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State Funding for Education Technology and School Infrastructure: Competing Demands and Limited Resources

Faith E. Crampton

Introduction

In spite of signs of an economic recovery at the national level, many states still face formidable fiscal problems.[1] In addition, the national fiscal outlook is compromised by a growing federal deficit, slow growth in job creation, and lingering unemployment in many parts of the country. As such, it is essential to understand the full context for state education funding. In the preK-12 educational domain, personnel costs continue to be the largest single budget item, frequently overshadowing other budgetary demands. Furthermore, in an era of heightened accountability and high stakes testing imposed at the state and national levels, competitive compensation, particularly in shortage areas such as mathematics, science, and special education, and in geographic areas, such as urban and rural school districts, is essential for teacher recruitment and retention. Education reforms, such as class size reduction, aimed at raising academic achievement, require additional staffing–and additional funding. Another costly education reform is education technology, used both to enhance academic achievement and to prepare students for future employment in a global economy. As a fiscal issue, education technology is unique because it spans both operating and capital budgets, making it a potential competitor with school infrastructure needs.

In the best of economic times, state policymakers must carefully weigh funding priorities. However, with deferred maintenance for schools estimated at more than $100 billion dollars,[2] and total unmet funding need for all types of school infrastructure, inclusive of new construction and renovation, estimated at over $260 billion,[3] state policymakers find themselves under tremendous pressure to provide sufficient funding for education and other public services without raising taxes. Setting funding priorities for education technology and school infrastructure may be further complicated by perceptions of their relative worth. For example, the image of engaged students working on state-of-the-art computers may be more compelling to many lawmakers and voters than the replacement of a leaky roof; but both are necessary and costly. The cost of most school infrastructure projects requires multi-year investments by school districts while the costs for education technology are also ongoing, but for different reasons. Because current technologies rapidly become obsolete, schools are faced not only with substantial initial investments, but also investments for upgrades and replacements over time.

To that end, this article explores the competition between education technology and school infrastructure for scarce resources in the state educational funding arena. The first section provides a comprehensive definition of education technology to anchor the discussion. Next, data on state funding levels for education technology are presented, followed by a description of the ways states allocate these funds. Here the potential for competition between education technology and school infrastructure emerges. In the third section, state estimates of unmet funding need for education technology are contrasted with those for school infrastructure. The article closes with policy recommendations for the equitable and adequate funding of education technology.

The Scope of Education Technology Needs

It is important to ground the discussion of the potential competition of education technology and school infrastructure for the same pool of funding by defining the scope of education technology needs. As part of a national study of unmet education technology funding needs, researchers at the National Education Association developed a comprehensive definition with the following nine components: (1) Multimedia computers; (2) Peripherals; (3) Operating, applications, and educational software; (4) Connectivity; (5) Networks; (6) Technology infrastructure; (7) Distance education; (8) Maintenance and repair of technology equipment; and (9) Professional development and support. [4]

Multimedia computers are generally newer, faster, and more powerful computers with sound capability and high-resolution graphics. Usually they have an internal CD-ROM and modem, the latter for Internet access. Peripherals represent a category of computer hardware that includes equipment such as printers, assistive/adaptive devices,[5] digital cameras, scanners, and computer projection units. Also included are various pieces of equipment such as CD-ROMS, zip drives, and modems that, although internally installed on many newer computers, are sometimes added externally to older computers. Operating software refers to computer programs, such as DOS and Windows, that provide the foundation for utilizing applications and educational software. Applications software includes computer programs such as word-processing and spreadsheets while educational software represents computer programs that are specifically designed for student learning. Connectivity refers to Internet access, video conferencing, and video phones. Networks found within a school or district include LANs (Local Area Networks) and WANs (Wide Area Networks). Technology infrastructure includes wiring and cables to, within, and between schools. In addition, to accommodate computers and peripherals, electrical upgrades may be needed in order for the school facility to support more electrical outlets; or the school may require more phone lines or fiber optic cables to support connectivity to the Internet. Distance education makes use of a number of components listed above to allow courses to be taught at remote sites. Maintenance and repair of technology equipment includes maintenance contracts and repair costs to keep computers and peripherals functioning properly over the life of the equipment. Professional development and support is necessary so that teachers and other educational professionals make effective use of technology to enhance student learning.

The description above makes evident that education technology needs draw from both the operating and capital budgets of school

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districts. With regard to operating budgets, education technology includes personnel costs for professional development and support; maintenance and repair costs for equipment; and the cost of several categories of equipment, which in some cases are categorized as part of the school district's operating budget and, in others, part of the capital budget, depending upon individual state laws around budgeting, bonding, and accounting. Technology infrastructure represents a direct overlap with the broader category of school infrastructure and so is likely to draw upon capital resources within a school district. In the next section, examples of overlap and competition are presented as part of the description of state funding for education technology.

Funding for Education Technology

In 1995-1996, twenty-one states provided $451.6 million for education technology, ranging from $100,000 in Montana to $117 million in Florida.[6] On average, states spent $21.5 million. Three years later, in 1998-1999, the most recent time period for which data are available, 31 states provided $847.8 million to local school districts for education technology funding.[7] (See Appendix.) Funding levels ranged from $600,000 in Delaware to $191.4 million in California, for an average state expenditure of $27.3 million. On a per pupil basis, the average state expenditure for education technology was a mere $27;[8] but these numbers tell only a small part of the funding story. Education technology is funded through a wide range of mechanisms at the state level.

The summary table at the end of the article makes explicit the array of funding mechanisms state use. Some, such as Alabama and Tennessee, fund education technology as part of the state's basic aid formula allocation although the use of funds for education technology by school districts may be restricted to particular expenditure categories. If education technology funding is allocated through state basic aid, there is a reasonable assurance that it is equalized because most basic aid formulas provide greater assistance to property and/or income poor school districts.[9] A number of states use one or more forms of categorical aid. For example, Minnesota funds education technology with seven categorical programs and New York, four. Unlike funding allocated through basic aid, funds distributed through categorical aid programs may or may not be equalized. Pennsylvania and South Carolina provide examples of equalized categorical funding. Other states, like Arkansas and California, may require school districts to submit a grant application to access education technology funds, a potential barrier for some school districts. Four states–Connecticut, Idaho, Illinois, and Washington–distribute a portion of state funding for education technology through a competitive grant process, a process that disadvantages districts lacking grantwriting expertise. At least one state, Kansas, requires the local school district to match state funding for education technology and to have a state-approved education technology plan in order to be eligible for funding. To further complicate the funding picture, some states use a combination of the funding approaches mentioned here.

In nine states, funding programs for education technology compete or overlap with those that have traditionally been considered the province of school infrastructure: Arizona; Connecticut; Minnesota; Missouri; Nebraska; New Jersey; Pennsylvania; Rhode Island; and Texas. In Arizona, the new school capital finance system includes education technology as well as school infrastructure. As such, there is no separate state appropriation for education technology. Like Arizona, Minnesota funds education technology from infrastructure resources, more specifically, the component of the general education revenue formula which is also used to finance school facilities needs. In Arizona and Minnesota, education technology competes directly with school infrastructure for the same resources. Education technology infrastructure funding in the remaining seven states potentially overlaps with funding for school infrastructure; that is, when education technology infrastructure is funded as a stand alone program, a potential overlap exists as well with school infrastructure funding programs. For example, Missouri's education technology funding program includes the funding of technology infrastructure. In Nebraska, funding for education technology is targeted toward training and technology infrastructure. Connecticut's funding for education technology is limited to the wiring of schools, an infrastructure item, to make them technology-compatible. Texas also limits education technology funding to infrastructure, in particular providing connectivity. However, the Texas funding program is broader than elementary and secondary education in that it includes institutions of higher education, libraries, and hospitals. New Jersey restricts education technology funding to the Distance Learning Network which includes costs associated with professional development, purchase of software, and maintenance, as well as education technology infrastructure. In Pennsylvania, the "Link to Learn" program provides school districts with education technology funding that includes the infrastructure component of cabling for LANs and WANs. Like Pennsylvania, Rhode Island's funding for education technology includes infrastructure.

Since most states allow education technology infrastructure to be funded through broader school infrastructure funding mechanisms that generally permit school districts to incur long-term debt, education technology infrastructure costs may potentially be supported through capital budgets. At the same time, education technology funding programs generally target funds as operating expenditures. Hence in states which fund both school infrastructure and education technology, technology infrastructure funding may be duplicative if it is also eligible for education technology funding. At the state policy level, this configuration raises issues of cost-effectiveness on two fronts. First, it represents duplication of funding effort for education technology infrastructure, and secondly it raises concerns about the appropriate financing of technology infrastructure. Unlike other components of education technology, technology infrastructure represents a long-term investment that may be financed more appropriately in a manner similar to other school infrastructure projects, through long-term debt instruments. Funding education technology infrastructure as a capital investment in turn would free up additional resources for operating expenses associated with education technology, such as professional development and support. In the next section, the extent of unmet funding need for education technology is explored, with special attention to estimates for education technology infrastructure.

Funding Needs for Education Technology

Earlier research has indicated that statewide education technology plans are the best single source for systematic data on education technology funding needs although even these provide only limited data.[10] In 1999, 38 states had statewide education technology plans in place, of which 26 had been developed in the prior five years.[11] Of these, only ten had developed cost estimates. A closer analysis of the cost estimates revealed that only three of the ten states–California,[12] Connecticut,[13] Delaware[14]–had developed cost estimates inclusive of all of the elements of a comprehensive definition of education

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technology needs. California's education technology plan was the most costly, calling for an investment of $10.9 billion, or $1,969 per pupil. In contrast, the Connecticut plan estimated unmet funding need at $555.2 million, or $579 per pupil. Delaware's education technology plan called for $120 million in new state dollars, or $1,072 per pupil. For the purposes of estimating total unmet funding need for education technology across states, Delaware was selected as the benchmark, as it represented the median. State estimates ranged from $103.5 million in Wyoming to $10.9 billion in California, for a total of $53.7 billion. (See Table 1.)

The unmet funding need for school infrastructure, estimated at $266.1 billion, is substantial as well. While it was not possible to partition out the portion of education technology plan cost estimates for education technology infrastructure with precision, education technology plans for Illinois[15] and New Mexico[16] may provide some insight as their cost estimates were limited to education technology infrastructure. Illinois projected costs for education technology infrastructure to be $787 million or $399 per pupil, while New Mexico estimated $75.1 million or $237 per pupil. When compared to total estimates for unmet funding need, education technology infrastructure represented 37% and 22% of total unmet funding need for education technology in Illinois and New Mexico, respectively.

Table 1

Funding Need for Education Technology

State	*Technology*
Alabama	$791,643,056
Alaska	141,780,576
Arizona	920,959,488
Arkansas	494,704,416
California	10,901,183,414
Colorado	738,005,536
Connecticut	555,226,320
Delaware	120,021,120
Florida	2,187,697,936
Georgia	1,474,984,096
Hawaii	202,909,232
Idaho	268,321,600
Illinois	2,115,098,880
Indiana	1,059,940,000
Iowa	539,794,880
Kansas	503,561,280
Kentucky	685,628,688
Louisiana	836,972,576
Maine	232,710,832
Maryland	893,500,208
Massachusetts	1,023,047,120
Michigan	1,852,952,000
Minnesota	906,590,400
Mississippi	541,354,640
Missouri	975,861,968
Montana	175,806,928
Nebraska	313,754,032
Nevada	317,977,712
New Hampshire	210,805,584
New Jersey	1,319,695,248
New Mexico	339,560,288
New York	3,035,796,800
North Carolina	1,314,586,096
North Dakota	125,223,536
Ohio	1,977,840,000
Oklahoma	670,011,792
Oregon	579,506,048
Pennsylvania	1,943,407,360
Rhode Island	162,989,024
South Carolina	694,044,960
South Dakota	151,570,080
Tennessee	971,081,920
Texas	4,186,434,432
Utah	513,648,800
Vermont	113,296,464
Virginia	1,190,793,680
Washington	1,062,603,920
West Virginia	322,390,064
Wisconsin	955,782,336
Wyoming	103,532,688
Total	**$53,716,590,054**

Conclusions and Policy Recommendations

This article explored competition between school infrastructure and education technology for limited educational resources. An important first step was to define the scope of education technology funding needs. In doing so, the overlap between education technology infrastructure and the broader category of school infrastructure becomes apparent. An analysis of current state funding revealed a mix of approaches to funding education technology, ranging from basic and categorical aid programs to selective grants. Nine states had some overlap in funding between education technology infrastructure. In some states, education technology is funded through infrastructure programs, even though a number of components of education technology would be considered operating costs. This configuration leads to direct competition between education technology and school infrastructure for education funds. In other states, elements of education technology infrastructure, such as wiring and cabling, appear to be eligible for funding under both education technology and school infrastructure funding provisions. Such overlap creates the potential for duplication and ineffective use of resources.

Because both education technology and school infrastructure suffer from underfunding at the state level, competition and duplication are serious policy issues. To avoid such inefficiencies, policymakers must conceptualize a state education funding system as an integrated whole. Admittedly, because aspects of education technology and school infrastructure can be quite technical, it may be challenging at the policy level to discern the potential for overlap and competition. To enable state policymakers to make informed decisions, appropriate agencies and experts should be deployed to develop comprehensive long-range plans with realistic cost estimates in both education technology and school infrastructure. Yet because unmet funding need for education technology and school infrastructure tops $300 billion, federal involvement may be required. Although states constitutionally are responsible for education funding, the federal government has a long history in intervening in education matters that have become national in scope. However, in order to determine the appropriate federal and state roles,

better data are needed on the current level of investment in education technology. At that point, a meaningful local/state/federal partnership might be forged to address the pressing need for the funding of education technology and school infrastructure that affects millions of school children in every state of the nation.

Endnotes

[1]According to a publication of the National Conference of State Legislatures, titled *State Budget Update: April 2003*: "State budgets are awash in red ink. For three consecutive years, nearly every state has encountered severe budget shortfalls. These shortages began appearing in FY 2001 and have grown dramatically each year since. Cumulatively, states have had to close gaps approaching $200 billion," http://www.ncsl.org/legis/fiscal/sfo2003.htm#execsum.

[2] U.S. General Accounting Office, *School Facilities: The Condition of America's Schools* (Washington, D.C., February 1995).

[3] "Unmet School Infrastructure Funding Need as a Critical Educational Capacity Issue: Setting The Context," by Faith E. Crampton, in *Saving America's School Infrastructure*, Faith E. Crampton and David C. Thompson, eds. (Greenwich, Connecticut: Information Age Publishers, 2003).

[4]National Education Association, *Modernizing Our Schools: How Much Will It Cost?* (Washington, D.C.: 2000).

[5] Assistive/adaptive devices refer to peripherals that enable individuals with physical disabilities or limitations to utilize technology.

[6] Faith E. Crampton, "The Coming Crisis in Student Access to Education Technology: Revisioning the State and Federal Roles in Funding," in *Technology and the Educational Workplace: Understanding Fiscal Impacts*, Kathleen C. Westbrook, ed., Eighteenth Annual Yearbook of the American Education Finance Association (Thousand Oaks, California: Corwin Press, Inc., 1997), 79-83.

[7] Calculated from data in state chapters, in Catherine C. Sielke, John Dayton, C. Thomas Holmes, and Anne Jefferson, eds., *Public School Finance Programs of the United States and Canada, 1998-1999*, Publication # NCES 2001-309 (Washington, D.C.: U. S. Department of Education, National Center for Education Statistics, 2001), http://www.nces.ed.gov/edfin/state_finance/statefinancing.asp.

[8] Given the nature of the 1995-1996 data, it was not possible to compute a per pupil expenditure figure.

[9] For a description of basic aid formulas, see David C. Thompson and R. Craig Wood, *Money & Schools*, 2d. ed. (Larchmont, New York: Eye on Education, 2001), 73-100.

[10] Crampton, "The Coming Crisis in Student Access to Educational Technology."

[11]National Education Association, 49-53.

[12] "California Department of Education's Education Technology Office Home Page" http://www.cde.ca.gov/edtech/.

[13] Connecticut State Board of Education, *Connecticut Statewide Educational Technology Plan*, Final Report (Marlborough, Massachusetts: Center for Educational Leadership and Technology, December 1995); Connecticut State Department of Education, *Guidelines for Technology Infrastructure in Connecticut Schools*, An Implementation Guide for the *Connecticut Statewide Educational Technology Plan*, In cooperation with the Center for Educational Leadership and Technology (Marlborough, Massachusetts: December 1995).

[14] Delaware Education Network, *Delaware Center for Educational Technology. Strategic Plan FY1999 - FY2001* (Delaware Center for Educational Technology: September 1998); and Delaware Center for Educational Technology, Action Plan FY2000 (April 1999).

[15] Illinois State Board of Education, *K-12 Information Technology Plan* (Springfield, Illinois: State of Illinois, 1996).

[16] New Mexico State Department of Education, *New Mexico's Educational Technology Plan: A Road Map to Student Success* (Santa Fe, New Mexico: January 1999).

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Appendix

State Technology Funding Programs, 1998-1999

State	*Funding ($ millions)*	*Description of State Funding Program*
Alabama	3.5	General state aid to local boards of education for technology began with the 1995 Foundation Program. In the calculation of cost factors in the 1995 Foundation Program, one of the components of the Classroom Instruction Support Factor is funding for technology. This shall be a uniform amount for each teacher unit and is recommended annually by the State Board of Education. This amount for Fiscal Year 1998-1999 is $75.00 per teacher unit. This allocation may be expended by school or by the school system as a whole. In addition, allocations from state bond issues are allowed to purchase technology equipment.
Alaska	0	Funding for the state educational technology program was eliminated in 1998.
Arizona	0	Technology is included in the new "Student FIRST" school capital finance system established in Fiscal Year 1998-1999. There is no separate state appropriation for technology, nor is any amount earmarked in the Students FIRST program for technology. The School Facilities Board, which is responsible for implementing the Students FIRST program, has not yet made any decisions related to technology standards, nor has it distributed any money for technology.
Arkansas	2.2	An agency called IMPAC, funded separately from the state school fund, provides computer hardware to school districts. The aid is based upon grant applications and poorer districts are favored.
California	191.4	The Digital High School Program provides grants to high schools to purchase hardware, software and infrastructure, and to train staff in its use. Schools that apply to the program are selected on the basis of a random draw each year. The educational technology program coordinates all of the technology efforts of the California Department of Education: $136.0 million for the Digital High School Program, and $55.4 million for educational technology.
Colorado	0	No state aid provided.
Connecticut	10.0	Now in its fourth year, this program provides funding for the wiring of schools to make them technology compatible. One million dollars is earmarked for the state's largest four urban districts, and the balance is distributed on a competitive basis to other school districts. Local area networks, wide area networks and Internet access have been among the major areas of emphasis for this funding. It should be noted that the school construction grant program also allows wiring to be included in the scope of new construction and building renovations with the state participating in 20% to 80% of eligible costs. Within the limits of the grant awards, the technology grant has provided up to 100% of the cost of wiring a school that has been successful in competing for an award.
Delaware	0.6	The state recently established the Delaware Center for Educational Technology that receives funding from federal, private, as well as state appropriations. For 1998-1999 the state appropriated $614,000 for the center. The center's mission is to assist schools and districts in adopting and adapting to new technologies. Other technology funding falls under Division II (material and supply), while many districts elect to use some of their Division II or III funding towards technology-related purchases.[1]
Florida	80.1	Funds are allocated based on each district's share of the state total unweighted student enrollment. This funding includes $1,000,000 for library automation grants. Public school technology funds may be used to purchase both hardware and software; however, priority is given to students and programs with the highest need and with the oldest equipment.

Appendix

State Technology Funding Programs, 1998-1999 (continued)

State	*Funding ($ millions)*	*Description of State Funding Program*
Georgia	26.8	Technology funding is supported in Georgia by the lottery. Originally lottery funds could only be used to purchase hardware. A 1996 amendment to the law added training for teachers in the use of technology and repairs and maintenance of technology as additional eligible uses for lottery funds.
Hawaii	0	na[2]
Idaho	10.4	A continuation of funding both on a competitive grant process as well as direct distribution to districts based on a district's percent of the general school income fund.
Illinois	30.8	The State Board of Education awards grants on a competitive basis to school districts for the purpose of implementing the use of computer technology in the classroom. $500,000 has been appropriated from the School Technology Revolving Fund for the purpose of funding the statewide educational network.
Indiana	15.0	The General Assembly provides annual funding to the Indiana Department of Education's Technology Grant Program that is to be distributed to all school corporations [districts] within a six-year cycle. The total grant to a qualifying school corporation is not to exceed $200 per student.
Iowa	30.0	Beginning in 1996-97, the legislature appropriated $30 million for a school improvement technology program. Each district is allocated an equal amount per pupil; however, the minimum amount a district receives is $15,000. The legislation calls for this program to be funded for five years. Funds may be expended for equipment acquisition, installation, maintenance, and software associated with instructional technology. Funds may also be expended for staff development; however, the legislature prohibited the hiring of additional staff with these funds.
Kansas	10.0	There is no provision specifically for technology; however, in 1998-99, the legislature allocated $10 million of windfall tax dollars to K-12 education for technology. The money was used as a matching grant that each school district was eligible for as long as the district had a state-approved technology plan. The money was split between all 304 school districts as a flat $12,500 per district plus $13.70 per student.
Kentucky	15.0	The Master Plan for Education Technology establishes the criteria for funding and access to computer technology. Funds for technology are distributed on a per-pupil basis and, purchases for equipment and software are negotiated for all so that pricing, payment schedules, and all other contracts are the same for each school. All schools have the same access to state-provided support services and networks. Minimum computer-to-student ratios are defined. The state pays 100% of the cost of the district administrative (support services and network) costs. The state and local school districts share, on an equal basis, funding for operational costs, equipment replacement, and upgrades.
Louisiana	25.0	The 1998 Legislature once again allocated monies for the Classroom-Based Technology Fund. This $25 million statutorily dedicated allocation is being used to continue efforts to carry out the State's Educationl Technology Goal, "All educators and learners will have access to technologies that are effective in improving student achievement." Funds are being used to purchase additional classroom computers, connect more classrooms to the Internet, purchase software to support curriculum, and provide additional technology tools needed to implement district and school technology plans. The funds are distributed to local school districts, special schools, and non-public schools. The Classroom-Based Technology Fund is supported solely by the state. Over the past three years, funding was provided annually from non-recurring sources.

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Appendix

State Technology Funding Programs, 1998-1999 (continued)

State	*Funding ($ millions)*	*Description of State Funding Program*
Maine	0	Maine's Computers for Schools and Libraries Program is a program where surplus computers are donated by businesses and other organizations, refurbished by prison inmates, and distributed to schools and libraries. The distribution criteria are designed to offer refurbished computers to those schools determined to be least able to purchase new computers. The guidelines for the dispersal of computers related to schools are: (1) a goal of one computer for every six students, and (2) the basis for selection of schools is the school's e-rate percentage. Computers provided are "Internet-ready." The program is self-supporting: parts and supplies for refurbishing the computers are funded by a charge of $150 per computer to schools.
Maryland	5.4	The Education Modernization Initiative is an innovative program initially funded in fiscal 1997 that provides schools access to online computer resources and capacity for data, voice, and video equipment.
Massachusetts	nr[3]	In 1996, the Education Technology Bill authorized a $30 milliion matching grant program for school districts, with the intent of improving classroom connections to the Internet. By 1998, 90% of districts and charter schools had received grant awards. MassEd.Net provides state-subsidized unlimited Internet access service for Massachusetts teachers and administrators. The cost is $25 per year, which may be paid on behalf of their employees by local school districts. The Massachusetts Department of Education's Information Management System is currently in the late design phase. When fully implemented, it will provide enrollment, fiscal, testing, and other information from all school districts.
Michigan	0	No state aid provided.
Minnesota	28.0	The operating capital component of the general education revenue formula provides funding which can be used for technology or other equipment and facility needs. School districts are also permitted to use unrestricted general education revenue for technology. Categorical funding for technology is described below: 1) Interactive Television (ITV) Revenue ($6 million) may be used for the construction, maintenence, and lease costs of an interactive television system for instructional purposes. A district that has completed the construction of its ITV system may also purchase computer hardware and software used primarily for instructional purposes and access to the Internet, provided that its total approved expenditures must not exceed its ITV revenue for Fiscal Year 1998. All school districts located outside of the Minneapolis-St. Paul metropolitan area are eligible to participate. The maximum revenue is the greater of $25,000 or 0.5% of the district's ANTC. Beginning in 1999-2000, the ITV revenue will be phased out over a four-year period. The state aid is the difference between the ITV revenue and the ITV levy. A district's ITV levy equals the ITV revenue time sthe lesser of 1 or the ratio of the district's adjusted net tax capacity (ANTC) per weighted average daily membership (WADM) to $10,000. 2) Technology Grants ($22 million) provide one-time funding for several technology programs. 3) Telecommunications Access grants ($12.4 million) provide funding for telecommunications services to provide Internet access, data transmission, and interactive television capability to school districts and libraries. 4) Electronic Curriculum grants ($1.6 million) provide funding for development of curriculum and an electronic curriculum repository to be available as a teacher resource. 5) Technology Transformation grants ($1.2 million) fund projects that demonstrate the use of technology in support of Graduation Standards record keeping and information management. 6) Computer Refurbishment ($4.5 million) funding partnerships with business and non-profit organizations to refurbish computers for distribution to schools with the goal of increasing student access to technology. 7) Site-Based Technology Grants ($2.3 million) fund technology projects in support of learning that increases community ties.

Appendix

State Technology Funding Programs, 1998-1999 (continued)

State	*Funding ($ millions)*	*Description of State Funding Program*
Mississippi	nr	These funds were distributed to local school districts for compter hardware, equipment, and computer-based instructional programs based on grant proposals written at the local school district level.
Missouri	20.6	This funding is to implement computer network infrastructure for Missouri's public schools, provide computer access to the Department of Elementary and Secondary Education, and to improve the use of classroom technology.
Montana	0	The state provides funding to school districts for technology acquisition and the associated technical training for school district personnel. The source of the state funding is revenue from the sale of timber from state school trust lands. The revenue from any timber sales in excess of 18 million board feet is dedicated to schools for technology. Schools did not receive any monies from this funding source in the 1998-1999 school year due to an over-distribution of monies in the 1997-1998 school year. In general, the revenue source is projected to generate $9 per student annually for a school district.
Nebraska	0	The 1999 Unicameral Legislature passed Legislative Bill 386 that appropriates $3 million during 1999-2000 fiscal year and $3.075 million for 2000-2001 fiscal year for the use of technology in schools. Training and infrastructure support are targeted area for the dollars.
Nevada	28.7	Funding in 1998-1999 was $4.4 million (state and local combined). Funding for technology is provided for the following: updating library databases and licensing for publication; updating of school software and licenses; funding for satellite down links and bringing all Nevada schools to Level I technology use (i.e., a network capable computer in each classroom or its equivalent in computer laboratory stations). In addition, $28.7 million was appropriated for education technology on a one-time basis in 1998-1999.
New Hampshire	0	No state aid provided.
New Jersey	52.3	Distance Learning Network aid is a restricted aid program to support the acquisition and installation of technology with aid allocated on the basis of the number of pupils enrolled in the district multiplied by the cost factor of $41 per pupil in 1998-1999. Such aid may be used for equipment, wiring, access fees, software and supplies, professional development, staffing, maintenance, and other uses that may be necessary for the establishment of effective distance learning networks. The eight county special service school districts (disabled pupils only) receive $120,000 of this aid.
New Mexico	7.0	The 1998 Legislature provided funding for 1998-1999 of $14.02 per student with a total appropriation of $4.4 million. Districts budgeted a total of $3.2 (0.5% of total capital outlay revenues) in Technology for Education Act revenues for 1998-1999.
New York	43.5	New York state aids school technology through the following programs: 1) Computer Hardware and Technology Equipment Aid ($17.1 million): All districts are eligible for aid to purchase or lease computer and technology equipment for instructional purposes. Schools may use up to 20% of this aid for the repair of hardware and equipment or for staff development. 2) Computer Software Aid ($14.1 million): All districts are eligible for computer software aid to purchase instructional software. 3) Aid for Instructional Computer Technology ($9.0 million): This aid supports approved instructional computer technology expenses (those that are not eligible for Building Aid or are not claimed for any other technology aid). 4) Learning Technology Grants ($3.3 million): The state aids learning technology programs, including services benefitting nonpublic school students.

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Appendix

State Technology Funding Programs, 1998-1999 (continued)

State	*Funding ($ millions)*	*Description of State Funding Program*
North Carolina	nr	The state of North Carolina began special funding for technology in 1995-1996. As of 1998-1999, $111.5 million have been dedicated to technology equipment and programs. Local school systems are required to write a Technology Plan which must be approved by the local board of education and submitted to the State Board of Education for final approval before money can be received. Plans must be reviewed annually.
North Dakota	0	No state aid. School districts could, with voter approval, levy up to 5 mills for distance learning technology.
Ohio	32.5	Significant investment in technology is made outside the basic aid and categorical aid to schools programs. For example, the Education Management Information System (EMIS) and Ohio Educational Computer Network (OECN) are used to provide administrative and instructional information technology and computer services for schools across the state. As well, the SchoolNet Plus program contains provisions for assistance in funding technology purchases.
Oklahoma	16.4	$16.4 million was distributed for common education classroom technology. Of that, $8.2 million went to help school districts obtain technology access (Internet capabilities, etc.) and another $8.2 million to purchase computer hardware.
Oregon	1.0	The state has no statewide technology plan. The Department of Administrative Services is devising a Technology Enterprise Network for all state agencies, including schools and higher education to begin in the 1998-2000 biennium. Through 1998-1999, all agencies and schools have developed their own plans for implementation. For the past 5 years the Education Service Districts have pooled resources with local districts and created a K-12 technology network that serves all schools in the state. Through this Oregon Public Education Network (OPEN) schools gain technology connectivity and access.
Pennsylvania	36.3	1998-1999 was the third year of the three-year Link-to-Learn program. Its purpose is to improve the basic technology infrastructure and capabilities of public elementary and secondary schools. Funding is provided for school districts and area vocational technical schools to assist them to: invest in the acquisition of new, or replacement of, obsolete, personal computers for use in classrooms; purchase cabling and equipment needed to install local area networks and wide area networks to position schools for eventual connection to the Pennsylvnia Education Network; and train teachers to integrate technology effectively into course curricula. The amount of Link-to-Learn grant is based on the average daily membership and market value/personal income aid ratio of the school district or area vocational technical school.
Rhode Island	3.4	The student technology investment fund is designed to provide schools and teaching staff with up-to-date educational technology and training to help students meet the demands of the 21st century. The program distributes an annual state allocation determined as part of the state budget process based on each district's average daily membership in grades pre-K to 12. Only 35% of the annual allocation can go to support ongoing activities, i.e., 65% of the allocation must support new technology activities. Funds may be used for curriculum development, professional development, and infrastructure requirements such as equipment, instructional materials, software and networking of systems. Each district must have (under a separate requirement) a technology plan, and use of these funds must be consistent with that plan. There is a legislative technology task force in place, which also must focus on closing student performance gaps. The Department of Education issues guidelines for and monitors the use of the fund.

Appendix

State Technology Funding Programs, 1998-1999 (continued)

State	Funding ($ millions)	Description of State Funding Program
South Carolina	28.4	State funding supports local implementation of the South Carolina Educational Technology Plan and district strategic and school renewal plans. Purchases consider issues projected in long-range plans such as the application of technology for teaching and learning. Funds may not be expended for personnel positions but may be used for contractual services. School technology funds are divided among all districts using the ratio of the district free/reduced lunch count for Grades 1-3 to the statewide free/reduced lunch count for Grades 1-3 of the second preceding year. Purchases must adhere to the following guidelines: 1) Provide for any lacking hardware, software or training needed to ensure extended connectivity to and usage of the dedicated telecommunications lines of the state network; 2) Focus on resources that facilitate integrated curriculum-based use of technology with correlation to curriculum frameworks and academic standards; 3) Supplement, but not supplant, the existing or projected school technology budgets; 4) Serve as seed money to stimulate technology innovation for Act 135; 5) Be supplemented or matched at the local level by entering into partnerships and arrangements with such groups as businesses and parent organizations and by using vehicle license plate sales, etc.; 6) Reflect equitable distribution of funds throughout the district; and 8) Match technologies to the local need, considering the fact that all technologies, video, computers, telecommunications, routers, DSUs, hubs, wiring, etc. are appropriate uses for these funds. Technology Professional Development Initiative. Expenditures made with these funds must have an emphasis on curriculum applications that support the South Carolina Educational technology Plan and must have a technology focus. Funds earmarked for technology Professional Development are divided among all school districts based on Averege Daily Membership (ADM). These funds must be used for graduate course contracts with South Carolina colleges and universities, instructor stipends for re-certification courses offered by districts, mini-course modules, and professinal development conference and workshop registration fees. This funding source may also be used to purchase instructional materials to support the courses and workshops offered in districts. They must center on weaving technology resources into daily instruction and on using them to support curriculum standards.
South Dakota	0	No state aid is provided.
Tennessee	20.0	Technology is one of the components of the Basic Education Program (BEP) cost formula. The districts are allowed to use the funds for any item considered "technology." The BEP provides 75% of the technology appropriation as provided in the formula based on $22.39 per average daily membership (ADM) until the fund is depleted.
Texas	nr	Beginning in 1992-1993, the Foundation School Program (FSP) included a technology allotment of $30 per average daily attendance (ADA). The technology allotment provides for the purchase of electronic textbooks or technology equipment for instruction, and it pays for training instructional personnel in the appropriate use of technology equipment and electronic textbooks. An "electronic textbook" means computer software, interactive videodiscs, CD-ROM, computer courseware, on-line services. The state also funds other technology initiatives such as the Texas Center for Educational Technology (TCET) located at the University of North Texas, the preview centers and training programs at the regional education service centers, the T-STAR telecommunications system, and the Texas Educational Telecommunications Network (TETN) that provides interactive video conferences, facsimile transmission, and two-way transmission of data. The Telecommunications Infrastructure Fund (TIF) was established in 1995 with the Public Utility Regulation Act. The Act was intended to generate $150 million each year to provide telecommunications access to schools, hospitals, libraries, *(continued on next page)*

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Appendix

State Technology Funding Programs, 1998-1999 (continued)

State	Funding ($ millions)	Description of State Funding Program
Texas (continued)		and institutions of higher education. A TIF Board is charged with disbursing the funds. The mission of the TIF Board is to help Texas deploy an advanced telecommunications infrastructure by stimulating universal connectivity. In addition, the TIF Board funds training programs. During the 1996-1997 biennium, the TIF Board awarded $52 million to help schools implement Internet connections. In 1998-1999, the Texas Education Agency received $14.6 million in TIF funds for various technology projects. Although the TIF was structured to collect $150 million a year over 10 years, lower assessments on commercial mobile telecommunications lowered anticipated collections by $25 million per year. Legislation passed in 1997 removed the 10-year limit on deposits to the fund and placed a $1.5 billion cap on the fund, excluding interest and loan repayments. Half of the revenue is dedicated to public school projects, and the remaining half is available for other qualifying projects.
Utah	8.5	Utah's Educational technology Initiative is intended to expand the use of computer-based technologies within schools and classrooms for administrative and instructional use. The goal is to enhance the teaching/learning process and to empower students to become productive members of a technology-oriented society. Funds may be used to maintain existing programs and for inservice programs required to implement the technology. Allocations are made to all districts based on total average daily membership for grades K-12.
Vermont	na	State law requires "access to current technology", and funding is subsumed in the general state support grant and in the guaranteed yield. There was no state categorical appropriation in Fiscal Year 1999. In addition, Vermont Interactive Television sites allow for statewide teleconferencing for business, education, and other general purposes. The appropriation for this freestanding agency was $763,933. Most high schools are equipped for satellite reception of lessons with telephone feedback loops. These facilities were funded in an earlier fiscal year with one-time grants.
Virginia	1.0	The Electronic Classroom Program (also known as the Virginia Satellite Educational Network) created a satellite delivery network offering high school and middle school students credit courses that are not widely available, particularly in small or rural schools. Advanced placement courses in English, calculus, statistics, U.S. history, and government are offered in addition to three years each of Latin and Japanese. A number of staff development programs supporting Virginia's Standards of Learning are also offered to teachers.
Washington	na	Currently, there is no state K-12 general fund category specifically earmarked for technology. Instead, the Washington State Department of Information Services is responsible for coordinating the development of the state's K-20 network. This is a high-speed, high-bandwidth network that connects Internet, videoconferencing, and satellite-delivered video programs. The effort is a collaboration of public and private K-12 schools, higher education, state government and the private sector which builds on an existing state-run telecommunications infrastructure. Since 1996, the state has appropriated $62.3 million to construct the network. Phase one was completed in September 1997 at a cost of $23.2 million. Phase one connected the main campuses of the state's higher education system and the nine regional education service districts. Phase two began in July 1998 and will connect the state's K-12 school districts, with an anticipated completion date in the year 2000. Subsequent phases will add public libraries, state and local governments, and community resources centers to the network. In addition to the K-20 network, the Superintendent of Public Instruction sponsors a number of competitive grant awards for innovative uses and technology, and also assists districts in developing the local technology plans required for districts in order *(continued on next page)*

Appendix

State Technology Funding Programs, 1998-1999 (continued)

State	Funding ($ millions)	Description of State Funding Program
Washington (continued)		to qualify for the federally-sponsored e-rates. State share is 100% of allocation for the K-20 network. Beginning in 1999-2000, a general fund category for the costs of the K-12 portion of the K-20 network will be added.
West Virginia	22.0	The Basic Skills/Computer Education program is an on-going initiative, providing hardware and software for every K-6 classroom in the state. Currently, 29,000 student workstations are in use, and 21,000 teachers have received training. The program was initiated in 1989 when the West Virginia Legislature requested that computer hardware, software and training for grades K-6 be implemented to improve basic skills.
Wisconsin	47.4	Public school districts are eligible to receive Technology Block Grants administered by the Technology for Educational Achievement in Wisconsin (TEACH) Board. The grants may be used for any purpose related to technology use in the education or training of any person or in the administration of a school and related telecommunications services, except for the funding of salaries or benefits of any school district employee. Of the total, $30 million of the funding is distributed based on a formula that uses equalized value per member. Each eligible school district receives $5,000 from the amount appropriated. The balance of the $30 million is distributed in proportion to a weighted membership of each district. The remaining $5 million is distributed based on the number of persons residing in the district between the ages of 4 and 20.
Wyoming	nr	Technology is considered to hold promise for improved student knowledge, especially in Wyoming's small remote schools. In addition to including a school finance model component providing per student equipment funding within the total block grant amount, the legislature has provided incentive payments for the foundation program account for programs involving distance learning technology, as well as significant funding, $11 million over a two year period, for implementation of the Wyoming Education Technology Plan. The Plan provides a structure for implementing and integrating technology into educational programs, with data connectivity between all schools to be accomplished as of July 1, 1999, and interactive two-way video capability within all high schools by July 1, 2001. Funding is phased-in over time to accomplish these goals. Technology is also addressed through a technology readiness factor included within the statewide assessment of school building and facility needs used in prioritizing statewide capital construction needs. The readiness component assesses the existence of required building and facility infrastructure to support informational technology and associated equipment.

Source: Compiled from Catherine C. Sielke, John Dayton, C. Thomas Holmes, and Anne Jefferson, *Public School Finance Programs of the United States and Canada, 1998-1999*, Publication #NCES 2001-309 (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2001) http://www.nces.ed.gov/edfin/state_finance/statefinancing.asp.

[1] In Delaware, Division I is the primary component that is determined by enrollment, through a unit (primarily the equivalent of the number of students per staff) funding system. It drives the allocation of personnel (weighted units based on Average Daily Membership) that eventually determines the primary component of funding depending on a state salaries and benefits scale. In 1998-1999, this fund provided nearly 76% of total state appropriations to districts, which pays roughly 70% of all districts' personnel expenditures, ranging from teaching to administrative to support staff. The second component of the formula, Division II, funds all other school costs (excluding transportation and debt service) such as material, supplies, and energy costs. Those funds are flat grants based on "units" of enrollment. The third component, Division III, is an equalizing factor used to compensate for funding disparities between property rich and poor districts.

[2] Not applicable (na).

[3] No reported (nr).

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