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# SCHOOL TECHNOLOGY

## Five School Districts' Experiences in Financing Technology Programs

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# School Technology: Five School Districts' Experiences in Financing Technology Programs

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Mr. Chairman and Members of the Education Task Force:

We are pleased to contribute this statement for the record, which discusses the experiences of five school districts in obtaining funding for their education technology programs.

Many of the nation's more than 16,000 school districts are investing in computer technology. Although questions still remain about how best to use such technology to improve students' education, many believe that it has an important role to play. As a result, schools are moving forward, as business and industry have, with plans for computer networks, Internet connections, and other technology. Doing so, however, can be costly. For example, a recent study has estimated that placing one networked computer laboratory in each school nationwide would cost \$11 billion up front and \$4 billion in annual operating costs.<sup>1</sup>

The Congress has taken steps to provide support for education technology in fiscal year 1998,<sup>2</sup> for example, by appropriating \$425 million to fund the Technology Literacy Challenge Fund and \$106 million for the Technology Innovation Challenge Grant program.

Relatively little is known, however, about how districts fund the technology they acquire. To obtain more information about how districts obtain this funding, our study focused on the following questions: (1) What sources of funding have school districts used to develop and fund their technology programs? (2) What barriers have districts faced in funding the technology goals they set, and how did they attempt to deal with these barriers? (3) Which components of districts' technology programs have been the most difficult to fund, and what have the consequences been? (4) How do districts plan to deal with the ongoing costs of the technology they have acquired?

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<sup>1</sup>Connecting K-12 Schools to the Information Superhighway, McKinsey & Company, Inc. (Palo Alto: 1995). This cost estimate assumes a single computer lab in each school equipped with 25 networked computers and connected to the national information infrastructure through standard telephone lines.

<sup>2</sup>We have reported on a number of issues relating to the Congress' interest in technology, including Rural Development: Steps Toward Realizing the Potential of Telecommunications Technologies (GAO/RCED-96-155, June 14, 1996); Telecommunications: Initiatives Taken by Three States to Promote Increased Access and Investment (GAO/RCED-96-68, Mar. 12, 1996); School Facilities: America's Schools Not Designed or Equipped for 21st Century (GAO/HEHS-95-95, Apr. 4, 1995); Information Superhighway: An Overview of Technology Challenges (GAO/AIMD-95-23, Jan. 23, 1995); and Information Superhighway: Issues Affecting Development (GAO/RCED-94-285, Sept. 30, 1994).

My testimony today is based on work we conducted in the past year to answer these questions at five school districts.<sup>3</sup> We selected these districts to provide insight into what districts may be experiencing as they try to fund their technology programs. We identified these districts by asking state education officials to suggest candidates that have had interesting experiences. In addition, we asked the officials to exclude districts that had benefited from extraordinary assistance such as those receiving the major portion of their funds from a company or individual.

The districts we studied are Davidson County Schools, a rural district in North Carolina; Gahanna-Jefferson Public Schools, a suburban district northeast of Columbus, Ohio; Manchester School District, the largest district in New Hampshire; Roswell Independent School District, which serves a city of 50,000 in southeast New Mexico; and Seattle Public Schools, a large and ethnically diverse district in the state of Washington.

In summary, the five districts we studied used a variety of ways to fund their technology programs. Funding sources included money from district operating budgets, special technology levies and bonds, state and federal funds, and private and other contributions. Districts typically had one primary source supplemented with a combination of several others. For example, two districts used special levies or bonds for over half of their technology funding as well as other sources such as their operating budgets and federal funds.

Officials we spoke with cited a number of barriers they faced in obtaining the needed funds for their technology programs. Four types of barriers seemed to be common to several districts. First, technology was just one of a number of competing needs and priorities such as upkeep of school buildings. Second, local community resistance to higher taxes limited districts' ability to raise more revenue. Third, officials said they did not have enough staff for fund-raising efforts and therefore had difficulty obtaining grants and funding from other sources such as business. In addition, some funding sources had restrictive conditions or requirements that made funding difficult to obtain. To overcome these barriers, officials reported that their districts used a variety of methods to educate and inform the school board and the community about the value of technology. These ranged from presentations to parent groups to the establishment of a model program at one school to showcase the value of technology.

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<sup>3</sup>This work is further described in the report, *School Technology: Five School Districts' Experiences in Funding Technology Programs* ([GAO/HEHS-98-35](#), Jan. 29, 1998).

The parts of the technology program that were hardest to fund, according to those we interviewed, were components such as maintenance, training, and technical support, which depend heavily on staff positions. For example, in two locations special levy and bond funding could be used only for capital expenditures—not for staff. In several districts we visited, officials told us that staffing shortfalls in maintenance and technical support had resulted in large workloads for existing staff and in maintenance backlogs. Most said this resulted in reduced computer use because computers were out of service.

As these districts looked to the future to support the ongoing and periodic costs of their technology programs, they typically planned to continue using a variety of funding sources despite uncertainties associated with many of these sources.

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## Background

The use of computer technology in schools has grown dramatically in the past several years. Surveys conducted by one marketing research firm<sup>4</sup> estimated that in 1983 schools had 1 computer for every 125 students; in 1997, the ratio had increased to 1 computer for every 9 students. Meanwhile, many education technology experts believe that current levels of school technology do not give students enough access to realize technology’s full potential. For example, schools should have a ratio of four to five students for every computer or five students for every multimedia computer, many studies suggest. In addition, concern has been expressed that aging school computers may not be able to run newer computer programs, use multimedia technology, and access the Internet.

A computer-based education technology program has many components, as figure 1 shows, which range from the computer hardware and software to the maintenance and technical support needed to keep the system running. Although technology programs may define the components differently, they generally cover the same combination of equipment and support elements.

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<sup>4</sup>Quality Education Data (of Denver).

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**Figure 1: Basic Components of a Computer-Based Education Technology Program**

Technology Component	Examples of Cost
<p style="text-align: center;"><b>Hardware</b></p>	<ul style="list-style-type: none"> <li>● Computers, printers, scanners, and other peripheral equipment</li> </ul>
<p style="text-align: center;"><b>Software</b></p>	<ul style="list-style-type: none"> <li>● Operating system software that makes computers run</li> <li>● Instructional and other programs that run on the computer</li> <li>● Information databases and reference materials that can be accessed by the computer</li> </ul>
<p style="text-align: center;"><b>Infrastructure</b></p>	<ul style="list-style-type: none"> <li>● Connections between computers, both within a school and beyond</li> <li>● Building improvements necessitated by computer installation, such as increased electrical capacity or better ventilation systems</li> </ul>
<p style="text-align: center;"><b>Training</b></p>	<ul style="list-style-type: none"> <li>● Training for teachers in using the computer as an effective learning tool for students</li> </ul>
<p style="text-align: center;"><b>Technical Support</b></p>	<ul style="list-style-type: none"> <li>● Assistance to teachers and students using the technology</li> <li>● Service to keep the system running such as fixing “bugs” in the system and restoring the system if it fails</li> </ul>
<p style="text-align: center;"><b>Maintenance</b></p>	<ul style="list-style-type: none"> <li>● Repair of equipment such as computer drives, keyboards, or monitors</li> </ul>
<p style="text-align: center;"><b>Telecommunications Access</b></p>	<ul style="list-style-type: none"> <li>● Charges paid for accessing the Internet, including telephone line charges and Internet service provider fees</li> <li>● Telephone line charges for connecting networks</li> </ul>

Computer-based technology can be used to augment learning in a number of ways. These include drill-and-practice programs to improve basic skills; programs providing students with the tools to write and produce multimedia projects that combine text, sound, graphics, and video; programs providing access to information resources, such as on the Internet; and networks that support collaborative and active learning. Research on school technology has not, however, provided clear and comprehensive conclusions about its impact on student achievement. Although some studies have shown measurable improvements in some areas, less research data exist on the impact of the more complex uses of technology. Our work focused on funding for school technology. We did not evaluate district goals or accomplishments or assess the value of technology in education.

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## **Districts Used a Variety of Funding Sources**

Each of the districts we visited used a combination of funding sources to support technology in its schools (see table 1). At the local level, districts allocated funds from their district operating budgets,<sup>5</sup> levied special taxes, or both. Districts also obtained funds from federal and state programs specifically designated to support school technology or from federal and state programs that could be used for this and other purposes. Finally, districts obtained private grants and solicited contributions from businesses. Although some individual schools in the districts we visited raised some funds, obtaining technology funding was more a district-level function than a school-level function, according to our study.

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<sup>5</sup>District operating budgets include locally generated revenues used to finance the daily operations of the school district, including instruction and administration, and they may also include general purpose state aid. They do not include funds used for capital outlay or debt service. Although districts may include categorical federal, state, or local funds in their operating budgets, we asked districts to separately account for any such funds used for technology.

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**Table 1: Technology Funding Sources (Percent)**

District	District operating budget	Local bond or special levy	State funding		Federal funding		Private and other funding
			Technology-specific programs	Other programs	Technology-specific programs	Other programs	
Davidson County Schools, Davidson County, N.C.	27	0	22	<b>43</b>	0	6	2
Gahanna-Jefferson Public Schools, Gahanna, Ohio	<b>77</b>	0	19	0	0	1	3
Roswell Independent School District, Roswell, N.M.	22	<b>54</b>	4	3	0	13	3
Manchester School District, Manchester, N.H.	18	0	0	0	<b>66</b>	12	3
Seattle Public Schools, Seattle, Wash.	16	<b>67</b>	0.8	3	4	6	3

Note: Primary source appears in boldface type. Percentages may not add to 100 due to rounding.

Although districts tapped many sources, nearly all of them obtained the majority of their funding from one main source. The source, however, varied by district. For example, in Seattle, a 1991 local capital levy has provided the majority of the district’s education technology funding to date. In Gahanna, the district operating budget has provided the majority of technology funding.

**Local Funding**

All five districts chose to allocate funds for technology from their operating budgets. The portions allocated ranged widely from 16 to 77 percent of their total technology funding. Two districts—Seattle and Roswell—also raised significant portions of their technology funding using local bonds or special levies.

**Federal Funding for Technology**

Manchester and Seattle won highly competitive 5-year Technology Innovation Challenge Grants for \$2.8 million and \$7 million, respectively. The grant provided the major source of funding for Manchester’s technology program—about 66 percent of the funding. The \$1.5 million in grant funding Seattle has received so far accounted for about 4 percent of the district’s technology funding.



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## Other State and Federal Funding

All five districts reported using federal and state program funding that was not specifically designated for technology but could be used for this purpose if it fulfilled program goals. For example, four districts reported using federal title I<sup>6</sup> funds for technology. In Manchester, a schoolwide program at a title I elementary school<sup>7</sup> we visited had funded many of its 27 computers as part of its title I program. Three districts used state program funds, such as textbook or instructional materials funds, to support their technology programs. In Davidson County, for example, the district has directed about \$2 million in such funds, including those for exceptional and at-risk children as well as vocational education, to education technology.

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## Private Funds

All districts received assistance, such as grants and monetary and in-kind donations, from businesses, foundations, and individuals. Such funding constituted about 3 percent or less of their technology funding. It is important to note, however, that our selection criteria excluded districts that had benefited from extraordinary assistance such as those receiving the majority of their funding from a company or individual.<sup>8</sup> Officials we spoke with attributed the limited business contributions in their districts to a variety of reasons, including businesses not fully understanding the extent of the schools’ needs and businesses feeling overburdened by the large number of requests from the community for assistance. Some said their district simply had few businesses from which to solicit help. Nonetheless, all five districts noted the importance of business’ contribution and were cultivating their ties with business.

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## School Fund-Raising

As part of our review, we also examined individual schools’ activities to raise money for technology. Obtaining technology funding was primarily a district- rather than a school-level function, however, according to our review. The majority of school technology funding came from the school district. In some cases, this was supplemented with funds from parent-

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<sup>6</sup>The Elementary and Secondary Education Act of 1965 as amended.

<sup>7</sup>A schoolwide program permits a school to use title I and other federal education funds and resources to upgrade the entire school’s education program, in contrast with title I targeted assistance, through which funds are used only for educational services for eligible children. A school must have at least 50 percent of its enrolled students or 50 percent of children living in the area from low-income families to qualify.

<sup>8</sup>A recent study by CCA Consulting estimated that contributions from corporate and other sources averaged 7 percent of funding for school districts’ education technology programs in school year 1994-95. The McKinsey & Company study estimated that business and other contributions accounted for 15 percent of public school technology funding, with local funding accounting for 40 percent; state funding, 20 percent; and federal funding, 25 percent.

teacher organization activities and other school fund-raisers. Such supplemental funding amounted to generally less than \$7,000 annually but did range as high as \$84,000 over 4 years at one school. Staff at two schools reported that teachers and other staff used their personal funds to support technology in amounts ranging from \$100 to over \$1,000.

## Four Types of Funding Barriers Most Common

Officials in the districts we visited identified a variety of barriers to obtaining technology funding. Four types of barriers were common to most districts and considered by some to be especially significant. (See table 2.)

**Table 2: District-Level Barriers to Obtaining Education Technology Funding**

Barrier	Davidson County Schools, N.C.	Gahanna-Jefferson Public Schools, Ohio	Roswell Independent School District, N.M.	Manchester School District, N.H.	Seattle Public Schools, Wash.
Competing needs take precedence	X	X	X <sup>a</sup>	X <sup>a</sup>	X
Community tax resistance	X <sup>a</sup>	X <sup>a</sup>	X	X	X
Inadequate staff to manage fund-raising	X <sup>a</sup>	X <sup>a</sup>	X <sup>a</sup>	X	X
Funding source conditions or requirements are restrictive	X <sup>a</sup>	X			X <sup>a</sup>

<sup>a</sup>The barrier was considered especially significant by district official.

## Competing Needs

Officials in all of the districts we visited reported that district-level funding was difficult to obtain for technology because it was just one of many important needs that competed for limited district resources. For example, a Gahanna official reported that his district's student population had grown, and the district needed to hire more teachers. A Seattle official reported that his district had \$275 million in deferred maintenance needs. Some districts had mandates to meet certain needs before making funding available for other expenditures like technology. Manchester officials noted, for example, that required special education spending constituted 26 percent of their 1997 district operating budget, a figure expected to rise to 27.5 percent in fiscal year 1998.

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**Community Tax Resistance**

Officials from all districts said that resistance to higher taxes affected their ability to increase district operating revenue to help meet their technology goals. For example, in Davidson County, the local property tax rate is among the lowest in the state, and officials reported that many county residents were attracted to the area because of the tax rates.

In addition, two districts—Roswell and Seattle—did not have the ability to increase the local portion of their operating budgets because of state school finance systems that—to improve equity—limited the amount of funds districts could raise locally. Officials in three districts reported that the antitax sentiment also affected their ability to pass special technology levies and bond measures. Although all districts identified an environment of tax resistance in their communities, most said they believed the community generally supported education.

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**Lack of Fund-Raising Staff**

Many officials reported that they did not have the time to search for technology funding in addition to performing their other job responsibilities. They said that they need considerable time to develop funding proposals or apply for grants. For example, one technology director with previous grant-writing experience said she would need an uninterrupted month to submit a good application for a Department of Commerce telecommunications infrastructure grant. As a result, she did not apply for this grant. The technology director in Manchester said that when the district applied for a Technology Innovation Challenge Grant, two district staff had to drop all other duties to complete the application within the 4-week time frame available.

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**Funding Source Conditions  
or Requirements Are  
Restrictive**

In three districts we visited, technology officials said that some funding sources had conditions or requirements that made obtaining the funding difficult. For example, one official was concerned about state restrictions associated with levy funds—such as minimum voter turn-out requirements, a 60-percent majority approval requirement, and a restriction prohibiting the district from involvement in a levy campaign—which made it harder for the district to obtain funds from this source. An official in Roswell said a requirement to form a consortium of businesses, universities, and the like made it difficult for geographically isolated districts like his to apply for some grants. An official in another district characterized her district as not disadvantaged enough overall to qualify for some funding, although the district student population included many students from lower income families. She further stated that

corporations and foundations typically like to give funds to schools where they can make a dramatic difference.

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## **Various Informational and Leadership Efforts Directed at Overcoming Funding Barriers**

Districts have employed general strategies to overcome funding barriers rather than address specific barriers. The strategies have involved two main approaches—efforts to inform decisionmakers about the importance of and need for technology and leadership efforts to secure support for technology initiatives.

In their information efforts, district officials have addressed a broad range of audiences about the importance of and need for technology. These audiences have included school board members, city council representatives, service group members, parents, community taxpayers, and state officials. These presentations have included technology demonstrations, parent information nights, lobbying efforts with state officials, and grassroots efforts to encourage voter participation in levy or bond elections. Roswell, for example, set up a model technology school and used it to demonstrate the use of technology in school classrooms.

In the districts we visited, both district officials and the business community provided leadership to support school technology. In all districts, district technology directors played a central leadership role in envisioning, funding, and implementing their respective technology programs over multiyear periods and continued to be consulted for expertise and guidance. In some districts, the superintendent also assumed a role in garnering support and funding for the technology program. Beyond the district office, business community members sometimes assumed leadership roles to support technology by entering into partnerships with the districts to help in technology development efforts as well as in obtaining funding. All five districts we visited had developed such partnerships with local businesses. In Roswell and Seattle, education foundations comprising business community leaders had helped their school districts’ efforts to plan and implement technology, providing both leadership and funding for technology. Other districts we visited continued to cultivate their ties with the business community through organizations such as a business advisory council and a community consortium.

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## **Staff-Related Components Difficult to Fund**

Nearly all districts reported maintenance, technical support, and training—components often dependent on staff—as more difficult to fund than other components. Officials we interviewed cited several limitations associated with funding sources that affected their use for staff costs. First, some sources simply could not be used to pay for staff. Officials in Roswell and Seattle noted that special levy and bond monies, their main sources of technology funds, could not be used to support staff because the funds were restricted to capital expenditures. Second, some funding sources do not suit the ongoing nature of staff costs. Officials noted, for example, that grants and other sources provided for a limited time or that fluctuate from year to year are not suited to supporting staff. Most districts funded technology staff primarily from district operating budgets. Several officials noted that competing needs and the limited size of district budgets make it difficult to increase technology staff positions.

Officials in all five districts reported having fewer staff than needed. Some technology directors and trainers reported performing maintenance or technical support at the expense of their other duties because of a lack of sufficient support staff. One result was lengthy periods—up to 2 weeks in some cases—when computers and other equipment were unavailable. Several officials observed that this can be frustrating to teachers and discourage them from using the equipment.

Teacher training was also affected by limited funding for staff costs, according to officials. In one district, for example, an official said that the number of district trainers was insufficient to provide the desired in-depth training to all teachers. Most district officials expressed a desire for more technology training capability, noting that teacher training promoted the most effective use of the equipment.

A number of districts had developed mitigating approaches to a lack of technology support staff. These included purchasing extended warranties on new equipment, training students to provide technical support in their schools, and designating teachers to help with technical support and training.

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## **Districts Plan to Use Same Funding Sources for Ongoing Costs**

Most of the districts we visited planned to continue funding their technology programs largely as they had in the past, despite the uncertainties associated with many funding sources. The costs faced by districts are basically of two types: (1) regular annual costs for maintenance, technical support, training, and telecommunications services

and (2) periodic costs of upgrading and replacing hardware, software, and infrastructure to sustain programs.

Most districts planned to continue funding ongoing maintenance, technical support, training, and telecommunications costs primarily from their operating budgets and to sustain at least current levels of support. Nonetheless, most districts believed that current levels of maintenance and technical support were not adequate and that demand for staff would likely grow. Some officials talked about hiring staff in small increments but were unsure to what extent future district budgets would support this growing need.

The periodic costs to upgrade and replace hardware, software, or infrastructure can be substantial, and most districts faced uncertainty in continuing to fund them with current sources. For example, Davidson County and Gahanna funded significant portions of their hardware with state technology funding. However, officials told us that in the past, the level of state technology funding had been significantly reduced due to the changing priorities of their state legislatures. In Seattle, special levies are the district’s primary funding source, but passing these initiatives is unpredictable.

Officials in all districts underscored the need for stable funding sources and for technology to be considered a basic education expenditure rather than an added expense. They also suggested ways to accomplish this. Some proposed including a line item in the district operating budget to demonstrate district commitment to technology as well as provide a more stable funding source. One official said that technology is increasingly considered part of basic education and as such should be included in the state’s formula funding. Without such funding, he said districts would be divided into those that could “sell” technology to voters and those that could not.

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## Conclusions

Education technology represents a substantial investment for school districts intent on following the lead of business and industry in making computers an integral part of everyday activities. Finding money to pay for the technology could be difficult, however, because it is just one of many education expenses—such as reducing class size or renovating aging buildings—that compete for limited funding. Furthermore, because technology programs involve ongoing maintenance, training, and other expenses, one-time funding is unlikely to be sufficient. As a result,

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technology supporters in the districts we studied not only had to garner support at the start for the district's technology, but they also had to continue making that case year after year.

To develop support for technology, leaders in these five school districts used a broad informational approach to educate the community, and they formed local partnerships with business. Each district has developed some ties with business. Nonetheless, funding from private sources, including business, for each district, constituted no more than about 3 percent of what the district has spent on its technology program. Other districts like these may need to continue depending mainly on special local bonds and levies, state assistance, and federal grants for initially buying and replacing equipment and on their operating budgets for other technology needs.

Lack of staff for seeking and applying for funding and the difficulty of funding technology support staff were major concerns of officials in all the districts we studied. Too few staff to maintain equipment and support technology users in the schools could lead to extensive computer downtime, teacher frustration, and, ultimately, to reduced use of a significant technology investment.

The technology program in each of the five districts we visited had not yet secured a clearly defined and relatively stable funding source, such as a line item in the operating budget or a part of the state's education funding formula. As a result, district officials for the foreseeable future will continue trying to piece together funding from various sources to maintain their technology programs and keep them viable.

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Mr. Chairman, this concludes my prepared statement. I would be pleased to respond to any questions you or members of the Task Force may have.

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