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ABSTRACT

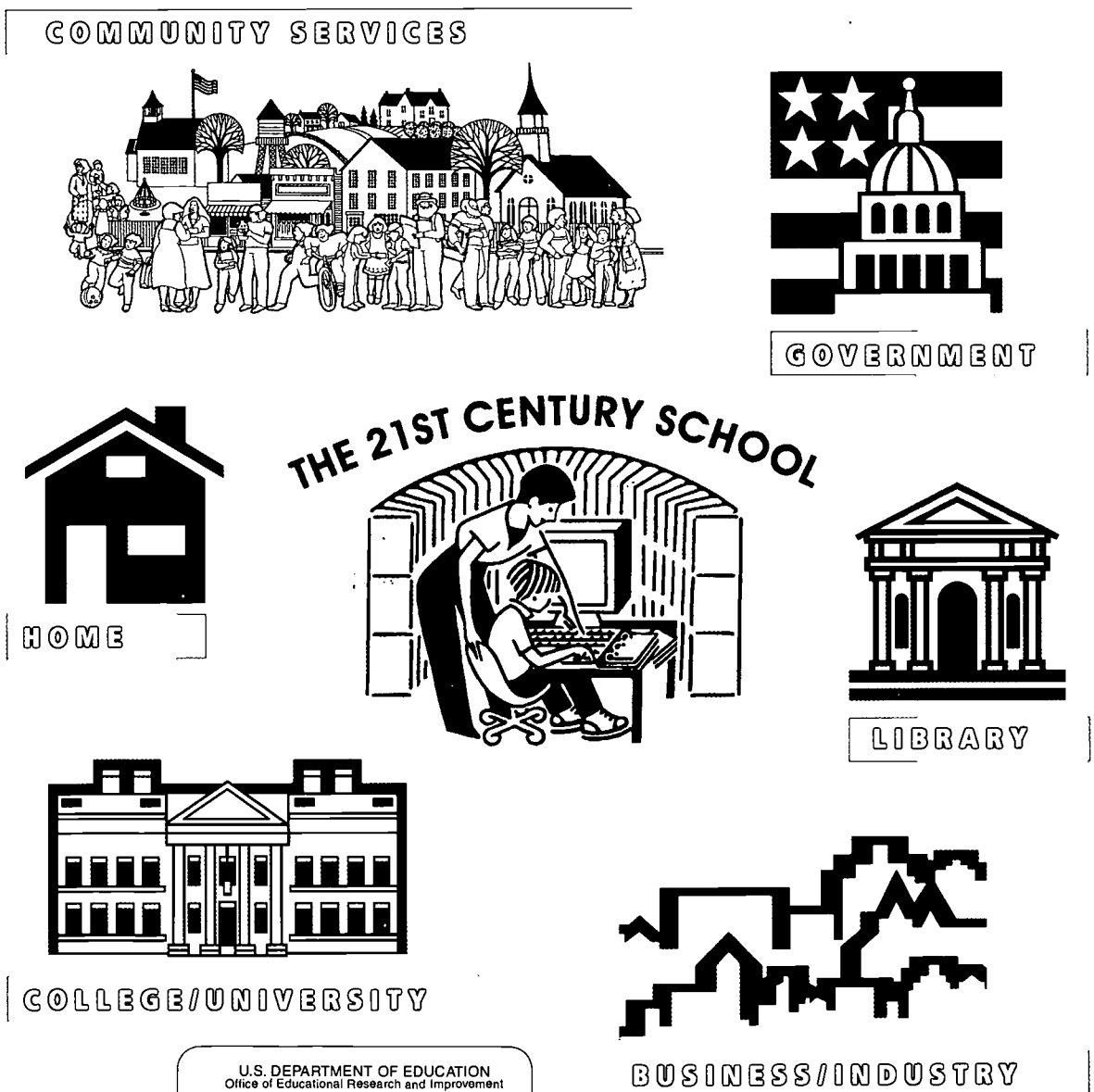
Since the development of the Educational Technology Plan PK-12 in 1996, the state of Wisconsin has made great strides to ensure that the technologies necessary for fostering student growth and achievement are available to urban, suburban, and rural children alike. This addendum, intended to supplement the 1996 plan, will provide Wisconsin's school districts with a clear vision for educational technology on a statewide level by: (1) addressing trends and issues; and (2) focusing on the use of instructional technology in teaching and learning to improve student achievement. Emphasis is on continued collaboration among state, regional, and local entities to build on the many good practices and policies implemented since 1996. The first section presents an overview, discussing the background, purpose, and process of developing this addendum, and the revised vision and mission for educational technology in Wisconsin. The next section provides information on the current status and progress since 1996, discussing major initiatives developed; comprehensive local technology planning; the Technology Literacy Challenge Fund; the federal E-rate; the technology survey initiative; and a chart of 1996 recommendations, current status, and evidence of progress. The third section provides recommendations under each of the following areas: student standards, curriculum integration, and student assessment; teacher standards, preservice training, and professional development; quality resources for students and teachers; well-maintained technology infrastructure and support systems; attention to equity and diversity; and sophisticated and multiple assessments. The next section outlines responsibilities of the Instructional Media and Technology Team at the Wisconsin Department of Public Instruction (DPI). A section of appendices includes references, a technology plan checklist, Levels of Technology Implementation (LoTI) Framework emerging priorities identified by the Forum on Technology in Education, and results of Wisconsin's portion of the 1999 Milken Technology Survey. The addendum also identifies areas in

which the state needs to invest to ensure that the current level of hardware, software, technology integration, teacher professional development, and infrastructure continues to evolve and does not stagnate. (AEF)

Wisconsin Education Technology Plan PreK-12

2000 ADDENDUM

A Supplement Marking Progress and Extending the Vision



Wisconsin Educational Technology Plan PreK-12: 2000 Addendum

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Foreword

To the Citizens of Wisconsin:

As we enter the 21st Century, Wisconsin's long and proud tradition of progressive public education, coupled with a commitment to equal educational opportunities for all children, has branched into a new area—educational technology. Since the development of the original Wisconsin Educational Technology Plan PK-12 in 1996, we have made great strides to ensure that the technologies necessary for fostering student growth and achievement are available to urban, suburban, and rural children alike.

Wisconsin is truly a leader in educational technology. Our *Wisconsin's Model Academic Standards for Information and Technology Literacy* are among the best in the nation. Our Governor's Wisconsin Educational Technology Conference attracts national speakers and presenters and serves over 2,200 PreK-16 educators each year. Since 1996, we have seen a dramatic increase in the amount of technology in schools and an increase in uses for technology. Nearly 97 percent of the 426 school districts in the state now have certified technology plans; over 50 percent of school districts belong to a distance learning network. The proliferation of on-line resources for students and teachers increases daily. Technology competencies for teachers are now part of a revamped educator licensing process in Wisconsin, bringing the state in line with a policy already in place in many local school districts.

But for all we have accomplished, we must continue to look ahead. The rapid change in technologies and their uses makes the creation of an educational technology vision and plan more important than ever. The Wisconsin Technology Task Force worked collaboratively over the past nine months to review where we have been, examine data collected since 1996, and determine the next steps Wisconsin must take to achieve its educational technology vision.

Emphasis in the addendum is on continued collaboration among state, regional, and local entities to build on the many good practices and policies implemented since 1996. It also identifies areas in which the state needs to invest to ensure that the current level of hardware, software, technology integration, teacher professional development, and infrastructure continues to evolve and does not stagnate.

Although we have made great strides since 1996, Wisconsin needs to continue developing its educational technology resources to prepare students for life in this 21st Century.

John T. Benson
State Superintendent

Acknowledgements

State Superintendent John T. Benson appointed 22 members to the State Superintendent's Technology Task Force to revise *Wisconsin's Educational Technology Plan PK-12* that was originally developed in 1996. In addition, many other individuals contributed their time and expertise to develop this report on educational technology for Wisconsin schools. Where applicable, a task force member's affiliation or area of expertise is indicated in the line after his or her name.

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A number of people from the Department of Public Instruction contributed support, input, technical assistance, and ideas to this addendum of *Wisconsin Educational Technology Plan PK-12*. Assistant State Superintendent Calvin Potter, Division for Libraries, Technology and Community Learning, has been a staunch advocate and supporter of instructional technology during his tenure in the state legislature and at the agency. The Instructional Media and Technology Team (IMTT), with leadership from Director Neah Lohr, and members Richard Sorensen, Jim Klein, Robert Roy, and Kathy Boguszewski all provided ongoing support and feedback for this project. Special thanks goes to Stephen Sanders, IMTT member, who chaired the original task force that produced the 1996 *Wisconsin Educational Technology Plan PK-12* and assisted in the development of this plan by providing background information and guidance during the process.

CHAPTER ONE

Overview

Background

The publication of *Wisconsin Educational Technology Plan PK-12* in 1996 signaled the start of a concerted effort in this state to examine the uses and impact of instructional technology in Wisconsin schools. That plan sought to provide guidelines for state, regional, and local initiatives to prepare students for life in the 21st century.

With the new century upon us, it is time to look both forward and backward. The task force that revised the *Wisconsin Educational Technology Plan PK-12* did just that. Nearly half of the 22 members of the task force charged with revising the plan were also members who assisted in creating the first plan in 1996. They provided the necessary link to the original plan by offering perspective and insight into the plan's phrasing and intent. New perspectives were brought to the table from representatives of groups invited to participate in the task force that did not participate in 1996. Representatives from Technology for Educational Achievement in Wisconsin (TEACH WI), the Public Service Commission (PSC), the Wisconsin Council of Religious and Independent Schools (WCRIS), the Wisconsin Library Association (WLA), and the Wisconsin Assistive Technology Initiative (WATI) brought views from constituents who now are part of the instructional technology landscape in the state.

This task force also had access to data sets not available in 1996. The amount and quality of research into the effectiveness and impact of instructional technology has increased greatly in the past four years. The state has collected data about instructional technology in annual surveys and questionnaires since 1997. Increasing the number of DPI staff who deal with instructional media and technology has provided necessary guidance to the field and has enabled the state to keep abreast of current situations. Results from three years of Technology Literacy Challenge Fund (TLCF) projects and the initial round of TEACH WI Technical Training and Assistance Grants also have assisted in developing this base of knowledge in Wisconsin.

Armed with the data sets now available, Wisconsin can look back on the 1996 plan and take note of some changes. The original plan listed several conditions for the effective integration of technology into the curriculum in PK-12 schools. The chart below lists some of the original conditions and the current situation regarding those conditions:

Existing Conditions—1996 (WDPI, 1996b)	Current Situation—June 2000
• Most school districts do not have comprehensive technology plans that cover curriculum integration, building infrastructure, and telecommunications.	• As of June 1, 2000, 414 of the 426 school districts (97 percent) in the state have certified technology plans or plans in the certification process. (WDPI, 2000a).
• Technology spending is not focused on a clear set of priorities.	• Districts having certified district technology plans focus expenditures on a clear set of goals developed locally. In addition, districts participating in the Technology Literacy Challenge Fund (TLCF) grant program focus their grant resources from a needs-based assessment within their district. (WDPI, 2000a).

Existing Conditions—1996 (WDPI, 1996b)	Current Situation—June 2000
• Only 10 percent of districts employ a full-time technology coordinator.	• 157 districts (37 percent) employ a full-time (1.0 FTE) technology coordinator (Milken Family Foundation, 1999).
• Most technology coordinators also teach more than half-time.	• Only 74 (17 percent) districts have a technology coordinator teaching half time or more. (Milken Family Foundation, 1999).
• Few districts have comprehensive staff development plans.	• Comprehensive staff development plans are a criterion for the TLCF grant program, and 261 districts (61 percent) have received grant money. (WDPI, 2000b).
• While distance learning is a state priority, relatively few districts have comprehensive distance learning plans or the technical capabilities to receive or distribute instructional programming.	• As of January 2000, 234 (55 percent) of the 426 districts had full-motion video distance learning network capacity (Dirks, 2000).

The preceding evidence reflects only a small portion of data that indicates Wisconsin has made great progress since 1996. Additional evidence of progress will be detailed in later sections of this report. Armed with this evidence and the solid foundation and framework outlined in the 1996 plan, Wisconsin was ready to assess its original plan and create a new vision for the future regarding instructional technology.

Purpose

This addendum will provide Wisconsin's school districts with a clear vision for educational technology on a statewide level by (1) addressing trends and issues and (2) focusing on the use of instructional technology in teaching and learning to improve student achievement. It is not intended to replace the *1996 Wisconsin Educational Technology Plan PK-12,* but to supplement it. Many portions of the original technology plan (such as *Chapter 3: State Technology Planning*; *Chapter 4: Local Technology Planning*, and several appendixes) still hold true and offer valuable guidance for districts developing an instructional technology program to support teaching and learning. Districts should use this addendum in conjunction with the original plan.

An addendum to the plan was also necessary for Wisconsin to remain eligible for the Technology Literacy Challenge Fund (TLCF) program, part of Title III of the 1994 Improving America's Schools Act (IASA). Grants through this U.S. Department of Education program are intended to improve schools through the use of technology. Wisconsin has focused its TLCF grants on professional development, integrating technology into the curriculum, and developing new curricula.

Finally, in light of a revision to the national technology plan developed by the United States Department of Education, it was appropriate for Wisconsin to examine the direction in which the federal plan was moving. Reports and white papers developed by the federal Forum on Technology in Education: Envisioning the Future Task Force served as background. In addition, the Wisconsin task force examined the *Forum on Technology in Education: Envisioning the Future—Emerging Priorities* to view the direction educational technology was heading (see Appendix C).

The charge for the Wisconsin Technology Task Force was to:

- review and revise the 1996 *Wisconsin Educational Technology Plan PK-12*, as necessary;
- review research and data collected since 1996 regarding educational technology at both the state and national levels;

- review 1996 plan recommendations and determine their level of adoption; and
- create educational technology recommendations, funding estimates, and an implementation plan for the next 3-5 years that will be used by the State of Wisconsin, school districts, individual schools, educators, and students.

Process

Because this task force is critically important to the future of public education in Wisconsin, State Superintendent John T. Benson sought nominees representing a wide range of PreK-12 and postsecondary schools, organizations, and related associations whose representatives were knowledgeable in the area of educational technology. From a list of nominees, letters were sent to 22 individuals in September 1999 appointing them to the task force. Stuart Ciske, educational consultant on the Instructional Media and Technology Team at the Wisconsin Department of Public Instruction (DPI), was appointed the agency liaison to the task force.

The task force met five times over the course of 10 months starting in October 1999. During those meetings, the task force heard numerous presentations from local, regional, and national experts regarding instructional technology, testing and assessment, and educator professional development.

During these meetings, the task force used multiple strategies to review the 1996 recommendations and create new recommendations (found later in this report). The task force engaged in lengthy discussion and debate regarding the recommendations and reached consensus on both the analyses of the 1996 recommendations and new recommendations for 2000. Extensive use of email contributed to the dissemination of information, meeting notes, and report drafts as well as general task force communication.

Vision and Mission

During the task force meetings, discussion generally centered on what Wisconsin should look like after implementing this technology plan. Discussion was lively. The task force settled on a vision and mission in December 1999. That vision and mission underwent some analysis and revision by a group of Wisconsin educators at a conference sponsored by the North Central Regional Educational Laboratory (NCREL) in April 2000. In May 2000, the task force met with Kathy Swope and Sheryln Brown, both of the Milwaukee Public Schools, who represented the educators who revised the vision and mission. Consensus was reached on the following vision for educational technology in Wisconsin:

> **The vision for the plan is to create a community of learners who utilize technology as responsible and productive global citizens.**

In addition, discussion on the task force mission also ensued and consensus was reached on:

> **The mission of the** *Wisconsin Educational Technology Plan PK-12* **is to promote and support continuous achievement and lifelong learning through the effective use of educational technology and resources.**

Current Status and Progress Since 1996

Major Initiatives

Since publication of Wisconsin Educational Technology Plan PK-12, seven major initiatives have begun to shape instructional technology in Wisconsin:

- Comprehensive Local Technology Planning
- Wisconsin Model Academic Standards for Information and Technology Literacy
- Technology Literacy Challenge Fund
- Federal E-rate
- Levels of Technology Implementation (LoTI) Teacher Self-Assessment
- Technology for Educational Achievement in Wisconsin (TEACH WI)
- Technology Survey Initiative

Individually, each has left a major imprint on the instructional technology landscape in Wisconsin. At times, though separate, many of the initiatives have areas that overlap. Agencies involved in implementing these initiatives have worked to ensure that the proper people, boards, and task forces are aware of the entire picture and not just their own little part. It is important to provide background, as many of the recommendations have come either directly from or in conjunction with the initiatives.

Comprehensive Local Technology Planning

Wisconsin school districts have made remarkable progress since 1996 in obtaining certification for local technology plans. DPI staff conducted workshops for local school district personnel and Cooperative Educational Service Agency (CESA) staff to enhance their understanding of what the plans should include. CESA staff work closely with many individual districts to ensure that their plans have the necessary content and documentation for certification.

Since 1996, 362 districts have submitted plans that have been certified. Another 52 districts have plans in the approval process as of June 1, 2000. In sum, 414 of 426 districts, or 97 percent, have plans approved or in the approval process (WDPI, 2000a).

		Districts with Technology Plans					
			Expiration Dates				
	No Certification	In Process of Certification	12/31/00	12/31/01	12/31/02	12/31/03	12/31/04 or later
Number of districts	12	52	89	88	116	55	14

Computing and networking technologies, in all their various forms, are becoming integral parts of instructional and administrative school services. To ensure that these technologies are used efficiently and cost effectively, school districts are encouraged to develop a technology plan. Ideally, any technology plan will be part of a broader long-range plan encompassing all educational services.

State approval and certification of local technology plans is an important step for local districts, as a certified plan is required by several state and federal technology-related grant and funding programs. For a local school district to qualify for federal E-rate subsidies, a certified plan must be on file at the state level. In addition, districts writing federal Technology Literacy Challenge Fund grant applications must have an approved plan. At the state level, participation in the TEACH WI Wiring Loan Program requires a certified technology plan.

School district technology plans are evaluated using a Comprehensive Technology Plan Checklist (see Appendix A). The checklist outlines the areas DPI staff look for when reviewing the plans. DPI staff work with districts that need assistance in this process to ensure their plans meet minimum requirements for certification. A list of school districts and their technology plan expiration dates can be found at the http://www.dpi.state.wi.us/dpi/dlcl/imt/tekcert.html. District technology plans must address the following areas:

- Introduction/Background Information
- Needs and Goals in Support of Educational Improvement
- Needs Assessment and Current Status
- Technology Design to Achieve Goals
- Action Plans, Including Budget Summary
- Monitoring and Evaluating the Plan
- Adult Technology Literacy Component

The checklist came from the *Wisconsin Educational Technology Plan PK-12*, Appendix O, which provided a suggested table of contents for a local school district technology plan. The checklist is consistent with Section 3135 of the Elementary and Secondary Education Act (ESEA). This federal law outlines the legal requirements for plans submitted for competitive grants from the Technology Literacy Challenge Fund (TLCF) program (WDPI, 1996b).

Wisconsin Model Academic Standards for Information and Technology Literacy

A statewide task force created *Wisconsin's Model Academic Standards for Information and Technology Literacy* (ITL). Their charge was to develop a set of clear, measurable academic standards defining what Wisconsin students, by the end of grades four, eight, and twelve, should know and be able to do to access, evaluate, and use information and technology.

Since its introduction in September 1998, *Wisconsin's Model Academic Standards for Information and Technology Literacy* (WDPI, 1998) has provided educators from Wisconsin and the nation with a vision of the information and technology skills necessary for the new millennium.

A great deal of national interest exists for the new Wisconsin ITL standards because they create a single, unified framework for the concepts found in both national standards that focus on information and technology competencies for students. Those two national standards are contained in the *Information Literacy Standards for Student Learning* (ALA, 1998), published by the American Association of School Librarians (AASL) and the Association for Educational Communications and Technology (AECT), and the *National Educational Technology Standards (NETS) for Students* (ISTE, 1998), published by the International Society for Technology in Education (ISTE). Both sets of standards were completed in 1998.

DPI staff have conducted more than 50 workshops around the state on the new information and technology literacy standards. During that time, DPI staff worked with classroom teachers, CESA technology directors, and other educational leaders to identify and develop a number of alignment tools, practical integration ideas, and lesson plans that show how information and technology competencies can be integrated into and aligned with content-area standards and curriculum.

The Department of Public Instruction has published companion documents to assist PreK-12 educators and curriculum planning teams. The print document, *Wisconsin's Information and Technology Literacy Standards Matrix* (WDPI, 2000e), shows the correlation between the information and technology literacy standards and the four assessed content areas (science, mathematics, social studies, and English/language arts) and provides classroom integration ideas for educators. This will enable educators to begin the process of integrating information and technology competencies into the core-area content lessons and activities.

The second document, a CD-ROM titled *Integrating Wisconsin's Information and Technology Literacy Standards into the Assessed Curricular Areas* (WDPI, 2000d), will simplify curriculum integration efforts and unit-planning tasks of educators. Material on the CD-ROM can be modified to coincide with district and teacher instructional goals. It also provides educators with actual classroom lessons, projects, and activities that blend both information and technology literacy and core-content standards into quality learning experiences and activities for students.

Technology Literacy Challenge Fund

The Technology Literacy Challenge Fund (TLCF) is a federal grant program to help school districts integrate technology into teaching and learning so that all students become technologically literate. This program is administered under Title III of the Improving America's Schools Act (IASA). Under this program, the U.S. Department of Education requires that state education agencies (SEAs) make competitive grants to local education agencies (LEAs) or a consortium of LEAs and other partners, including CESAs.

Congress has appropriated $1.475 billion over the last four fiscal years for this effort. Wisconsin has received $23.7 million during that time frame (WDPI, 2000b). The request to Congress for these funds established 1997 as the beginning of a five-year, $2 billion effort intended to help encourage state, local, and private sector investment in technology for improving education. The funds were requested to advance the President's four goals for technology in education (US DoE, 2000a):

1. All teachers will have the training and support they need to help students learn through computers and the information superhighway.
2. All teachers and students will have modern computers in their classrooms.
3. Every classroom will be connected to the information superhighway.
4. Effective and engaging software and online learning resources will be an integral part of every school curriculum.

The focus in Wisconsin over the first four years has been on the first goal. The professional development emphasis in this grant program complements other state and federal grant programs under which hardware and networking have been acquired. Wisconsin's TLCF districts and consortium participants gather each May for a TLCF conference, open to all educators, to disseminate their project findings and share best practices.

Federal E-rate

In May 1997 the Federal Communications Commission (FCC) released its order on Universal Service (US). This publication highlights major points of that order pertaining to telecommunication and other discounts for schools and libraries. Popularly known as the "E-rate," it has provided $3.59 billion in telecommunications discounts in the first two years of the program to school districts and public libraries across the country, with approximately $62.5 million of the funds being funneled into Wisconsin schools and libraries (WDPI, 2000c).

The FCC Order on Universal Service is part of the Federal Telecommunications Act of 1996 (PL 104-104). The FCC has recognized the DPI web pages as a resource for information regarding the federal E-rate program. Department staff have also authored a page on state activities regarding the FCC order. Regular updates on the federal E-rate program are posted to the DPI's state PK-12 and public library email lists. In addition, DPI sponsors an E-rate listserv for those interested in the program.

The FCC Order on Universal Service enables public and private K-12 schools, public libraries, and public library systems to receive discounts on all commercially available telecommunication services, Internet access, and internal connections. Many questions remain to be answered regarding which services are eligible for "internal discounts." The discount ranges from 20 percent to 90 percent, with the higher percentage going to less affluent applicants and those in rural areas. For public libraries as well as for schools, the discount is determined by the percentage of students eligible for the national school lunch program.

Discounts apply to both interstate and intrastate services, though the latter are covered only where state utility commissions cooperate with the FCC by establishing the intrastate discounts within their states. A Wisconsin Public Service Commission letter strongly encouraged adoption of such rules in July 1997.

Levels of Technology Implementation Teacher Self-Assessment

In the spring of 1999, DPI sponsored a Technology Literacy Challenge Fund (TLCF) conference that offered technical assistance to districts, spotlighted subgrantee projects, and introduced attendees to a process for assessing individual teachers' competence in using educational technology, called the Level of Technology Implementation (LoTI) model. As a result of the conference, substantial statewide interest developed for using LoTI in Wisconsin school districts to obtain data to make professional development decisions. CESA administrators and DPI decided to offer this as a statewide option to districts that were ready for such an assessment tool.

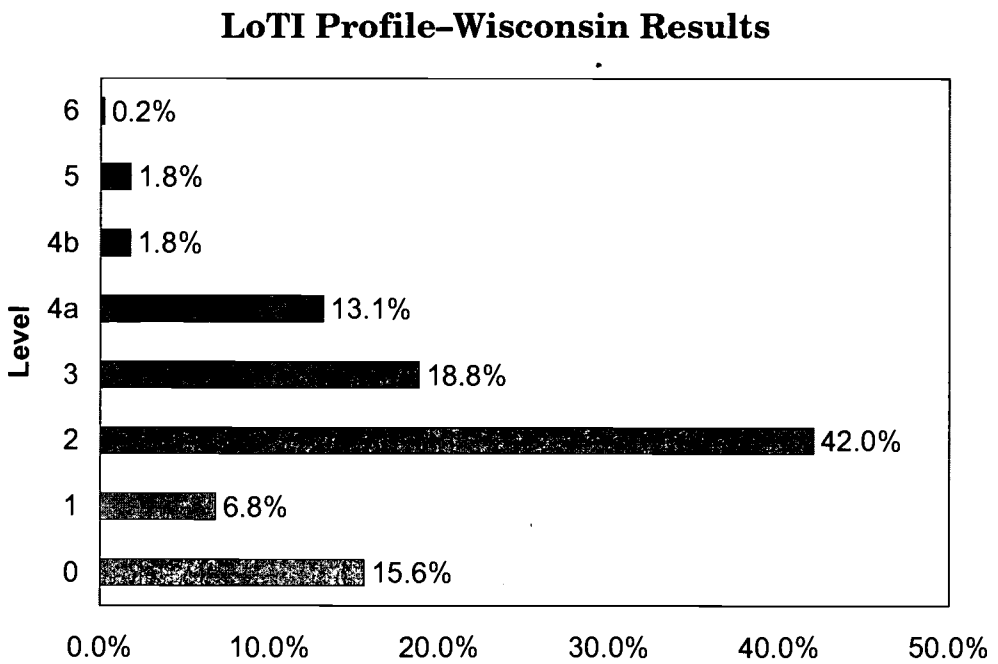
The LoTI assessment measures teachers' level of technology integration (LoTI), comfort and skill level of personal computer use (PCU), and current instructional practices (CIP) using a subject matter–based versus learner-based approach. It has been revised to correlate with *Wisconsin's Model Academic Standards for Information and Technology Literacy* (NBEA, 2000b).

Forty-four people attended the initial CESA/DPI training for using this assessment tool, held in August 1999. CESA staff development, standards and assessment, technology, and curriculum staff and DPI, Educational Communications Board (ECB), and TEACH WI staff attended. Dr. Christopher Moersch of the National Business Education Alliance (NBEA) provides analysis of the survey data; maintains the corresponding database; creates district, regional, and state reports; and interprets the reports at regional workshops for leadership teams of district staff. Individual school building reports are also available.

By June 2000, nearly 23,000 teachers in 287 of Wisconsin's 426 school districts had completed the LoTI assessment (NBEA, 2000c). The DPI and CESAs established workshops for CESA, DPI, and TEACH WI staff; leadership teams from participating districts; and other interested persons. District, regional, and state LoTI profiles were distributed and explained. District staff attending the workshops, working with CESA and DPI staff members, determined the next steps related to professional development (NBEA, 2000b).

Results of the survey analysis indicate that Wisconsin teachers are very strong in their Current Instructional Practice (CIP) and their Personal Computer Use (PCU), according to Moersch (NBEA, 2000c). He noted in his report that Wisconsin teachers are among the nation's best in terms of CIP. The overall LoTI profile for Wisconsin teachers, however, came in at a level

of implementation (see Appendix B) similar to that of the overwhelming majority of teachers across the nation. This level, which Moersch calls "Level 2: Exploration," is one in which technology use is not fully integrated into the curriculum.



As part of his report, Moersch outlined several strategies for moving teachers toward increased technology integration into the school curriculum (NBEA, 2000b). Moersch has regularly visited Wisconsin to hold workshops; consult with district, CESA, and state personnel; and offer his expertise in developing appropriate professional development activities for teachers to increase their use of educational technology in the curriculum.

Technology for Educational Achievement in Wisconsin

Technology for Educational Achievement in Wisconsin (TEACH WI) provides support for investment in educational technology and telecommunications access for schools, libraries, and colleges. TEACH WI seeks to enable educational institutions to take advantage of gains in technology and communications, to improve teaching and learning, and to provide students with the skills necessary to live in a complex world (TEACH WI, 2000).

Wisconsin Governor Tommy G. Thompson proposed the TEACH WI initiative in January 1997 in response to a similar initiative advanced by State Superintendent John T. Benson. TEACH WI was funded initially in the state's 1997-99 biennial budget and was reauthorized in the 1999-2001 biennial budget. The program has the following goals:

- Accelerate the use of technology by K-12 schools, libraries, colleges, universities, and technical colleges.
- Break down the barriers of distance and time to allow students to learn at any time and in any place.
- Advance education into the 21st Century.

The following programs comprise TEACH WI:

Educational Telecommunications Access. Public school districts, public library boards, private schools, private colleges, tribal colleges, and technical college districts are eligible for this program. It provides a minimum level of telecommunications access for a maximum price of either $100 per month (for a T-1 line) or $250 per month (for other types of data lines and video links). Districts can obtain one data line for each high school in the district.

Educational Technology Block Grants. This program provided public school districts with $62 million during 1997-99 and $70 million during 1999-2001 for educational technology. The funding is distributed through two formulas and requires no application or competition. To apply, school boards must approve a resolution requesting block grant funds.

Wiring Loans. This program makes funds available to school districts and public libraries to upgrade electrical wiring and install computer network wiring. Loans totaling $100 million have been made available to school districts. Public libraries are eligible to receive $10 million in loans. Districts and libraries taking loans are required to pay back 50 percent of the amount loaned.

Technical Assistance and Training Grants. TEACH WI awards competitive grants to CESAs and consortia; consortia may include CESAs, school districts, and /or public library boards. Approximately $15 million in grants has been distributed during each biennium.

Technology Survey Initiative

How is technology being used in Wisconsin schools? The answer to the question is becoming more readily available. Since 1997-98, instructional technology coordinators throughout the state have completed three statewide surveys focusing on how technology is being used in Wisconsin school districts. Beginning with the Quality Education Data (QED) survey in 1997-98 and continuing through the Milken Exchange on Education Technology surveys of spring 1999 and 2000, both DPI and TEACH WI have collected data on instructional technology use in the state.

DPI sponsored the QED survey and co-sponsored with TEACH WI Milken's Survey of Technology in the Schools to collect this data. The Milken survey focuses on the use of technology by teachers and students as well as on the number of computers and peripheral equipment used in the schools.

The DPI and other agencies have used the data from these surveys, as has this task force. According to the latest Milken survey (Milken Family Foundation, 1999), the three areas of greatest need, identified by district technology coordinators, are

- continued professional development,
- assistance in integrating the Information and Literacy Standards into the curriculum, and
- local technical assistance and support.

These three areas mirrored the top three from the 1999 survey and are echoed in several national reports and surveys completed by the US Department of Education.

The focus of the Wisconsin TLCF Grant program and annual conference, the LoTI teacher self-assessment, the *Information and Technology Literacy Standards Matrix* and accompanying CD-ROM, and other efforts can all be traced to data from these surveys.

DPI and TEACH WI staff members field questions daily about technology. Media representatives, association leaders, legislators, and interested citizens want to know how our major investments are being put to work to improve learning. Funding agencies (such as TEACH WI) and federal grant programs (such as the TLCF) need this information not only to meet

governmental requirements but to direct the funds to the projects and areas of the state most in need of support. To that extent, data from these surveys provide much-needed information.

The surveys will tell us, among other things, if students use computers only in a lab or in classrooms and library media centers as well. The surveys ask technology coordinators to comment on district objectives for using technology. For example, is the emphasis on teaching students how to use technology or on improving learning in all disciplines? The surveys ask if technology is leading students to become more independent learners and whether its use has led to more engaged learning.

Results from these surveys are shared with DPI staff and other state agencies and are disseminated to educators through articles, email lists, and presentations at technology and professional conferences.

1996 Recommendations: Evidence to Support Progress

As part of their charge, the task force examined the recommendations from the 1996 *Wisconsin Educational Technology Plan PK-12* and gathered information to determine the progress and level of implementation for each of the recommendations. Task force members determined which recommendations were implemented and what indicators demonstrated implementation. Below are the recommendations from 1996 and the task force's analysis.

The recommendations of the original technology task force identified a direction for what needed to be done (WDPI, 1996b). At the state, regional, and local levels, implementation plans were to be developed that defined how the recommendations would be implemented and which organizations should have responsibility for specific areas. State agencies, regional organizations, and local districts all had roles to play in implementation. Within each context (state, regional, and local), decisions were to be made about the roles different state agencies, organizations, or school districts would play. Recommending what those specific roles should be was beyond the scope of the 1996 report.

The 1996 technology task force expected the state to provide leadership and guidance by articulating the vision for educational technology, setting priorities for implementation, and aligning the resources necessary to develop and provide an effective and appropriate statewide technology infrastructure.

(Note: All facts and figures are as of June 1, 2000.)

1996 Recommendations, Status, and Evidence of Progress (WDPI, 1996b)

1.0 State Technology Planning		
Recommendation	**Status**	**Evidence of Progress**
1.1—The DPI must maintain a strong instructional technology unit so it can serve in a leadership capacity.	*In progress*	Current staffing for the Instructional Media and Technology Team (IMTT) is nearly full (one director, five consultants, and two program assistants). However, the team relies on federal grant program funds for retaining several staff. This should be examined further.
1.2—The state should make educational technology accessible and affordable throughout Wisconsin by developing regulations and standards that will facilitate the construction, operation, and interconnection of affordable statewide networks.	*In progress*	Through the TEACH WI wiring loan program, schools needed to adopt minimum wiring and infrastructure standards to participate. Federal E-rate funding has provided some standards as well. All districts have received Teach WI block grant monies, but 10 percent of districts have not used other TEACH WI resources.

1.0 State Technology Planning (cont.)		
Recommendation	**Status**	**Evidence of Progress**
1.3—The state should develop a statewide PK-12 foundation to solicit technology-related donations on behalf of all school districts to negotiate licensing agreements in conjunction with DOA purchasing, the University of Wisconsin System, and the Wisconsin Technical College System.	*Not addressed as recommended*	A foundation was not set up to accomplish this. However, at the request of the legislature, the Wisconsin Department of Administration and TEACH WI have formed a Technology Acquisition System Program (TASP) to facilitate best-price negotiations with vendors, assisting with other individual agencies and programs (CESA 1, VendorNet, WILS).
1.4—The state should encourage, through policy and programs, linkages between school and home.	*In progress*	Both the Technology Literacy Challenge Fund (TLCF) and TEACH WI have linkage components in their respective grant programs. However, this is still a very weak area. In addition, while the adult literacy component of district technology-plan certification is an area that must be completed, it is not emphasized. TLCF requires this component as part of their granting process, so this area needs more emphasis in the future.

2.0 Curriculum and Assessment		
Recommendation	**Status**	**Evidence of Progress**
2.1—The current requirement of integrating technology into all subject areas and grade levels of the PK-12 curriculum is correct and necessary.	*In progress*	With the introduction of the *Wisconsin Model Academic Standards for Information and Technology Literacy* (ITL standards), Wisconsin moved to the forefront nationally in establishing world-class standards. Current DPI projects include integrating the standards into new subject-area curriculum guides as well as creating a separate publication that demonstrates how to integrate the ITL standards into the core curricular areas using various student-centered learning activities. All Wisconsin TLCF grant proposals must be tied to the ITL standards.

3.0 Technology for Lifelong Learning		
Recommendation	**Status**	**Evidence of Progress**
3.1—Students must develop the skills to become lifelong, engaged learners for individual success and for the economic stability and development of the community.	*In progress*	The ITL standards address this recommendation in two of its four standards. All school districts in the state either adopted the ITL standards or similar standards in Fall 1998. In addition, local district technology plans have a requirement that student technology skills, knowledge, and dispositions be assessed regularly.

4.0 Professional Development		
Recommendation	**Status**	**Evidence of Progress**
4.1—All professional development should model and include the use of current and emerging technology resources.	*In progress*	DPI staff model and include current and emerging technology resources and best practices during presentations; many local practitioners do this also. Local school districts must insist on modeling best practices for technology-related inservice opportunities. The TEACH WI Technical Assistance and Training grant program will emphasize modeling expert use of technology in teaching. As part of the TLCF project in Wisconsin, districts showcased these types of projects and models at the annual TLCF conference.
4.2—Educational leaders must establish benchmarks of technological competencies for Wisconsin educators.	*In progress*	In the PI 34 rules for educator licensing, two of the ten standards for teachers include technology competencies. Separate workgroups for each licensing area are developing the competencies necessary for each license based on the ten standards, which include the technology components.
4.3—Educators must share effective technology-infused integration practices with their colleagues.	*In progress*	Wisconsin hosts many technology-related conferences (WEMA, GWETC, and others) at the state level as well as other regional educator conferences (SWEIO, WEAC, NWEA, etc.). Two DPI-maintained listservs (WI-PK12 and WEMA-l) are used to promote and share best practices related to using technology effectively. The IDEAS website (ideas.wisc.edu) is another resource under development. A Best Practices Committee consisting of Wisconsin educators is also working on ensuring that UW System faculty and preservice teachers are integrating technology into their respective curriculums. DPI is currently creating new subject- area curriculum guides that will address technology integration. In addition, DPI has published Wisconsin's *Information and Technology Literacy Standards Matrix* showing where technology standards fit in the four assessed subject areas. ECB promotes this recommendation by producing the *Teaching through Technology* video series that highlights Wisconsin educators using technology in the classroom.
4.4—Educators must utilize the technology itself as a tool to learn and teach about technology.	*In progress*	Use of technology by educators is increasing in Wisconsin. The recent *Levels of Technology Implementation (LoTI)* state report pegged 65 percent of Wisconsin educators surveyed as able to use and troubleshoot basic computer applications and problems. Distance education sites are increasing (52 percent of districts now have this capability), and use of this technology for learning continues to rise. Other means enabling teachers to learn and use technology

4.0 Professional Development (cont.)		
Recommendation	**Status**	**Evidence of Progress**
		are PI34 Teacher Licensing rules that now have a technology component, the Technology Literacy Challenge Fund (TLCF) program that has distributed over $15 million in Wisconsin the past three years, Teach WI Technical Training and Assistance grants, and support from other education-related professional organizations. In terms of teaching about technology, Wisconsin's *Information and Technology Literacy Standards Matrix,* along with the recently published *Linking Wisconsin's School Libraries and Classrooms: A Guide for Integrating Information and Technology Literacy* (WASL, 2000), will help educators develop lessons and units that incorporate knowledge of technology.
4.5—Educators must use new developments in telecommunications to provide previously unavailable educational opportunities.	*In progress*	Use of telecommunications and distance education for educator learning lags far behind its use for students, despite 55 percent of districts having distance education capabilities. Some universities and local districts are beginning to use these methods for professional development, but it is sporadic at best. The FY2000 TEACH WI Technical Training and Assistance grant program intends to use distance learning technology to enable teachers to observe model uses of integrating technology in teaching.

5.0 Teacher Certification		
Recommendation	**Status**	**Evidence of Progress**
5.1—A set of benchmark standards for technology competencies for teachers should be developed and implemented for Wisconsin PK-12 educators based on criteria like the International Society for Technology in Education Standards.	*Addressed*	In the PI 34 rules for educator licensing, two of the ten standards for teachers include technology competencies, but specific benchmarks for teachers have not been addressed at a state level. Benchmark competencies are currently being developed by workgroups of practicing educators for library media specialists and district technology coordinators through the revised educator licensing rules proposal. Many districts have local benchmarks. The LoTI assessment is widely used by Wisconsin school districts along with the International Society for Technology in Education (ISTE) competencies, benchmarks developed by North Central Regional Education Laboratory (NCREL), and the Milken Family Foundation for Educational Technology.
5.2—Changes need to be made in the certification and licensure requirements.	*Addressed*	In the PI 34 rules for educator licensing, two of the ten standards for teachers include technology competencies. Separate workgroups for each licensing area are developing the skills and competencies necessary for each license based on the ten standards that will include technology components.

5.0 Teacher Certification (cont.)		
Recommendation	**Status**	**Evidence of Progress**
5.3—Preservice teachers must be required to be technologically competent before they reach the classroom.	*In progress*	In PI34 rules for educator licensing, two of the ten standards for teachers include technology competencies. Separate workgroups for each licensing area are developing the skills and competencies necessary for each license based on the ten standards that will include technology components. The Collaborative Committee—agency heads from DPI, ECB, TEACH WI, University of Wisconsin System, Wisconsin Technical College System (WTCS), and Wisconsin Association of Independent Colleges and Universities (WAICU)—is addressing this issue, identified as critical over the past two years at the Education Commission of the States (ECS) Workshop, National Governor's Association (NGA) Conference, and at the National School Boards Association (NSBA) workshop.
5.4—Wisconsin must improve its teacher training programs.	*In progress*	To begin the process, Wisconsin received four Preparing Tomorrow's Teachers to Use Technology (PT3) grants from the U.S. Department of Education: • Empowering 21st Century Teacher/ Milwaukee Public Schools—three-year total: $1,938,158 • UW-Milwaukee Technology and Implementation Urban Teaching Project—three-year total: $1,307,241 • Development of Instructional Technology for Tomorrow's Teachers Capacity Building/UW-Oshkosh—One year: $108,157 • Preparing UW-River Falls Future Teachers for 21st Century Schools: Effective Use of Technology for Teaching and Learning/UW-River Falls—three-year total: $556,756 The Collaborative Committee is addressing this issue, identified as critical over the past two years at the Education Commission of the States (ECS) Workshop, National Governor's Association (NGA) Conference, and at the National School Boards Association (NSBA) workshop. The state also joined the Interstate New Teacher Assessment and Support Consortium (INTASC).

6.0 Teacher Certification		
Recommendation	**Status**	**Evidence of Progress**
6.1—The state should lay the groundwork for equity across all districts by providing funding for a common base of technology.	*In progress*	TEACH WI has supported districts by providing formula-driven block grants to each district to support technology initiatives. Block grant funds totaling $62 million in 1997-99 and $70 million in 1999-2001 can be used for any educational technology-related purchases except for personnel costs.

6.0 Equity, Access, and Use (cont.)		
Recommendation	**Status**	**Evidence of Progress**
6.2—The following conditions must be met: the ratio of students to contemporary instructional workstations will be no more than 5 to 1.	*In progress* According to the	1999 Milken Family Foundation survey for Wisconsin, the ratio is 8.3:1 for multimedia computers and 12.4:1 for internet access computers.
6.3—Each classroom will have access and equipment to support video, voice, and data networks.	*In progress*	According to the 1999 Milken Family Foundation Survey for Wisconsin, 59 percent of all classrooms are internet ready (have a computer with internet access) and 71 percent of all classrooms are wired to CAT 5 standards or above. (Note: percentages derived are weighted for district size.)
6.4—Each district will have access to equipment for originating and receiving distance learning transmissions.	*In progress*	According to the 1999 Milken Family Foundation Survey for Wisconsin, about 52 percent of districts (221 of 426) have full-motion video capability. This translates to 299 out of approximately 1,870 total public school instructional and administrative buildings (16 percent) in the state. (Note: percentages derived weighted for district size.)
6.5—Each district will install local- and wide-area networks with access to global networks.	*In progress*	According to the 1999 Milken Family Foundation Survey for Wisconsin, 359 of the 367 districts (97 percent) reporting had networks in place. In addition, 59 percent of all classrooms are internet ready (have a computer with internet access). (Note: percentages derived weighted for district size.)

7.0 Accountability and Reporting		
Recommendation	**Status**	**Evidence of Progress**
7.1—The Wisconsin accountability and reporting system must support using technology to improve how work is carried out by educators, instructional leaders, policy specialists, and those responsible for oversight.	*In progress*	The DPI is currently working to provide on-line access to districts for reporting purposes.
7.2—Specific recommendations include the following: establish a standardized statewide student records system.	*In progress*	DPI is currently working to provide this.
7.3—Implement an integrated statewide data collection and enterprise database.	*In progress*	DPI is currently working to provide on-line access to districts for reporting purposes.

8.0 Administrative Technology Utilization		
Recommendation	**Status**	**Evidence of Progress**
8.1—To provide the leadership necessary within their buildings and districts, administrators must adopt and use technology for their own purposes and as a model for staff members.	*In progress*	Administrators at all levels have been exposed to technology use for personal and administrative applications as well as for integration into the curriculum. However, administrative professional organizations and local districts need to continue to emphasize technology use and curricular integration efforts for administrators.

9.0 Learning Environments		
Recommendation	**Status**	**Evidence of Progress**
9.1—The governor, the legislature, state agencies, and leaders in business, community, and education are responsible for ongoing development and maintenance of a statewide infrastructure.	*In progress*	Through the use of BadgerNet and WiscNet, along with TEACH WI subsidies for data lines and video links, a statewide infrastructure is being developed.
9.2—Implementation of a comprehensive upgrade of the technology infrastructure and environments in Wisconsin schools should be a joint effort at the local, regional, and state levels.	*In progress*	BadgerNet and WiscNet, along with TEACH WI subsidies for video links, represent the major state contribution. All CESAs provide technical assistance and coordination while local districts provide funding, staffing, planning, and implementation. However, each CESA has a varying degree of participation among member districts for their technology assistance programs.
9.3—Wisconsin must develop a standard process for designing new and remodeling existing buildings that will ensure that all stakeholders are involved at the proper stage of the project and that responsibilities are clearly outlined.	*Addressed*	Districts using TEACH WI grants for wiring loans must meet minimum standards for wiring and access. For districts not using this funding, it is up to local school boards to determine standards. TEACH WI maintains a list of consultants that districts can use to make sure architects build appropriate technology needs into their plans. The DPI publication *Designing Schools to Accommodate Technology* (WDPI, 1996a) provides basic advice and guidelines. It emphasizes stakeholder involvement in the planning process.

10.0 Regional Consortia		
Recommendation	**Status**	**Evidence of Progress**
10.1—Regional consortia or providers, such as CESAs, should facilitate: communication with local school districts on effective technology planning considerations, practices, and guidelines.	*In progress*	The 12 CESAs administer regional programs to meet local school district needs. All CESAs sponsor technology-related professional development opportunities for educators, offer technical assistance to districts, and provide technology and curriculum services for districts. Much of this takes place on a yearly-fee basis that districts subscribe to through their CESA contract. Specific services among CESAs vary.

10.0 Regional Consortia (cont.)		
Recommendation	**Status**	**Evidence of Progress**
		Two email listservs are available to the public: Wisconsin PK-12 and WEMA. DPI also collaborates with the CESAs and other entities above on various projects and programs. Other providers who can be contacted regarding technology planning considerations, practices, and guidelines include the Association of Wisconsin School Administrators (AWSA), Educational Communications Board (ECB) and its six Regional Educational Telecommunications Areas, the Wisconsin Educational Media Association (WEMA), the Wisconsin Assistive Technology Initiative (WATI), and the Wisconsin Association of Distance Education Networks (WADEN).
10.2—Regional consortia or providers, such as CESAs, should facilitate: training and professional development for equipping district- and building-level leaders with information and strategies on how to develop basic technology skills and competencies for all educators.	*In progress*	The 12 CESAs administer regional programs to meet local school district needs. All CESAs sponsor technology-related professional development opportunities for educators, offer technical assistance to districts, and provide technology and curriculum services for districts. Much of this takes place on a yearly-fee basis that districts subscribe to through their CESA contract. Specific services among CESAs vary. DPI also collaborates with the CESAs and other entities above on various projects and programs.
10.3—Regional consortia or providers, such as CESAs, should facilitate: assistance to school districts on the development, implementation, and updating of technology plans. *Addressed*	The DPI trained	CESA staff in 1997 to assist local districts in completing and updating local technology plans to meet criteria of the Wisconsin Comprehensive Technology Plan Checklist. The DPI refers districts to their local CESAs for assistance. Consultants on the DPI's Instructional Media and Technology Team coordinate technology plan certification for public schools in the state and provide assistance. Wisconsin Council of Religious and Independent Schools (WCRIS) members work with WCRIS staff for technology planning. TEACH WI works with all other educational institutions not falling into the above two categories.
10.4—Wisconsin should encourage the establishment of community consortia to develop strategies for assessing and meeting community network needs.	*Not addressed*	Because it happens informally and locally, usually on an as-needed basis, this is a very under-reported element. Some districts allow after-hours use of facilities or create community learning centers. TLCF and TEACH WI Technical Assistance Grants include this in their granting process, but it remains a weak area.

10.0 Regional Consortia (cont.)		
Recommendation	**Status**	**Evidence of Progress**
		CESA 10 created several partnerships with UW-Eau Claire and CESA 5 did the same with UW-Stevens Point for various projects. Door County municipalities and schools teamed up to create DoorNet to meet their networking needs. Several districts have started to use Municipal Area Networks (MANS) to tie together school sites and buildings, but it is not yet widespread.

11.0 Local Educational Technology Planning		
Recommendation	**Status**	**Evidence of Progress**
11.1—Every district must develop a local plan for integrating technology into the curriculum. The state will make available tools to help districts formulate a plan that fits local needs and responsibilities.	*In progress*	As of June 1, 2000, of 426 school districts, • 362 districts (85 percent) had plans approved. • 52 districts (12 percent) had plans in the certification process. • 12 districts (3 percent) had no plan approved or in certification process.
11.2—Electronic Planning Workbook—The DPI will develop an electronic planning workbook to help districts and schools with the technology planning process.	*Addressed*	The DPI assisted in technology planning by making available to all 426 school districts an electronic version of *Teaching, Learning and Technology: A Planning Guide* (Apple, 1995), a program to assist in developing comprehensive technology plans. Using a Train-the-Trainer model, 24 workshops held around the state instructed CESA and district staff in using this program and the Comprehensive Technology Plan Checklist (*Appendix B*) used in the certification process. DPI also published *Instructional Telecommunications: A Resource and Planning Guide* (WDPI, 1995) and *Designing Schools to Accommodate Technology* (WDPI, 1996a), which provide basic advice and guidelines.
11.3—Clearinghouse of Printed and Electronic Materials—The DPI and regional consortia such as CESAs should develop a clearinghouse of printed and electronic materials that focus upon the planning processes, education reform, systemic change, and existing and emerging information technologies.	*Addressed*	The DPI and CESAs both use their individual websites to list this type of information as well as provide links to other sources of technology-planning information for schools and public libraries. A statewide IDEAS initiative is also working on this type of web portal for Wisconsin educators.

11.0 Local Educational Technology Planning (cont.)		
Recommendation	**Status**	**Evidence of Progress**
11.4—Professional Development—Teachers and administrators must develop new skills, knowledge, and attitudes for applying information technologies in support of education reform.	*In progress*	Quality professional development activities have increased since publication of the *Wisconsin Educational Technology Plan PK-12* in 1996. However, there is still a great need for professional development, especially as it relates to the integration of technology into the curriculum and classroom learning. TLCF and TEACH WI grants have made professional development a priority by requiring that 70-75 percent of grant monies be used for this type of activity. The 1999 Milken Family Foundation Wisconsin survey reported that 69 percent of teachers said their number one need was obtaining help in curriculum integration and more professional development activities. This was also a recommendation of the LoTI survey conducted in Fall 1999 to assist districts and CESAs in planning educator professional development opportunities.

12.0 Funding		
Recommendation	**Status**	**Evidence of Progress**
12.1—Fund the DPI so it can maintain a strong instructional technology unit to expand technology leadership, support, and coordination for school districts across the state.	*In progress*	Current staffing for the Instructional Media and Technology Team (IMTT) is full (one director, five consultants. and two program assistants). However, the team relies on federal grant program funds for retaining several staff. This should be examined further.
12.2—Allow a board of education to borrow, without referendum, up to $1 million aggregate or up to $1,000 per student (whichever is greater) to pay for technology equipment, telecommunications and distance education contracts, retrofitting buildings, and providing advanced technology support. Repayment of principal and interest would be exempt from revenue caps.	*In progress*	Although this specific recommendation was not implemented, TEACH WI has provided wiring loans, telecommunications access subsidies, and block grants in an attempt to meet this recommendation. **Wiring Loans** *Fast Start Program* (ended August 1998) • 96 K-12 school district loans processed • four public library loans processed • nearly $22 million loaned *Standard Start Program* (started September 1998) • $78 million available for schools—13 districts approved and 32 more in review • $96 million available for public libraries—six applications being reviewed *Totals from both loan programs* • more than 20,000 classrooms wired in 590 K-12 buildings (representing 32 percent of state's K-12 buildings) • 501,164 students will have access to these classrooms every hour they are in use

12.0 Funding (cont.)		
Recommendation	**Status**	**Evidence of Progress**
		Telecommunications Access *Video links* (as of June 2000) • 145 TEACH-installed video links, including 113 public schools, five private schools, two state schools, nine private colleges, and 16 technical colleges *Data lines* (as of June 2000) • 453 TEACH-installed high speed data lines, including 158 public schools, 33 private schools, 251 libraries, and 11 private colleges *Existing contract grants* (as of June 2000) • 127 existing video/data lines in public and private schools **Technology Block Grants** • $62 million during 1997-99 for public school districts, amounting to $31.40 per pupil in 1997-98 and $40.34 per pupil in 1998-99 • $35 million for each year of the 1999-01 biennium
12.3—Reserve at least 50 percent of the annual ETB and WATF funds for noncompetitive allocations to Wisconsin public school districts. This will help ensure equitable access to technology for all Wisconsin students by providing funds to schools that cannot afford to hire grant writers.	*In progress*	Although this recommendation was not undertaken, TEACH WI has provided wiring loans and block grants in an attempt to meet this recommendation.
12.4—Continue to combine state and private funds to provide grants to public schools, through the ETB and WATF, to purchase technology equipment, telecommunications and distance education contracts, retrofit buildings, and provide advanced technology support.	*Not addressed*	ETB services were rolled into the TEACH WI program. WATF has published new guidelines for the 2000 grant program.
12.5—Provide for significant increased staff resources to the ETB grant and loan program.	*In progress*	ETB services were rolled into the TEACH WI program.
12.6—The Wisconsin Public Service Commission should provide permanent rate relief for libraries, schools, CESAs, and accredited institutions of higher learning to support the ongoing costs of using advanced telecommunications systems; and	*Addressed*	Using the state Universal Service Fund, the PSC collaborated with TEACH WI to meet this recommendation. The federal E-rate program also provides telecommunications discounts to schools and libraries.

12.0 Funding (cont.)		
Recommendation	**Status**	**Evidence of Progress**
12.7—The Wisconsin Public Service Commission should establish a policy so that all Wisconsin citizens will be able to call any school in the public school district where they reside without incurring long-distance telephone charges.	*Not addressed*	Extended Area Service (EAS), already in place in 1996, provides an option to rectify this concern, but it does not provide relief in all instances.
12.8—Provide substantial permanent state funding annually for regionally based technology services to schools. These services could include planning, grant-writing, network support, purchasing, and professional development. Organizations such as technical colleges, universities, and/or regional consortia (such as CESAs) could provide these services.	*Not addressed as recommended*	No state-funded positions were made available. The 12 regional CESAs provide this type of assistance to local districts. Also, TLCF and TEACH WI Technical Assistance and Training Grants were sponsored by DPI and TEACH WI to provide grant monies used for these services. However, each CESA has a varying degree of participation among member districts for their technology assistance programs.
12.9—Develop a statewide PK-12 foundation to solicit technology-related donations on behalf of all school districts and to negotiate licensing agreements in conjunction with DOA purchasing, the UW System, the Wisconsin Technical College System, and ECB. Provide incentives for telecommunications providers to contribute to this fund.	*Not addressed as recommended*	A foundation was not set up to accomplish this. However, at the request of the legislature, the Department of Administration and TEACH WI have formed a Technology Acquisition System Program (TASP) to facilitate best-price negotiations with vendors, assisting other individual agencies and programs (CESA 1, VendorNet, WILS).
12.10—Encourage, through policy and programs, linkages between school and home through arrangements with vendors for reduced costs of advanced technology for parents and students, tax incentives, and other appropriate means.	*In progress*	BadgerLink is a statewide project of the DPI Division for Libraries, Technology, and Community Learning. Its goal is to provide Wisconsin residents with increased access to information resources in cooperation with the state's public, school, academic, and special libraries. BadgerLink provides access to a variety of information resources directly from the BadgerLink Webpage. This major resource allows users to access more than 6,000 magazines, newspapers, and other reference materials—many in full-text. The DPI is drafting guidelines to advise districts on internet use and web-based services with educational content.
12.11—Provide high-speed Internet connections for all schools, libraries, and higher education institutions in Wisconsin at equitable and affordable rates. This might be accomplished by providing permanent state funding for the installation and annual operating costs for high-speed, high-capacity Internet hubs located at regional centers such as technical colleges, universities, and/or regional consortia such as CESAs.	*Addressed*	This is covered by TEACH WI subsidized data, video links, and existing contract services.

12.0 Funding (cont.)		
Recommendation	**Status**	**Evidence of Progress**
12.13—Promulgate state rules for approving consolidated federal grants that encourage districts to spend federal grant funds to purchase equipment, support, and professional development for technology.	*Not addressed*	This recommendation lost its relevance and was not addressed. The federal TLCF grant program and Comprehensive School Reform (CSR) program were both designed to encourage districts to consolidate funding to address technology needs. Thus, no state rules were necessary.
12.14—Provide permanent state funding to the DOA budget to interconnect current and proposed regional fiber optic networks.	*Addressed*	This is covered by TEACH WI-subsidized video links and existing contract services and through federal E-rate monies.
12.15—Provide funding for a statewide DOA purchasing position dedicated to negotiating statewide and regional educational contracts in coordination with the UW System, Wisconsin Technical College System, and other purchasing consortia.	*Addressed*	DOA staff work with TEACH WI staff to provide this service through the TASP program and VendorNet, as required by the legislature.

CHAPTER THREE

Recommendations

The Wisconsin Technology Task Force developed the following recommendations because it believes, if all are successfully implemented, they will help Wisconsin reach the vision and mission outlined in the introduction to this report. The task force developed the recommendations after examining the current state of educational technology in Wisconsin. Specifically, the task force examined the evidence of implementation of the 1996 recommendations as well as hearing detailed presentations on major state educational initiatives during task force meetings.

It should be noted that the following recommendations were created using a consensus process. Not all task force members and the agencies, organizations, and associations that the task force members represented agreed with each recommendation. Representatives from TEACH WI, the Department of Administration (DOA), and the Wisconsin Educational Communications Board (ECB) raised objections to recommendations that specified using General Purpose Revenue (GPR) funds for new positions or projects and recommendations that advocated school districts being allowed to spend outside current revenue limits. DOA also questioned recommendations that specify procurement of services outside of current DOA policies and procedures.

The recommendations were also built on technology and learning research from the North Central Regional Educational Laboratory (NCREL). The lab reported in *Computer-Based Technology and Learning: Evolving Uses and Expectations* (NCREL, 1999) that for technology to play a positive role in education, five factors must be considered:

1. The success or failure of technology is more dependent on human and contextual factors than hardware or software.
2. The extent to which teachers are given time for and access to pertinent training to use computers and technology to support learning plays a major role in determining whether or not technology has an impact on achievement.
3. The success or failure of technology involves seeing it as a valuable resource.
4. The success of technology depends on having significant critical access to hardware and applications that are appropriate to the learning expectations of the activity.
5. Teachers' perception is that computers have improved the climate for learning, especially because technology increases student motivation in subjects for which they use computers.

Finally, the task force examined the reports and white papers completed for the revision to the national technology plan, currently under development by the U.S. Department of Education. Specifically, the task force examined the *Forum on Technology in Education: Emerging Priorities* to view the direction educational technology was heading (see Appendix C).

This section starts with a series of belief statements that provided the foundation for building the recommendations for the *Wisconsin Educational Technology Plan PK-12: 2000 Addendum.*

- Implementation of a comprehensive upgrade of the technology infrastructure and environments in Wisconsin schools should be a joint effort of the local, regional, and state levels.
- All students must develop the skills to become lifelong, engaged learners for individual success and for the economic stability and development of the community and the state.
- The governor, the legislature, state agencies, and leaders in business, community, and education are responsible for ongoing development and maintenance of a statewide technology infrastructure.

- The state should make educational technology accessible and affordable throughout Wisconsin by developing regulations and standards that will facilitate the construction, operation, and interconnection of affordable statewide networks.
- The state should ensure adequate access to a telecommunications infrastructure for all school districts.
- The state should lay the groundwork for equity across all districts by providing funding for an ongoing base of technology.
- Teacher training programs have a responsibility to ensure that beginning teachers can use technology effectively to facilitate learning.
- Districts have a responsibility to ensure that current teachers can use technology effectively to facilitate learning.
- The current requirement for integrating technology into all subject areas and grade levels of the PK-12 curriculum is correct and necessary.
- The state PK-12 technology plan will encourage the inclusion of future technologies and applications.

Student Standards, Curriculum Integration, and Student Assessment

Wisconsin is fortunate to have a quality set of model academic standards encompassing 16 distinct curricular areas and two additional sets of standards designed to be integrated into all subjects. When groups from the various content areas were developing these standards, they included many technology competencies. For example, the *Wisconsin Model Academic Standards for English Language Arts* are particularly strong when it comes to incorporating technology literacy into the standards.

While each content area addressed technology literacy in its standards, a coordinated scope and sequence of needed technology knowledge, skills, and dispositions did not emerge. In an attempt to solve that problem, a task force developed *Wisconsin's Model Academic Standards for Information and Technology Literacy* (ITL). Work has now begun to integrate the ITL standards into the standards-based curriculum planning guides now under development at the DPI.

The DPI is attempting to help school districts integrate technology throughout the curriculum in several ways. A technology advocate is a member of each content-area team writing the new state curriculum planning guides to ensure that technology literacy is included. DPI consultants facilitated workshops and developed resource tools to assist schools and districts in the integration process. Many districts have taken advantage of these tools and opportunities and have begun the process, while others have not yet started. The TLCF grant program, administered by the DPI, has used the ITL standards as a focal point around which districts design teacher professional development opportunities to support the integration of the standards into the curriculum as well as providing technology training to teachers.

To further address this need, the DPI developed *Wisconsin's Information and Technology Literacy Standards Matrix* (WDPI 2000e) and corresponding CD-ROM to correlate information and technology literacy skills into standards in the four assessed areas (English/language arts, mathematics, science, and social studies). For example, school districts must decide where and when to introduce databases. A matrix might suggest that the fifth-grade social studies unit on the United States is appropriate, because social studies standard A.8.5 states that students will, *"Identify and compare the natural resource bases of different states...using a statistical abstract,...and computer databases."* Several districts in the state have already begun this process and have provided resources and expertise to this DPI effort.

Along with this matrix project, DPI staff are working on developing proficiency standards for each Information and Technology Literacy content standard. As technology is integrated into the curriculum, it should also be integrated into appropriate assessments. Therefore, the Wisconsin Knowledge and Concepts Examinations need to look toward the day when technology will be an integral part of activities in science, mathematics, social studies, or any other content area and assess students' ability to use technology to learn the content in these and all areas of the curriculum.

Recommendations

1. The competencies identified in *Wisconsin's Model Academic Standards for Information and Technology Literacy* shall be infused into the four assessed content areas (English/language arts, mathematics, science, and social studies).
2. The DPI shall make available to school districts a correlation of *Wisconsin's Academic Standards for Information and Technology Literacy* with the four assessed content area standards (English/language arts, mathematics, science, and social studies).
3. The competencies identified in *Wisconsin's Academic Standards for Information and Technology Literacy* shall be integrated into all remaining content areas.
4. Relevant state agencies and boards shall identify and review policies to ensure that they help districts and other local educational agencies (LEAs) improve the integration of technology into the classroom.
5. The DPI shall develop and disseminate models to assist districts in assessing student performance on the *Wisconsin's Model Academic Standards for Information and Technology Literacy* within the context of the subject-based curricular areas.

Teacher Standards, Preservice Training, and Professional Development

The Wisconsin Department of Public Instruction implemented new educator licensure rules (PI 34) in February 2000. The new rules moved to a standards- and performance-based licensing system for teachers seeking an initial Wisconsin license. All persons seeking a Wisconsin license must meet ten standards, two of which require technology competencies:

> (4) The teacher understands and uses a variety of instructional strategies, **including the use of technology** to encourage children's development of critical thinking, problem solving, and performance skills.
>
> (6) The teacher **uses effective verbal and nonverbal communication techniques as well as instructional media and technology** to foster active inquiry, collaboration, and supportive interaction in the classroom. (WDPI, 1999)

Including technology in the licensing standards will ensure that Wisconsin teachers have the necessary and appropriate background not only in using technology but also in teaching with technology. Institutions of higher education are already revising programs so graduates can meet the new requirements, which go into effect on July 1, 2004.

Teachers who are already licensed in Wisconsin can choose an alternative to the traditional requirement of six credits of graduate work (or its equivalent) every five years for licensure. PI 34 allows any teacher who renews a license after July 1, 2004, to use the Professional Growth Plan model (mandated for all teachers receiving initial licenses after July 1, 2004) as a means for renewing licensure. In this model, teachers will devise a growth plan around one or more of the ten teaching standards and then carry out that plan over a five-year period. A team of

peers, administrators, and representatives from higher education will review each plan at the local level to ensure teachers complete the plan and achieve their personal growth goals. Successful completion will merit continued licensure.

These new licensure rules and procedures could mean that institutions of higher education might cease to become the sole provider of training for educators. As competencies are developed and alternative means of licensure are designed, Wisconsin colleges and universities, especially those in the University of Wisconsin System, must position themselves to respond quickly to the changing needs of teachers and administrators in need of recertification or gaining new licenses.

Along with the new licensing rules, a new license has been created for the district instructional technology coordinator. A work group charged with developing guidelines containing the content standards or competencies for the new license completed its work in Spring 2000 and sent the final draft to the DPI's Teacher Education and Licensing office, which will review the final drafts from the various groups working on content standards for all licenses and forward them to the Professional Standards Council. After review, the Council will make its recommendation to the State Superintendent.

The DPI-administered TLCF program, which provides almost $7 million in funding for professional development activities in the state, used the annual TLCF Conference to focus on assessing teacher competence in integrating technology into the curriculum to improve learning. Following that 1999 conference, the DPI, in conjunction with CESAs, organized an initiative in which districts could implement an assessment survey called Levels of Technology Implementation (LoTI), developed by keynote speaker Christopher Moersch. As of June 15, 2000, 287 Wisconsin school districts have participated in the LoTI assessment survey. The LoTI framework (see Appendix B) is just one tool schools and educators can use to determine technology implementation and teacher growth.

As technology has entered the schools, staff development for technology has tended to be separate from other staff development programs. As educators discover that technology and instructional practices are closely related, this gap should close. CESA staff assisted school district leaders in using LoTI data to plan for appropriate staff development to move educators to a higher level of technology integration into classroom instruction. CESA staff specializing in technology professional development and standards and assessment need to collaborate to bring together teaching practice, technology use, and student assessment.

Recommendations

1. School districts shall require and assist teachers and administrators to pursue a professional development plan that results in the effective use of technology in the classroom to improve student achievement.
2. Teacher preparation programs shall prepare future Wisconsin teachers to enter the profession equipped with an appropriate variety of technology skills, experiences, and knowledge of how to integrate technology into the curriculum to improve learning.
3. Districts, in partnership with institutions of higher education, the DPI, and CESAs shall continue to provide preservice and inservice opportunities for educators regarding the effective instructional use of technology for all students.
4. Institutions of higher education shall collaborate to offer licensure programs for educators via distance learning, web-based, and outreach programs to address current and anticipated shortages.
5. Professional development agencies and presenters shall model and include the use of current and emerging technology resources in their training programs.

6. Professional development agencies and presenters shall be encouraged to explore and deliver programming through distance learning, online classes, or other technologies.
7. Appropriate state agencies and CESAs shall collect and disseminate data regarding current successful models and best practices for professional development activities that focus on effective technology use and curricular integration.
8. Districts shall be encouraged to replicate successful TLCF projects that integrate technology into the curriculum to improve learning.

Quality Resources for Students and Teachers

One of President Clinton's four pillars for educational technology is that "effective and engaging software and online resources will be an integral part of every school curriculum." Wisconsin has addressed this pillar in several ways.

BadgerLink, an on-line resource available to any Wisconsin resident, provides access to the contents of over 6,000 newspapers and periodicals via the Internet (WDPI, 1999b). According to the latest reports, almost 10 million searches were made on BadgerLink resources during the first nine months of 1999. DPI staff report that schools are especially pleased with this service and value it highly. In addition, a DPI resource web page has links to over 400 content-area websites categorized by subject area (WDPI, 1999b).

Second, the increase of distance learning networks provides many rural and economically challenged school districts with access to staff and courses offered by neighboring districts. As of June 2000, approximately 234 Wisconsin school districts (55 percent) had full-motion video distance education network capability (Dirks, 2000). Each of these school districts is a member of one of the 30 distance education networks that are interconnected throughout the state. With the increased availability of multiple technologies, the growth of regional full-motion networks appears to be reaching a plateau. However, network use is increasing as teachers become more knowledgeable in using distance education effectively. Face-to-face synchronous video distance education will be necessary as long as there is a need for live classroom-to-classroom (or other resource) instruction. The technology that provides this capability will be changing in coming years.

Web portals or sites that list educational resources have become increasingly important to educators. Designed to assist teachers by providing links to quality Internet resources, webpages developed and maintained by the DPI and ECB point teachers to sites that can assist them in developing quality learning opportunities for students. In addition to these resource pages, the DPI also maintains a resource page of summaries that describe over 125 TLCF projects completed in the state. The IDEAS website is being developed through a partnership involving PK-12, higher education, and others. The goal of this web portal is to provide a statewide point-of-access to curricular, professional development, and other resources tailored for Wisconsin educators. The IDEAS site uses the nationally recognized Gateway to Educational Materials (GEM) standards to organize a searchable database and to access a wide array of educational materials both within and outside Wisconsin.

One project recently implemented by the DPI is the Wisconsin Information Network for Successful Schools (WINSS) website. This website provides educators and others access to data and informational resources to help school communities educate the hearts and minds of all children. The site has links to web resources, documents for download, spreadsheets for data comparison, and areas that assist in analyzing a wide array of data.

While the focus on the present is expected, application of technology currently under development or not yet developed is also important to education. What will wireless or satellite connectivity to the Internet mean? How will on-line course offerings affect school districts and

universities? What will technology integrated into the curriculum look like? How will conversion to digital broadcasting play out in K-12 schools? These questions, and a host of others, are hitting educational leaders at an alarming pace. How do educators obtain the proper information to make the right decisions?

Some important initiatives related to educational technology research and development currently exist and should continue to be fostered to provide a vision for educational technology in the state. Collaborative efforts, such as the TEACH WI AdHoc Committee on Distance Education, the Wisconsin Learning and Technology Group, and the Collaborative Committee are leading the way to explore emerging technologies and their application to teaching and learning. The DPI Instructional Media and Technology Team (IMTT) also plays an important role in providing the necessary curriculum link between technology and teaching and learning. The team provides expertise to school districts in technology planning, curriculum integration, distance learning, and other technology-related aspects of education.

Recommendations

1. All school districts shall have access to equipment for originating and receiving distance learning transmissions, and all school buildings in the district shall be capable of receiving distance learning transmissions as appropriate and where cost effective.
2. Universities, technical colleges, school districts, CESAs, state agencies, and business and industry shall be encouraged to collaborate in order to maximize resource sharing, facilitate planning, and reduce duplication of services among institutions.
3. The state shall demonstrate its commitment to leadership in instructional technology by funding a strong DPI Instructional Media and Technology Team using general purpose revenue (GPR).
4. State policy shall support collaborative efforts, such as the TEACH WI Committee on Distance Education, the Collaborative Committee, and the UW Distance Education Study Committee, in their efforts to explore emerging technologies and their application to teaching and learning.
5. The state shall fund the following programs:
   - BadgerLink
   - Wisconsin Information Network for Successful Schools (WINSS) Project
6. The state shall fund and support the development of a PK-12 portal site on the Internet.

Well-Maintained Technology Infrastructure and Support Systems

The 1996 *Wisconsin Educational Technology Plan PK-12* recommended that the ratio of students to contemporary instructional workstations be no more than 5:1. The plan also recommended that each classroom have access and equipment to support video, voice, and data networks. It is true that many districts have focused their local technology plans on acquiring boxes and wires in the past, as evidenced by data from recent surveys.

While Wisconsin has made considerable progress toward these goals, we have not met them yet. Data indicates that 71 percent of all Wisconsin classrooms are wired with Category 5 and above cabling and that 59 percent of classrooms in Wisconsin's public schools have Internet access (Milken Family Foundation, 1999). According to Milken, the ratio of students to contemporary multimedia computers is about 8.3:1, well short of the 5:1 goal recommended in the 1996 plan. It is imperative that the state continue to support technology in local districts.

In addition to acquiring the equipment, districts must create and maintain a system to sustain their investment in technology. While budgeting for routine maintenance and support costs, districts are trying to find continued funds for procurement and replacement of aging and obsolete computers, infrastructure, and other technologies. To deal with these ongoing costs, businesses have calculated a "total cost of ownership" (TCO) for computers and other equipment. This is the total cost per year for the initial equipment, personnel to support it, upgrades, cost of disposal, and so forth. By knowing these costs up-front, businesses can project and realistically budget for expenditures. Schools should begin to use this type of calculation to fine tune budget requests and create realistic budget scenarios.

TEACH WI has provided $132 million in block grants to school districts for educational technology from 1997-2001. TEACH WI also provided wiring loans to school districts and offers each school district subsidies for either a video link (bringing the district's cost to $250 per month) or a data link (bringing the district's cost to $100 per month). These subsidies have enabled the growth of distance learning networks and connected schools to the Internet (TEACH WI, 2000).

Recommendations

1. All classrooms, LMCs, and other instructional spaces used by students shall be equipped for voice, video, and data communications and connected to networks in order to provide access to local and global electronic resources.
2. The DPI and CESAs shall continue to provide ongoing assistance and resources to PK-12 districts for developing and revising local technology plans.
3. School districts shall strive for a target ratio of two to five students for every one contemporary instructional workstation (CEO Forum, 1997).
4. The DPI and CESAs shall encourage administrators to implement and be accountable for their district technology plans.
5. All public school districts shall have a certified technology plan.
6. The Comprehensive Technology Plan Certification process shall be revised to require
   - evidence that the district has aligned *Wisconsin's Model Academic Standards for Information and Technology Literacy* with their local curriculum, with an emphasis on the four assessed areas (English/language arts, mathematics, science, and social studies);
   - evidence that the district has policies and programs for serving the technology needs of students with disabilities;
   - alignment of the district technology plan certification timeline to correspond with the federal E-rate timeline; and
   - evidence of achievement of previous plan goals or progress toward achieving them.
7. Appropriate public agencies and institutions shall make Wisconsin school districts aware of developing and emerging technologies and their potential application for instruction and improved learning.
8. The state shall allocate general purpose revenues (GPR) for staffing at each CESA to include one technical consultant and one professional development resource staff person for leadership and in-district support for instructional technology.
9. The state shall allow districts to employ technical support personnel or enter into technical support agreements using funds exempt from revenue limits.
10. The DPI and CESAs shall assist school districts to identify effective practices for delivering technical support in maintaining technology assets and infrastructure.
11. Appropriate state agencies shall develop a program for school districts to establish a student technician training program to assist districts in maintaining technology assets and infrastructure.

12. The DPI and CESAs shall assist school districts in identifying innovative and cost-effective practices for providing professional development in the use of instructional technology.
13. Every school district shall designate an instructional technology contact person and report that name annually on the DPI Report of Staff (PI 1202).
14. Every school district shall inform its constituents about the importance of and need to support technology infrastructure and resources with appropriate technical staffing.
15. The state shall continue the following programs:
    - Wiring Loan Program
    - Video and Data Link Subsidies
    - Block Grants
    - Technical Training and Assistance Grants
16. The state shall expand the TEACH WI Wiring Loan Program to include switches, hubs, routers, and associated LAN/WAN hardware purchases that provide connectivity between/ among school buildings.
17. The state shall modify legislation to allow a board of education to borrow, without referendum, up to $1 million aggregate or up to $1,000 per student (whichever is greater) for technology equipment, telecommunications and distance education contracts, and retrofitting buildings and shall exempt payment of principal and interest from revenue limits.
18. The state shall exempt the TEACH WI Wiring Loan Program repayment of principal and interest from revenue limits.
19. The Wisconsin Public Service Commission, following guidelines in the federal Telecommunications Act and policies in other Midwestern states, shall continue to collaborate with TEACH WI and other statewide initiatives to support the ongoing costs of using advanced telecommunications systems.
20. The state shall allow TEACH WI to obtain competitively priced telecommunications access service from the State Department of Administration (DOA) or alternate sources.
21. The DPI shall develop a method using the Wisconsin Elementary and Secondary Schools Accounting System (WESSAS) to account for technology expenditures by school districts, including procedures for tracking TEACH WI program funds provided to the district.

Attention to Equity and Diversity

While increasing numbers of students have access to technology at school and at home, access to technology may still be determined by gender, race, ethnicity, socioeconomic status, or disability. These inequities must be addressed.

Access to computers and the Internet and the ability to effectively use technology are becoming increasingly important for full participation in America's economic, political, and social life. In recent years, access to computers and the Internet has exploded. Unfortunately, strong evidence exists of a "digital divide"—a gap between those individuals and communities that have access to these tools and those who don't (US DoE, 2000b). According to government statistics,

- **Better-educated Americans are more likely to be connected.** Nearly 69 percent of households with someone possessing a bachelor's degree or higher have computers, compared to 16 percent of those households without a high school graduate. In addition, 45 percent of households with someone possessing a bachelor's degree or higher have Internet access in the home, compared to 14 percent of households in which someone has earned only a high school diploma or GED.

- **The divide between high-income and low-income Americans is significant.** Eighty percent of households with an annual income of $75,000 or above have computers, compared to 16 percent of households earning $10,000–$15,000. Nearly 60 percent of households with annual incomes of $75,000 or above have Internet access, compared to 12 percent earning $20,000-$25,000.

- **Whites are more likely to be connected than African-Americans and Hispanics.** About 47 percent of white households have computers, compared to 23 percent of African-American households and 26 percent of Hispanic households. Also, 53 percent of white two-parent households with children and an annual income of more than $35,000 have Internet access in the home, compared to 31 percent of similar African-American and Hispanic households. However, there is virtually no gap in computer ownership between white and African-American households earning more than $75,000.

- **Wealthier schools are more likely to be connected to the Internet than poorer schools.** In wealthy schools (less than 11 percent of students eligible for free or reduced-price school lunch), 74 percent of classrooms are connected to the Internet compared to 39 percent for the poorest schools (71 percent or more of students eligible for free or reduced-price school lunch).

- **People with disabilities are less likely to have access to technology.** Only 11 percent of people aged 15 and above with a disability have access to the Internet at home, compared to 31 percent of people without disabilities.

Some schools and public libraries can and do assist in bridging this digital divide by providing after-hours access for parents, students, and other community residents who do not have ready access to technology.

Recommendations

1. School districts shall ensure equitable and appropriate access to technology across all schools, grade levels, and students regardless of gender, race, ethnicity, socioeconomic status, or disability.
2. School districts shall adopt policies and programs that promote and encourage diverse community access to district technology resources.
3. School districts shall provide accessible and appropriate technology tools, including adaptive hardware and software, that allow access to information for students with disabilities or other special needs.
4. School districts shall review all school facilities and planned construction to address technology needs, including accessibility for students with disabilities or other special needs.
5. The DPI and CESAs shall assist school districts to identify practices effective in addressing digital divide issues in schools and communities.

Sophisticated and Multiple Assessments

As Wisconsin commits substantial resources to technology, we have a responsibility to measure its impact on student learning and achievement. Only by looking at objective data will we be able to determine what is working and what isn't. The DPI has been working with the North Central Regional Educational Laboratory (NCREL), North Central Regional Technology in Education Consortium (NCRTEC), and the Metiri Group to develop a technology profiling system which takes multiple measures of a school district's technology implementation and provides recommendations for further enhancement. This assessment tool, called enGauge, will not focus

solely on technology but will include student achievement, systems design, educator proficiency, and other aspects of a comprehensive technology program (NCREL, 2000).

In Wisconsin, districts using the enGauge process should consider their existing student, teacher, and district assessments along with interview, focus group, and other local data. This process goes far beyond technology alone and could be expanded both to define district needs and measure progress in the interaction of standards, instructional practice, and technology.

Recommendations

1. The DPI shall work with local districts, CESAs, and other agencies to develop evaluation procedures, programs, and tools (such as enGauge and LoTI) to assess and report the impact of technology-enhanced learning.
2. Results of local technology assessments shall be reported publicly and used to focus local, regional, and state educational technology initiatives.

Monitoring Progress of the 2000 Addendum

For any plan to be successful, procedures and methods for monitoring and meeting the objectives must be included. Since one main intent of this plan is to satisfy requirements for continued federal and state funding, including TLCF, the monitoring and evaluation responsibilities shall fall on the state educational agency. In this case, it is the Instructional Media and Technology (IMT) Team at the DPI.

The IMT Team will be responsible for

1. developing statewide goals derived from the state technology plan and their evaluation as required by the federal TLCF program
2. reporting to the state superintendent and other appropriate state agencies on the progress in meeting each of the recommendations listed in this plan no later than June 30 of the following years: 2001, 2002, and 2003. This constitutes the effective length of this plan. This report shall include
   - status reports for each recommendation in the plan;
   - appropriate next steps necessary to achieve each recommendation;
   - suggestions for goal or recommendation modifications, as necessary; and
   - a report on future trends and themes in educational technology.
3. revising or creating a new statewide technology plan to take effect during the 2003-04 school year.

Appendixes

A. References

B. Comprehensive Technology Plan Checklist

C. Levels of Technology Implementation (LoTI) Framework

D. Forum on Technology in Education: Envisioning the Future—Emerging Priorities

E. Results of Wisconsin's Portion of the 1999 Milken Technology Survey

Appendix A

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Appendix B

Comprehensive Technology Plan Checklist

The following is a checklist to be used to develop and evaluate technology plans. The checklist was developed from the *Wisconsin Educational Technology Plan PK-12*, Appendix O, which is a suggested table of contents for a local school district technology plan. The checklist has been compared to section 3135 of the Elementary and Secondary Education Act (ESEA). This federal law outlines the legal requirements for plans submitted for competitive grants from the Technology Literacy Challenge Fund (TLCF), a federal grant program. The numbers in parentheses (*) are those parts of section 3135 of ESEA that are met in specific sections of Appendix O. If your technology plan includes all of the items listed, and is for **at least three (3) years**, and is approved using this checklist, it will qualify your district to apply for any state or federal grant at this time.

District	Date Completed
Contract Person	Plan Dates

- ❑ **Introduction**—Ties the plan to school reform or the school district's strategic plan ***(I)***
- ❑ **Background Information** ***(II)***
  - ❑ School/district and community demographics
  - ❑ Overview of the planning process employed including a list of committee members
  - ❑ Committee includes representation from all stakeholder groups
  - ❑ Committee identifies community resources
  - ❑ District educational technology *Vision* and *Mission* statements are included
- ❑ **Program Goals and Educational Technology Initiatives in Support of Education Improvement** ***(III, I-A, I-B)***
  - ❑ Instructional and curricular goals and initiatives are well developed
  - ❑ Communication and information access goals and initiatives outlined
  - ❑ Staff competency goals in support of student learning and reform initiatives are listed
  - ❑ Administrative and management goals and initiatives identified
- ❑ **Current Status**
  - ❑ Includes assessment of student and staff technology skills, knowledge, and attitudes
  - ❑ Includes the following inventories:
    - ❑ Software ❑ Hardware ❑ Facilities ❑ Networking and Telecommunications Capacities
  - ❑ Outlines current status of curriculum and educational technology initiatives in relationship to educational improvement
  - ❑ Includes review of existing professional development activities and structures
  - ❑ Includes assessment of current educational technology staffing

- ❑ **Technology Design** ***(I-E)***
  Software priorities:
  - ❑ Administrative and management
  - ❑ Communications and information access
  - ❑ Instructional and curricular

  Hardware, Facilities, and Network priorities:
  - ❑ Hardware: Workstations and Peripherals
  - ❑ Facilities: Network design
  - ❑ Building and classroom wiring standards
  - ❑ Implementation issues
  - ❑ Operations, Maintenance, and Upgrade priorities

- ❑ **Educational Technology Implementation Action Plan** *(Leadership, Activities, Timeline, Policy, Budget)* ****(I-D, I-F, I-G, I-H)***
  - ❑ Software procurement
  - ❑ Hardware, Facilities, and Network acquisitions/implementation
  - ❑ Operations, Maintenance, and Upgrades
  - ❑ Professional Development
  - ❑ Additional human resources in support of technology
  - ❑ Funding sources
  - ❑ Budget summary

- ❑ **Monitoring, Evaluation, and Revision of Educational Technology Plan** ****(IV)***
  - ❑ Monitoring and evaluation process
  - ❑ Incorporation of evaluation information for ongoing planning
  - ❑ Process for reporting to stakeholders
  - ❑ Process and timeline for ongoing, *long-term* planning

- ❑ **Adult Literacy Component** ****(I-C)***

Comments

[If you are developing or revising your district technology plan, it is recommended that you also check all funding sources from both federal and state programs for their current requirements for technology plans and include them in one comprehensive plan.]

Appendix C

Levels of Technology Implementation (LoTI) Framework

LoTI Level 0—Non Use—A perceived lack of access to technology-based tools or a lack of time to pursue electronic technology implementation. Existing technology is predominately text-based *(e.g., ditto sheets, chalkboard, overhead projector).*

LoTI Level 1—Awareness—Computer-based applications have little or no relevance to the individual teacher's instructional program. The use of computers is generally one step removed from the classroom teacher *(e.g., integrated learning system labs, special computer-based pull-out programs, computer literacy classes, and central word processing labs).*

LoTI Level 2—Exploration—Technology-based tools serve as a supplement to the existing instructional program *(e.g., tutorials, educational games, and simulations).* The electronic technology is employed either as extension activities or as enrichment exercises to the instructional program.

LoTI Level 3—Infusion—Technology-based tools including databases, spreadsheets, graphing packages, probes, calculators, desktop publishing, and telecommunications augment selected instructional events *(e.g., science kit experiments using spreadsheets & graphs to analyze results, telecommunications activity involving data sharing among schools).*

LoTI Level 4a—Mechanical Integration—Technology-based tools are integrated in a mechanical manner that provides rich context for students understanding of the pertinent concepts, themes, and processes. Heavy reliance is placed on prepackaged materials and sequential charts that aid the teacher in the daily operation of their instructional curriculum. Technology *(e.g., multimedia, telecommunications, databases, spreadsheets, and word processing)* is perceived as a tool to identify and solve authentic problems relating to an overall theme or concept.

LoTI Level 4b—Routine Integration—Teachers can readily create Level 4 (Integrated Units) with little intervention from outside resources. Technology-based tools are easily integrated in a manner that provides rich context for student understanding of the pertinent concepts, themes, and processes. Technology *(e.g., multimedia, telecommunications, databases, spreadsheets, and word processing)* is perceived as a tool to identify and solve authentic problems relating to an overall theme or concept.

LoTI Level 5—Expansion—Technology access is extended beyond the classroom. Classroom teachers actively elicit technology applications and networking from business enterprises, governmental agencies *(e.g., contacting NASA to establish a link to an orbiting space shuttle via INTERNET),* research institutions, and universities to expand student experiences directed at problem solving, issues resolution, and student activism surrounding a major theme/concept.

LoTI Level 6—Refinement—Technology is perceived as a process, product *(e.g., invention, patent, new software design)*, and tool toward students solving authentic problems related to an identified "real-world" problem or issue. Technology, in this context, provides a seamless medium for information queries, problem solving, and/or product development. Students have ready access to and a complete understanding of a vast array of technology-based tools to accomplish any particular task.

(NBEA, 2000a)

Appendix D

Forum on Technology in Education: Envisioning the Future—Emerging Priorities

The Forum on the Future of Technology in Education: Envisioning the Future concluded with the identification of emerging priorities.

All students and teachers will have universal access to effective information technology in their classrooms, schools, communities, and homes.

Much of the promise of the use of technology in education, including the notion of fostering learning anytime anywhere, hinges on the universal availability of learning tools for students and teachers and on their effective use. In addressing this issue, it is important to pay attention to individual learner characteristics and needs as well as the social context of using technology.

All teachers will effectively use technology.

There is universal support for devising ways to encourage teacher use of technology aligned with instructional goals—whether delivered through preservice education or inservice professional development or both. Given the continual changes and advances in technology, the need for training is ongoing and must not only be about how to use technology, but also about how to support student learning.

All students will be technologically literate and responsible cybercitizens.

Today's world is marked by increasingly rapid social, political, and technological change—change that is becoming increasingly more difficult to predict. As a consequence, in addition to being academically, socially, and emotionally prepared, students will need to be technologically savvy—understanding how to locate information, determine its relevance, determine its accuracy, and integrate it with other sources. In addition, we must help students to remain vigilant in safeguarding personal information and from accessing inappropriate materials.

Research, development, and evaluation will shape the next generation of technology applications for teaching and learning.

As the use of technology in education becomes more commonplace, it becomes critical to understand what we are learning about what works and what does not. Too often individual schools and districts are left without good information that could guide them in making appropriate investments in technology—investments that could result in tremendous changes to the educational experience for both teachers and students.

Education will drive the e-learning economy.

The Internet is fast becoming an engine of innovation in education. As it is revolutionizing business through e-commerce, the Internet is on a course to redefine education. E-learning, or the delivery of education and related services over the Internet, is being touted as the next most innovative application of the Internet, and private investment in education organizations is rapidly expanding. Fostering innovation in education—providing digital learning, digital content, assessment services, tutoring, distance learning, data warehousing, and other forms of instructional technology—is important. Other areas ripe for innovation include ways of: establishing collaboration among schools, libraries, museums, higher education, and industry; evaluating the quality of educational materials and content; and archiving public domain historical, cultural, and scientific resources.

(US DOE, 2000c)

Appendix E

Results of Wisconsin's Portion of the 1999 Milken Technology Survey

How many people (FTE) does the district employ in the following positions? (FTE = Full Time Equivalent. For example, one person serving half time in one of these positions would be .5 FTE. One full-time person plus a quarter-time person in the same position would be 1.25 FTE.)

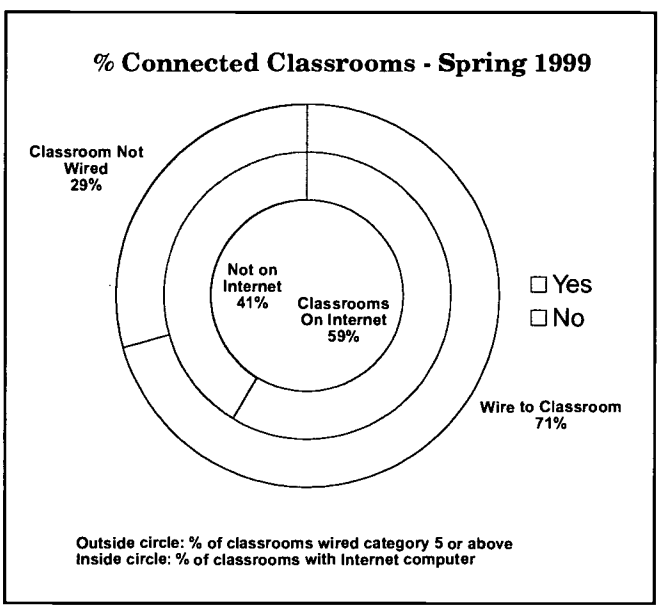
	Number of Districts Reporting the following FTE (N=367)					
Position	More than 1	1 down to .75	.5 thru to .75	.25 to .5	Between 0 and .25	Zero
Technology Coordinator	11	146	60	35	39	76
Admin. Tech. Manager Data Processing)	36	26	17	6	7	275
Network Operations Specialist	16	43	10	8	12	278
Technician	32	50	26	16	12	231
Computer Resource Teacher	54	41	28	16	18	210
Computer Lab Assistant	65	35	14	8	6	239

What percentage of classrooms in your district:

a) are wired with high-speed data connections? (category 5 copper wire or above) 85%

b) have a computer with Internet access? 73%

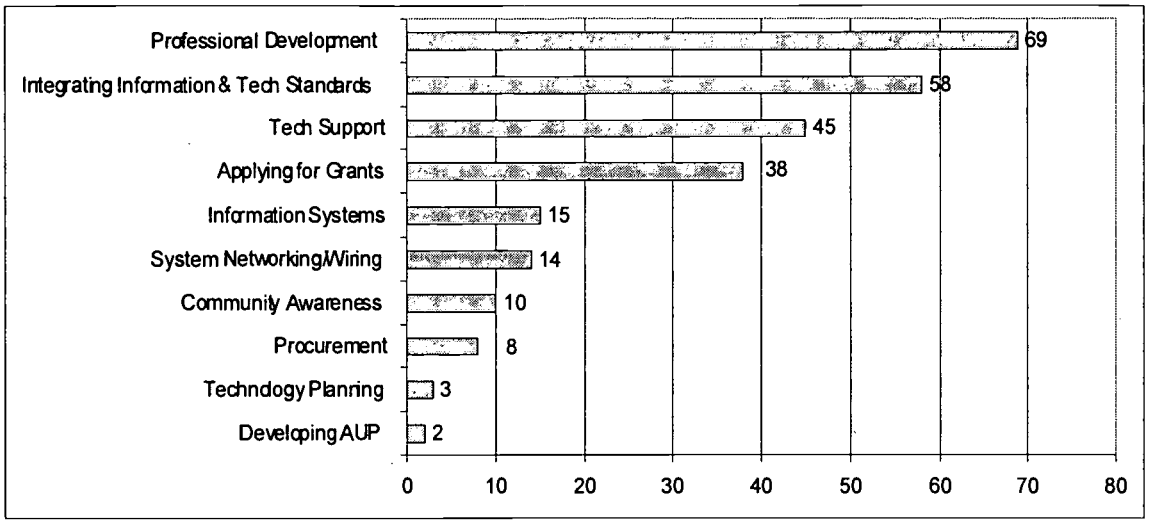
The mean of the 367 districts responding was 85 percent of classrooms were wired and 73 percent had Internet access. Since smaller districts tended to have higher percentages, we then weighted for district size (by number of students). The weighted averages were that 71 percent of classrooms were wired and 59 percent were on the Internet. These numbers show that smaller districts are farther along in the wiring process, percentage-wise, than larger ones.



Does your district have a written Acceptable Use Policy (AUP) in place for the Internet and other technology?

Yes: 96% No: 4%

In what areas are your greatest needs for technical assistance?



Percent of districts identifying as one of top 3 priorities

Do teachers typically include technology skills in their professional development plans?

Yes: 64% No: 36%

Please identify the number of computers, by type, that are currently in your district:

	Mac PowerPC	Mac Non PowerPC	Pentium Class PC or Above	486 Class PC or Below	Apple II/GS
Line 1: How many computers of each type do you have?	35,443	29,387	60,250	19,068	12,983
How many of the computers from Line 1 (above) have a CD-ROM drive AND sound?	32,959	11,522	48,162	3,339	246
How many of the computers from Line 1 (above) are laptops?	1,266	686	2560	550	xxxxxxxxx x

How many of your students are currently participating in a distance learning class?

3,577 (total)

Of the 367 districts that responded, 169 indicated they had students participating in a distance–learning class. The average number of students participating in distance education in those 169 districts was 21 students.

How many of your students are using some elements of distance learning within a more traditional class (for example, a social studies class talking to a state legislator using videoconference technology)?

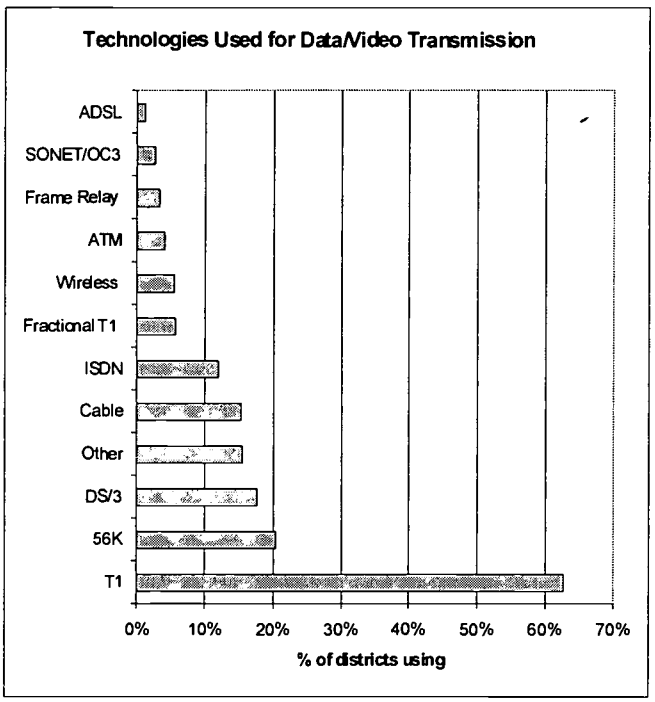
14,658 (total)

Of the 367 districts that responded, 54 indicated they had students participating in distance learning activities within another class. A large number of the total students in this category were from the Milwaukee Public Schools.

Are any factors precluding you from meeting your distance learning needs? *(check all that apply)*

50% Lack of finances

15% Lack of availability of the needed type of technology



37% Lack of perceived need (not able to justify cost for benefits)

23% Other, please specify: *staff time, training, awareness, space*

What technologies are you using to connect buildings for data/video transmission? *(check all that apply)*

There were a variety of answers to the "other" category. The most common was some type of fiber optic cable.

Are any factors precluding you from meeting your WAN connection needs? *(check all that apply)*

50% Lack of finances

7% Lack of availability of the needed type of technology

11% Lack of perceived need (not able to justify cost for benefits)

13% Other, *specify: time, technical support, staff, and others*

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