About This Issue

In recent years, state educational technology policies have come to play an increasingly important role in shaping local educational technology practices. The No Child Left Behind (NCLB) Act of 2001 has further consolidated important resources and responsibilities for educational technology within state education agencies.

On one hand, resources that historically were administered directly by federal agencies have increasingly passed through federal channels to state agencies. For example, the Enhancing Education Through Technology program allows state education agencies to retain up to 5 percent of their allocations for state-level activities, and to distribute half of the remainder by formula and the other half competitively to local education agencies.

On the other hand, responsibilities that historically were vested in local education agencies have been assumed by states. State achievement tests, linked to state curriculum standards, provide another example in which states are assuming a greater role. The NCLB legislation has continued this trend by giving states the responsibility for setting high-stakes guidelines, such as those relating to teacher quality and adequate yearly progress.

NCLB has established improved student academic achievement as the primary goal of educational technology in elementary and secondary schools. The law also seeks to bridge the digital divide by ensuring that every student is technologically literate by the end of eighth grade, and by encouraging effective integration of technology resources with teacher training and curriculum development.

If these goals are to be realized, states must practice what they preach to local education agencies and base their educational technology policies on research and best practices. This edition of *Policy Issues* provides recommendations intended to stimulate thinking and discussion about how states might undertake such an effort. —*James R. Sweet, Learning Point Associates*

Making Educational Technology Work: State Policies in the North Central Region

By Chris Dede, Ed.D.

Introduction

I n recent years, resources historically awarded and administered by national government agencies have increasingly passed instead through federal channels to states and localities, where decision makers at those levels have determined how to spend these funds. The No Child Left Behind (NCLB) Act of 2001 has continued this trend, moving a substantial amount of technology monies from specialized federal programs into block grants to states and even to large cities.

As the responsibility for allocating resources for technology shifts from federal administrators to state and local education agencies, state and local policymakers face greater accountability for making fiscally and educationally sound decisions. North Central Regional Educational Laboratory (NCREL), the research and development arm of Learning Point Associates, is committed to assisting state and local education agencies with understanding the many issues related to developing and implementing technology programs. This policy study presents findings from an analysis of the educational technology policies of the seven states in the North Central region: Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin. The analysis was conducted through the lens of the *State Policy Framework for Assessing Educational Technology Implementation*, developed by the author (Dede, 2002b). This framework delineates a menu of ways in which state policies can enhance educational technology usage to improve student learning and standards-based educational reform.

The policy categories in the framework span the spectrum of potential state policy actions and provide a common template for comparative policy discussions among policymakers. Each category has a set of essential questions that highlight the issues involved in policies of this type. These questions are followed by indicators that depict an evolutionary path for the progression of state policy. These indicators allow for variation among states, depending on individual circumstances and political philosophy. The more indicators satisfied by a state and its local education agencies in their implementation of educational technologies, the more complete and aligned the state's policies are in ensuring effective usage to improve student learning and standards-based reform. For more details, please see Chapter 5, "Enhancing State and Local Policymaking About Educational Technologies" (Dede, 2002a) as well as the actual framework in Appendix A

(Dede, 2002b) in the Benton Foundation report *Great Expectations: Leveraging America's Investment in Educational Technology* (www.benton.org/publibrary/e-rate/greatexpectations.pdf).

The framework is intended as a means of self-assessment for state education agency staff and other education decision makers, as well as a comparative mechanism for discerning patterns of policies across states. The "State Educational Technology Policy Implementation Rubric" (pullout) was developed to help states use the framework to assess their educational technology policies.

The "State Educational Technology Inplementation Rubric" helps states access their educational technology policies.

Feedback by state policymakers on the framework and the rubric indicated that although successful practices in other states often offer insights for adapting those policies, each state has its own unique politics, culture, and local implementation challenges. The individual variability among states is so large that decision makers should not use this type of analytic strategy to identify a single "best" model for technology policies. Instead, the framework and rubric are best used as a menu of possible policy actions, a map of interrelationships among policies, and a means of self-assessment—rather than a comparative measure of states' conformance to a single constellation of policy choices.

Policy Analysis

This policy study provides an analysis of state educational technology policies in the North Central region, including examples of best practices, for the policy categories included in the *State Policy Framework for Assessing Educational Technology Implementation*. It is not intended to provide a comprehensive analysis of all state policies related to educational technology in the North Central region. Instead, its goal is to increase the self-assessment capacity of policymakers by providing examples of best practices based on the framework and the rubric.

This policy study is based on documentary evidence drawn from the official state Web sites of Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin, including links to Web sites of other organizations sponsored by states whose work relates to educational technology. Documents that are not available electronically were not included in this analysis, not only because of difficulties in accessing such policies but also because they are likely to have little impact if inaccessible to practitioners. Each state was provided the opportunity to validate that a summary of the information garnered from its Web site was an accurate and current depiction of its educational technology policies in the 19 areas described below. Each area also provides links to specific Web resources that provide additional information.

The 19 areas are as follows:

- Curriculum Standards for Students
- Assessments of Students' Educational Outcomes
- Technology-Enhanced Learning for Students

- Technology-Based Resources for Learners With Diverse Needs
- Standards and Certifications for Educators
- Professional Development
- Financing for Technology-Related Professional Development
- State-Subsidized Electronic Network
- Priority for Less Connected Populations
- Collaborative Partnerships for Access
- State Provision of Aggregated, Synthesized Information
- State Use of Analyzed Data to Shape Policy
- Aid for E-Rate Applications
- Guidelines for Technology Infrastructure
- Volume-Purchasing Discounts for Technology
- Infrastructure Financing
- State-Sponsored Research and Evaluation on Technology
- State Educational Technology Plan
- State Oversight of District Technology Plans

1. Curriculum Standards for Students

The integration of technology into state curriculum standards and the development of technology literacy standards for students are moving targets. Frequently, states have used the *National Educational Technology Standards* developed by the International Society for Technology in Education (ISTE NETS) as their guide in this process. Now, more complex definitions of integration are emerging, such as those proposed by the Partnership for 21st Century Skills.

As subject-area groups (such as the National Council of Teachers of Mathematics) develop second-generation content standards exemplifying more integration of technology, these standards also will offer insights for states about their own content standards.

In the North Central region, Wisconsin and Indiana have the most thoroughly developed integration of technology into their curriculum standards for students. In Wisconsin, the state has detailed Model Academic Standards for information and technology literacy, as well as for technology education. Also, Wisconsin has Model Academic Standards for English language arts, mathematics, science, social studies, and 12 other subject areas. Fluency in the use of technology and media is integrated into many of the curriculum content standards. For example, the English language arts standards contain substandards for the use of media and technology. As another illustration, the mathematics standard for statistics and probability references technology but does not explicitly prescribe its usage.

Indiana has a high level of integration of technology into its core curriculum standards for students. At both the K–8 and the high school levels, Indiana's core curriculum standards are in English language arts, mathematics, science, and social studies. These standards were updated in 2002. As illustrations, the high school mathematics standards in probability and statistics reference the use of spreadsheets and graphing calculators, and the Grade 8 English language arts standards include conducting multiple-step information searches by using computer networks, creating computer documents by using word-processing skills and publishing programs, and developing simple databases and spreadsheets to manage information and prepare reports.

In addition, for each set of the core curriculum standards, Indiana has developed documents that correlate with the *Nine Information Literacy Standards for Student Learning* developed by the American Library Association and the Association for Educational Communications and Technology (1998). It is important for states to correlate among standards because the results highlight knowledge and skills considered vital from a variety of perspectives. Districts then are able to prioritize their efforts based on those components in the standards that they deem most important.

Resources

National Educational Technology Standards
cnets.iste.org/currstands/

Partnership for 21st Century Skills
www.21stcenturyskills.org

Mathematics standards developed by the National Council of Teachers of Mathematics
www.nctm.org/standards/

Wisconsin Model Academic Standards
www.dpi.state.wi.us/dpi/standards/

Indiana's Academic Standards
doe.state.in.us/standards/

2. Assessments of Students' Educational Outcomes

Resources such as the National Research Council report *Knowing What Students Know: The Science and Design of Educational Assessment* (Pellegrino, Chudowsky, & Glaser, 2001) provide guidance and examples to states about how technology can aid their processes of assessment. Most states, however,

are not exploring diagnostic, formative tools for classroom-based student assessment, and only a few states are using technology to aid in high-stakes testing.

In the North Central region, Indiana has the most thoroughly developed usage of technology for assessment. Indiana's achievement test, the Indiana Statewide Testing for Educational Progress Plus (ISTEP+), comes with a host of online aids to help students and teachers. In addition, TestMate Clarity™ software is supplied to each school district (called a *school corporation* in Indiana) as a part of the ISTEP+ program. Along with the software, school corporations (and nonpublic schools) get the test results for all of their students as electronic files. The software provides tools and reports that allow schools or school corporations to analyze their results as they choose and extract data to move into other databases or tools. States that provide flexibility in the tools and formats associated with data enable local districts to use this information more easily for instructional improvement.

Resource

Indiana's ISTEP+ InfoCenter
doe.state.in.us/istep/

3. Technology-Enhanced Learning for Students

The amount and types of online learning resources that states provide for students vary greatly. Sometimes a state develops and maintains a curricular resource; other times the state contracts with a vendor for learning services. As yet another possibility, the state may fund an intermediary, such as a regional service center or a nonprofit organization, to develop and provide these resources.

In the North Central region, Illinois and Iowa have the most thoroughly developed online resources to aid student learning. Illinois sponsors a variety of technology-enhanced learning resources, including the Illinois Virtual High School and regional Learning Technology Centers. Iowa's area education agencies—such as the Heartland Area Education Agency 11—make available to districts Internet curriculum resources, including unified catalogs of school or library media materials, electronic mailing lists related to educational topics, resources to aid in research projects, and a searchable public auction for equipment. The Iowa Distance Learning Database provides distance learning classrooms scattered around the state with online support available about how to use this resource.

Resources

Illinois Virtual High School
www.ivhs.org

Illinois Learning Technology Centers
www.isbe.state.il.us/ltc/

Iowa's Heartland Area Education Agency 11
www.aea11.k12.ia.us/

Iowa Distance Learning Database
www3.iptv.org/iowa_database/default.cfm

4. Technology-Based Resources for Learners With Diverse Needs

The seven states in the North Central region vary greatly in the extent to which technology-based support for special-needs learners is provided. The shortfalls in some states are unfortunate, because all regions of the country face roughly proportionate levels of special needs related to gender discrimination and to physical disabilities. Also, although states may vary in the

proportion of urban and rural students who need special assistance as well as the percentage of limited-English-proficient (LEP) learners, all states face some challenges in these areas.

States face challenges providing technology for special-needs learners.

In the North Central region, Michigan and Ohio provide the most extensive technology-based resources for learners with diverse needs. Michigan provides *Michigan's Assistive Technology Resource* (MATR) to help educators with using assistive technologies. Also, assistive technology resources and references have been developed by a number of Michigan's intermediate service agencies (such as the Special Education department at Eaton Intermediate School District in Charlottesville, Michigan). Ohio's $9.4-million Assistive Technology Infusion Project helps districts in providing assistive technology devices and services.

Resources

Michigan's Assistive Technology Resource
www.matr.org

Assistive Technology at Eaton Intermediate School District, Charlottesville, Michigan
eaton.k12.mi.us/at/

Ohio Assistive Technology Infusion Project
www.atip.state.oh.us

5. Standards and Certifications for Educators

In the North Central region, the integration of technology into state content standards is only moderately correlated with whether a

state mandates that educators have skills in technology. That these policies are not strongly correlated may reflect that different parts of the state government are acting independently from each other, rather than working together to implement a coherent, interwoven set of content standards and educator certifications.

Illinois, Indiana, Michigan, and Wisconsin have strong technology policies in standards and certifications for educators. Illinois has extensive technology certifications such as Library Information Specialist, Technology Education, and Technology Specialist. It also has developed *Technology Standards for All Illinois Teachers*. However, technology generally is not integrated into content standards, such as the core language arts standards for teachers. In Indiana, technology generally is integrated into Indiana's content standards for teachers, and the state has a "computer educator" license for teachers. Michigan's *Entry-Level Standards for Michigan Teachers* includes the standard "an ability to use information age learning and technology operations and content to enhance learning and personal/professional productivity" (Michigan Department of Education, 2002, p. 4). The state has specialized teacher certifications in Educational Technology and in Library Media. In Wisconsin, two of the 10 teacher standards specifically address technology.

Resources

Illinois Content Area Standards for Educators
www.isbe.net/profprep/pcstandardrules.htm

Illinois Teacher Standards
www.isbe.net/profprep/pcstandardrules.htm

6. Professional Development

That so many states are emphasizing technology skills as the content of professional development is heartening, given the investment in technology, infrastructure that schools have made. Many states, however, are not using computers and telecommunications to their full capacity in complementing face-to-face professional development experiences with ongoing virtual interactions in synchronous and asynchronous media.

In the North Central region, many states are strong in providing professional development related to technology, and some also use technology as a medium for instructional delivery and follow-up. Indiana has a wide variety of state-sponsored streaming video programs online, including a *Technology in Curriculum* series and an Indiana Principals' Leadership Academy. Michigan's Consortium for Outstanding Achievement in Teaching With Technology provides incentives and encourages high standards for Michigan teachers in infusing technology into instruction. Ohio SchoolNet has produced a professional development model that aligns curriculum, instruction, and technology for novices and practitioners. The Ohio Resource Center for Mathematics, Science, and Reading provides model examples of technology integration into curriculum, especially in math, science, and reading. Minnesota State Colleges and Universities provides eFolio Minnesota, a tool that enables students, teachers, and jobseekers throughout the state to create their own Internet-based portfolios.

Resources

7. Financing for Technology-Related Professional Development

Policy studies are needed on whether states should provide funding to districts for professional development, should supply professional development themselves, or should pay vendors or nonprofit organizations to make these services available. To the extent that state funding to school districts for technology-related professional development is provided, this financial support should be allocated in ways that enhance equity. In the few instances in which states in the North Central region do provide special resources for professional development, these resources are not targeted specifically to educators with particularly challenging roles (other than where mandated by federal formula funding to large urban districts). In distributing its federal NCLB funds, Wisconsin requires that "at least 60 percent of the overall project request must be used for ongoing, sustained, high quality professional development integral to this project to improve teaching and learning through the use of technology" (Lohr & Roy, 2003, p. 8).

Policy studies are needed on whether states should provide funding to districts for professional development, should provide professional development themselves, or should pay venders or nonprofit organizations to make these services available.

The Bill and Melinda Gates Foundation has provided funding to many states for professional development activities targeted to principals and superintendents. For example, the Ohio Leadership for Integrating Technology project, funded in part through a grant from the Gates Foundation, provides educational technology leadership training to school superintendents and principals. Outside of these Gates-funded initiatives, few states in the North Central region provide financial assistance to districts that is targeted specifically to technology-related professional development for administrators.

Resources

Wisconsin Guidance on NCLB Funds
www.dpi.state.wi.us/dpi/dltcl/imt/
doc/guidnce03.doc

Ohio Leadership for Integrating
Technology project
www.ohioschoolnet.k12.oh.us/
3_programs/default.asp?pg=2&tab
=fastfacts&program=OhioLIT

8. State-Subsidized Electronic Network

Policy studies are needed on the value of states developing and maintaining their own regional electronic networks, versus contracting with the private sector for such a service, versus subsidizing districts to interconnect however they wish. The relative value of having such a regional network service for all forms of human service organizations, as contrasted with focusing only on educational institutions, is another area in which more research is needed. One reason that little research of this type has been conducted is lack of funding. No single human service agency is likely to fund such studies, and joint funding across human service organizations typically is difficult to attain. Another barrier to this type of research is that the private sector vendors who supply such networks often have vested interests in implementing a particular model, regardless of whether or not it is the most effective approach.

In the North Central region, Illinois, Iowa, Ohio, and Wisconsin have the most developed statewide electronic networks. The Illinois Century Network (ICN) is a telecommunications backbone providing high-speed access to data, video, and audio communication in schools and libraries, colleges and universities, public libraries and museums, and local governments and state agencies.

ICN sponsors an annual Illinois Distance Learning Conference, which focuses on virtual professional development for teachers. The Iowa Communications Network is a state agency that administers a statewide fiber optics network. The capacity of the Iowa Communications Network enables authorized users—such as hospitals, state and federal government, public defense armories, libraries, schools, and higher education—to communicate via high-quality, full-motion video; high-speed Internet connections; and telephones. The Ohio SchoolNet provides access to data, voice, and video networks for public school classrooms throughout the state. ONEnet Ohio is a state initiative working to expand SchoolNet's capabilities. Wisconsin provides subsidized telecommunications for all districts. Districts may either receive a T1 line for $100 per month or a DS/3 video line for $250 per month. About two thirds of Wisconsin's 426 school districts are on a full-motion video-distance learning network funded and operated by the state.

Resources

Illinois Century Network
www.linc2icn.net

Iowa Communications Network
www.icn.state.ia.us

ONEnet Ohio
www.ohioschoolnet.k12.oh.us/
3_programs/default.asp?pg
=2&tab=fastfacts&program=onenet

Wisconsin BadgerNet Converged Network
www.doa.state.wi.us/wencc/

9. Priority for Less Connected Populations

As documented in reports by sources such as the Benton Foundation, the federal E-Rate funding has aided in promoting access for underserved populations. Much remains to be accomplished, however. The provision of access alone does not address the need for content and services tailored to students with special needs. Few of the seven states in the North Central region dedicate substantial resources targeted to improving technology access for less connected populations.

Illinois and Ohio illustrate what types of initiatives are possible. In Illinois, the Closing the Gap Program provides districts with additional funding to support and enhance the district's community-based technology plan and is targeted to low-income schools. The Illinois School Technology Revolving Loan Program provides low-cost financing to eligible school districts for technology hardware improvements. To date, the program has made 379 loans for a total of more than $63 million. In Ohio, the Ohio SchoolNet Telecommunity and the Interactive Video Distance Learning projects help Ohio's schools expand upon the local network infrastructure provided by the SchoolNet Wiring and ONEnet Ohio programs. Technology Equity Grant funds are designed to fill technology needs not addressed by the SchoolNet or SchoolNet Plus programs.

Resources

Illinois Closing the Gap Program
www.isbe.state.il.us/learn-technology/
elearn/html/ctg.htm

Illinois School Technology Revolving Loan Program
www.isbe.state.il.us/learn-technology/
elearn/html/loan.htm

Ohio SchoolNet Telecommunity
www.ohioschoolnet.k12.oh.us/
3_programs/default.asp?pg=2&tab
=fastfacts&program=telecommunity

Ohio SchoolNet Interactive Video
Distance Learning
www.ohioschoolnet.k12.oh.us/
3_programs/default.asp?pg=2&tab
=fastfacts&program=ivdlp

Ohio SchoolNet Technology Equity
Grants
www.ohioschoolnet.k12.oh.us/
3_programs/default.asp?pg=2&tab
=fastfacts&program=techequity

10. Collaborative Partnerships for Access

Apart from financial resources, another policy tool that states can use to aid underserved populations of learners is to encourage collaborative partnerships among educators, coordinating online services and support. A few states are pioneering this type of initiative, but most in the North Central region have no programs in this area.

The Wisconsin Education Network Collaboration Committee links TEACH Wisconsin, the Department of Electronic Government, the Department of Public Instruction, the Wisconsin Technical College System, the University of Wisconsin System, the Wisconsin Educational Communications Board, and the Wisconsin Association of Independent Colleges and Universities. Also, the Wisconsin Association of Distance Education Networks aids in coordinating among distance education providers. Similarly, the goal of the Illinois Online Leadership Council (consisting of the Illinois Century Network, Illinois Virtual High School, Illinois Community Colleges Online, Secretary of State, Illinois Virtual Campus, Illinois Digital Academic Library, Illinois Online Network, the Collaboratory Project, and the Illinois Mathematics and Science Academy) is to connect resources related to online education in Illinois.

Resources

Wisconsin Education Network Collaboration Committee
www.teachwi.state.wi.us/WENCC/wencc.html

Wisconsin Association of Distance Education Networks
www.uwex.edu/disted/waden/

Illinois Online Leadership Council
elearning.illinois.net/iolc.htm

11. State Provision of Aggregated, Synthesized Information

NCLB reporting requirements are putting substantial pressure on districts and states to report a variety of data. During the next few years, this requirement likely will lead to an expansion of data-driven decision-making initiatives. Some of the seven states in the North Central region have taken promising steps in this direction. All of these states collect information from districts and make this information publicly available.

Illinois's ILEARN online tool allows comparisons of districts using financial data, and the *Illinois School Improvement* Web site allows comparisons of demographic and performance data. Other states have Web sites that provide accountability data, such as the *Wisconsin's Information Network for Successful Schools* Web site. Michigan's Center for Educational Performance and Information (CEPI) collects and reports data about Michigan's K–12 public schools. CEPI also provides a number of reports used by local districts to assist them with data-based educational decision making. Ohio conducts a Biennial Education Technology Assessment, which gathers and reports technology accessibility and usage in its K–12 public schools, using online surveys for

teachers, buildings, and districts. Ohio's annual Data Training Institutes help school personnel to analyze their own proficiency test data, operational data, and even teacher-generated data in depth.

Resources

Illinois ILEARN
206.166.105.128/ilearn/ASP/index.asp

Illinois School Improvement Web site
ilsi.isbe.net

Michigan Center for Educational Performance and Information
www.michigan.gov/cepi/

Ohio Biennial Education Technology Assessment
www1.osn.state.oh.us/beta/

Ohio Data Training Institutes
www.ode.state.oh.us/
school_improvement/School_Leaders/
Goals_Brochures/
DataManagementAnalysis.asp

Wisconsin's Information Network for Successful Schools
www.dpi.state.wi.us/sig/

12. State Use of Analyzed Data to Shape Policy

Systematic "mining" of data already being collected is an important emerging opportunity for states— and the federal government—to enhance capabilities for data-based decision making and policy setting. As discussed above, many states in the North Central region make the data they collect publicly available, and some states aid districts in interpreting the data. There is little evidence, however, that any of these states analyzes its own data and uses the results to shape state policy. Data-based decision making is a virtue that states tend to preach but not practice. Some states recently have experienced high turnover of

decision makers and staff in their education agencies, making consistent policy setting based on longitudinal data more difficult. If newly elected or appointed officials are to make good on promises of reforming education, they should make better use of the performance data that would allow effective improvements.

Resources

None.

13. Aid for E-Rate Applications

Although providing support for districts applying for federal E-Rate funds seems an excellent way to leverage resources, only some of the states in the North Central region provide such support. Illinois, Michigan, and Ohio provide districts with help in applying for federal E-Rate funds. In particular, Ohio SchoolNet provides regional E-Rate technical assistance workshops.

Resource

Ohio SchoolNet E-Rate Technical Assistance Program
www.ohioschoolnet.k12.oh.us/ 3_programs/default.asp?pg=2&tab =fastfacts&program=erate

14. Guidelines for Technology Infrastructure

Policy studies are needed on the value of states providing technology infrastructure guidelines to districts. Whether or not such support is needed at this point in history is an open question. One argument for this type of state-supported resource is that information technology continues to evolve rapidly, and new capabilities such as wireless handheld devices offer opportunities to enhance educational effectiveness and equity. To provide value in assessing emerging technologies,

however, state guidelines must include a range of technologies and must frequently be updated. Both actions are not typical of many state guidelines now.

Policy studies are needed on the value of states providing technology infrastructure guidelines to school districts. One argument for this type of state-supported resource is that information technology continues to evolve rapidly.

In the North Central region, Ohio provides the most substantial guidance to districts on their decision making about technology infrastructure. The SchoolNet Plus program provides funds that allow schools to purchase computers, with the goal of one computer per every five students. The Software Review Project consists of a library with hundreds of reviews of instructional software.

Resources

Ohio SchoolNet Plus
www.ohioschoolnet.k12.oh.us/ 3_programs/default.asp?pg=2&tab =fastfacts&program=schoolnetplus

Ohio SchoolNet Software Review Project
www.ohioschoolnet.k12.oh.us/ 3_programs/default.asp?pg=2&tab =fastfacts&program=ssrp

15. Volume-Purchasing Discounts for Technology

Volume-purchasing discounts seem a clear advantage that states can offer to educators—particularly if the pur-

chases apply to hardware, software, and services across a range of vendors. That many states in the North Central region make little use of such discounts is surprising. Iowa, Michigan, and Ohio provide the most extensive volume-purchasing discounts. Iowa's area education agencies have negotiated statewide purchasing discounts for districts on hardware, software, and training materials. The state of Michigan sponsors and funds 22 regional educational media centers (REMCs), which provide a wide range of technology-related services to the local districts. One such service is providing statewide volume-purchasing discounts. The Ohio SchoolNet Commission makes available an online *Equipment and Services Catalog*, which features workstations, servers, laptops, printers, and other equipment.

Resources

Media and Technology for Iowa Area Education Agencies
www.iecia.org/MediaTech/ MediaTechMain.html

Cooperative Bid Catalog for Michigan Regional Educational Media Centers
www.remc.org/avbid/

Ohio SchoolNet Equipment and Services Catalog
www.ohioschoolnet.k12.oh.us/ 4_resources/scheduling/default .asp?pg=3.1&keyword=231&days =&resource=scheduling &program=&wherefrom=home

16. Infrastructure Financing

States have responsibilities for equity, and programs such as the federal E-Rate fall short of meeting the full range of needs for underserved populations of learners. In the North Central region, some states provide financing to districts

for purchasing technology infrastructure. For example, the TEACH Wisconsin funding program provides educational technology block grants to public school districts, Milwaukee charter schools, and secured juvenile correctional facilities to accelerate their investments in educational technology. The Ohio SchoolNet Commission developed the Community Schools.Net program to provide students in community schools with educational technology resources and services. Indiana also provides a limited number of low-interest loans to aid districts in purchasing computers and telecommunications.

Resources

Block Grants for TEACH Wisconsin
www.teachwi.state.wi.us/
blockgrants.html

Ohio Community Schools.Net
www.ohioschoolnet.k12.oh.us/
resources/document/documents/
doclib_1558.pdf

Indiana School Technology Advancement Account
doe.state.in.us/olr/staa/welcome.html

17. State-Sponsored Research and Evaluation on Technology

As discussed earlier, NCLB reporting requirements are mandating that districts and states conduct research on the types of educational interventions they are funding. In particular, the federal government currently is emphasizing scientifically based research, focusing on randomized field trials. None of the states in the North Central region has provided substantial resources for this type of research, although some have submitted a grant application to the U.S. Department of Education for this purpose. The

Education Department's Evaluating State Education Technology Programs Grant Competition provides much-needed assistance for increasing the capacity of states to design, conduct, and procure high-quality evaluations of educational technology.

Resource

Evaluating State Education Technology Programs
www.ed.gov/about/offices/list/os/
technology/edgrants.html

18. State Educational Technology Plan

Ideally, a district has an education plan that integrates technology; less optimally, a district may have an educational technology plan that provides a strategic perspective even if it is separated from documents that delineate the district's educational objectives and approaches. Many states, even though they frequently preach the ideal model of technology planning for districts, do not practice this model in their own policy formulation processes. In the North Central region, a number of states—Illinois, Michigan, Ohio, and Wisconsin—do have some form of educational technology plan, but no state has an education plan that fully integrates technology. For example, Illinois provides a five-year K–12 technology plan. State technology plans often aggregate technology initiatives across a number of sectors beyond K–12 (e.g., higher education, libraries, economic development), so the ideal policy option would be to have both a state K–12 education plan that integrates technology and a state technology plan that interrelates K–12 initiatives with technology activities across other types of state activities.

Resource

Digital-Age Learning: Illinois K–12 Technology Plan
www.isbe.state.il.us/learn-technology/
ltc/pdf/Tech%20Plan%20Revisions%2
0_11-07-02_1.pdf

19. State Oversight of District Technology Plans

In the North Central region, most states provide some support and oversight for districts in preparing technology plans. In some states, however, a culture of strong local control precludes such support as a policy option. Illinois has a *School District Technology Plan Blueprint* for district technology plans as well as *Technology Plan Progress Guidelines*. Ohio SchoolNet provides an online district technology planning tool. Ohio also has a Web-based application called *Comprehensive Continuous Improvement Planning*. This online document is the entry point for Ohio school districts to access their district improvement plans and grant applications.

Resources

Illinois School District Technology Plan Blueprint
www.isbe.state.il.us/learn-technology/
elearn/pdf/SDTPB.pdf

Illinois Technology Plan Progress Guidelines
www.isbe.state.il.us/learn-technology/
elearn/pdf/TPPG.pdf

Ohio SchoolNet Online District Technology Planning Tool
www.osn.state.oh.us/3_programs/
default.asp?pg=2&tab=fastfacts&
program=TPT

Ohio Comprehensive Continuous Improvement Planning
ccip.ode.state.oh.us/ccip/
default.asp?ts=12200311249

Policy Recommendations

This policy study highlights both the strengths and weaknesses of the current educational technology policy approaches that are typical of states in the North Central region. Exemplary initiatives are cited that other states could emulate, and policy areas are identified in which many states are strong. The following policy recommendations build on the strengths of the states in the North Central region and address weaknesses that appear to be consistent among these states.

- **Use technology to achieve policy objectives.** States should exploit the potential of computers and telecommunications to aid in achieving policy objectives that may not be directly related to technology. State policymakers may wish to investigate online professional development strategies used in the corporate sector and online assessment approaches as models that could be adapted to their own operations. Federal policymakers could provide funding for initiatives of this type, as well as incentives to business for providing expertise in these areas.

- **Improve equity.** Many states could do more to aid equity through technology—from helping students with special needs, to providing access and services for underserved populations, to facilitating districts' E-Rate applications. States could supplement federal resources through initiatives such as volume-purchasing discounts and money for infrastructure financing. In difficult financial times, equity often becomes a policy area that is downplayed as all local districts experience shortfalls and clamor for state assistance.

Staying the course with special initiatives to aid districts with underserved populations is important but requires political will on the part of legislators, governors, and other elected officials.

- **Integrate technology into the state education plan.** Most states do not have an education plan into which educational technology is integrated, thereby not practicing themselves what they preach to local districts. Although the turnover in state education agencies is high, thus making strategic planning difficult, the changeover in elected officials is typically even higher. State policymakers may wish to develop long-range plans that integrate technology into larger educational objectives, then engage in active educational outreach to legislators and governors.

- **Provide oversight of district technology plans.** State oversight of district technology plans is an important policy tool for increasing the effectiveness of investments in computers and telecommunications. As a follow-up activity, states could do more to share exemplary district plans that seem good models for others to follow.

Conclusion

Developing and maintaining a high-quality set of educational technology policies is a major challenge for states. The NCLB legislation presents state policymakers with a complex array of responsibilities. As a result, states face the challenge of implementing new initiatives at a time when their revenues are falling so dramatically that many already existing programs are threatened. Financial shortfalls also have deci-

mated the staffs of many state departments of education, adding high turnover and difficult workloads to these other challenges. Despite these problems, many states have solid strategies for using educational technology—a tribute to the dedication and quality of state policymakers and staff at all levels.

Overall, the good news is that states have implemented a variety of policies that advance education through the effective use of information technology. Even better news is that much more can be done to improve state educational technology policies, thereby providing substantial additional leverage for educational improvement. The challenge is for state decision makers to provide the resources and the political will to take this next step in policy development. It is much easier for states to monitor local districts' use of more effective practices and policies than to hold themselves accountable for improving their own policies and policy-setting processes. The primary shift necessary is for these higher-level decision makers to hold themselves responsible for effective practices and policies similar to those they preach to local districts: improvement initiatives based on data, consistent over a substantial period of time, adequately and reliably funded, and directed to improving students' educational outcomes rather than political objectives. The policy recommendations in this report are intended to stimulate thinking and discussion about how states might successfully undertake such an effort.

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