Classroom	Constructed computer classroom and training area to provide computer and writing instruction for all students enrolled in General Education writing courses,

				approximately 3,000 students.
Colorado State University	Chemtrek II, CSMATE	\$ 93,250	WAN/Internet Access	Nine high schools have expanded their usage of the Internet. Approximately 1,100 new users; 500 new computers.
Nederland M/S HS	Excellence in Learning Through Technology	\$ 86,371	Curriculum	Equipment was purchased to support the science curriculum: nine student stations, one teacher station, and a server, all networked together, located in two science labs. With the new computers, students focus more of their time on understanding projects rather than manual manipulation of data. This resulted in a marked increase in student interest and motivation, with a side-benefit that students became more proficient with technology. The grant has thus contributed toward the school's goal of increasing the percentage of the graduating class taking more science than required.
University of Colorado at Denver	The Electronic Library of Colorado	\$ 85,860	Content	Developed Web site documenting images and information about approximately 100 buildings and sites in Colorado.
Weld County RE-4	The Windsor Connection	\$ 70,139	WAN/Internet Access	Installed wide area network between the schools, town, and libraries in Windsor, Colorado, bringing Internet access to these facilities. Prior to the grant, there was essentially no access; now all school, library, and town hall computers are connected serving 2,600 students and staff in the schools, 300 town and library employees. Public access to the town's 9,000 residents is now available through the library and school. The project has resulted in 600 additional computers being connected to the Internet.
Kit Carson R-1	Networking the District	\$ 69,935	WAN/Internet Access	In a small, rural district with only 18 full time faculty, the project linked the district's two buildings, fully connected to a central file server. Still pending is a WAN connection to community building. The district will allocate funds for the continued operation and maintenance of this network. Affects 100 students.
University of Colorado at Denver	Colorado GIS Online	\$ 65,000	Distance Learning	Developed four distance learning courses in Geographic Information Systems. Delivered these over the course of two semesters to a total of 20 students. Found that students take on-line courses because of convenience, and that students would prefer an entire degree program be offered via distance learning instead of a mix of courses. Students want courses delivered to their home or office and are willing to pay an extra fee charged by the university for access to this form of instruction. Were supported in the project by the CU Online Program, and the UCD Office of Teaching Effectiveness. Found in-house WebCT supported by the campus' information services division to be easier to use for course development and delivery than outside vendor services.
Security	Swirl	\$ 56,282	WAN/Internet	Developed Internet access at the public library, all

Public Library			Access	secondary schools, the community center in Security/Widefield community of Colorado. Provided training, created community homepage, enabled email requests for interlibrary loans.
Pueblo East High School	Funds for Computer Literacy	\$ 50,000	LAN/Internet Access	Wiring, hardware, software, Internet connectivity, education. Five percent of the study body at East High School are utilizing the technologies in place at the school.
Buffalo School District	Excellence in Learning Through Technology	\$ 34,731	WAN/Internet Access	Through the grant, the district acquired 15 modern computers with connection to the Internet; developed an online version of the library catalog; and provided training to district staff. Each student and community member have access to the Internet and e-mail. Internet access is available in classrooms, computer labs, and the library.
Martin Park/High Peaks Elementary	Network to Literacy	\$ 20,364	LAN/Internet/Integration of Technology	Every classroom is now wired to the Internet. The school has an active Technology Committee. It maintains a Technology Plan, updated annually. Specific instructional outcomes have been established, such as: students publishing their own work on the Internet, student's viewing others' work, students will complete at least one research project in which they utilize the Internet as a primary source of information, and students using the Internet to communicate with someone outside their classroom. For example, 4th grade students spent part of the year communicating with an arctic explorer via the Internet.
Haxtun School District	Computer Cluster	\$ 10,504	Library	Developed a compeer cluster consisting of Internet, ACLIN, CD-ROM, and automated library collection access. 5 new computers.
Lower Arkansas Valley	Excellence in Learning Through Technology	\$ 6,606	Library	Bookmobile project; added middle and high school; purchased 15 computers; Internet access.

TABLE 2
Year 2000 Report
Technology Learning Grant and Revolving Loan Fund
Summary of Projects Pending Completion or Final Project Report

Recipient	Project Title	Award Amount	Status
Northwest BOCES	Western Slope Consortium for Excellence in Learning	\$2,686,035	Report due 1/31/00
Jefferson County Public Schools R-1	Phoenix Project	\$1,251,000	To be completed 12/31/99
Mountain BOCES	Mountain Tech/Telecom	\$1,083,457	To be completed, report due 1/31/00
Weld County RE-8	Community Tech. System	\$ 932,925	To be completed 12/31/99
Mesa County Valley School	LAN Implementation	\$ 908,718	To be completed June 2000, report due 7/31/00
Western State College	Excellence in Learning Through Technology RMOTE	\$ 787,231	Final report pending
Bennett School District 29J	Smart Classrooms	\$ 418,000	Final report pending
Colorado Springs School District 11	Excellence in Learning Through Technology	\$ 225,000	Project extended to 6/30/00
Pueblo Centennial High School	Smart Classroom	\$ 198,998	Funds not yet fully expended.
Boulder Valley Schools	Excellence Through Technology	\$ 154,000	Unexpended balance
Ryan Elementary	Pen-pals Around the World	\$ 146,306	Final report pending