Approved: 2-6-96
Date

MINUTES OF THE HOUSE SELECT COMMITTEE ON TELECOMMUNICATIONS.

The meeting was called to order by Chairperson Doug Lawrence at 1:30 p.m. on January 30, 1996 in Room 313-S of the Capitol.

All members were present except: Rep. Carol Beggs - excused
Rep. Greg Packer - excused

Committee staff present: Lynne Holt, Legislative Research Department
Bob Nugent, Revisor of Statutes
Mary Ann Graham, Committee Secretary

Conferees appearing before the committee: Lynne Holt, Legislative Research Department

Others attending: See attached list

Chairman Doug Lawrence called the meeting to order at 1:30 p.m. He announced an addition to the Telecommunications Directory had been distributed to committee members and was available for pick up from the committee secretary. Also a process is being started in the committee to try to get a handle on pending issues, part of that process is going to involve written submissions on some of the issues. Anyone that has interest in telecommunications is welcome to participate. Today some time is set aside for committee discussion, to get feed back on what information the committee feels are lacking and what additional information is needed.

The Chairman recognized Lynne Holt, Legislative Research, Ms. Holt distributed two memorandums, the first memorandum was presented to the Special Committee on Education in September 1995 and was intended to provide the Committee with background information on technology in the schools. (See Attachment 1) The second memorandum was in reference to setting up a matrix to address telecommunications issues. Ms. Holt distributed copies of the memorandum to committee members and briefed them on the subject. (See Attachment 2)

The Chairman reminded the committee Joe Weber, Consultant, on the Telecommunications Strategic Planning Committee report, will be addressing the committee in tomorrow's meeting. Also to check their calendars for Thursday, February 8, a tour of Sprint in Johnson county is planned for that day on adjournment of the House. Thursday, February 1, the committee will be taking a tour of the Southwestern Bell switching and physical plant.

The Chairman reminded anyone that is interested in providing written information on concerns or problems need to have those lists for the committee by Friday, February 9, the Legislative Research Department will set up a Matrix to address these issues.

The meeting was adjourned at 2:25 p.m.

The next meeting is scheduled for January 31, 1996

SELECT COMM. ON TELECOMMUNICATIONS
COMMITTEE GUEST LIST

DATE: 1-30-96

NAME	REPRESENTING
HEINEMANN	KCC
Glenda Cafer	KCC
David Brenty	KCC
Ann Henningsen	KASB
Jona Powers	MCI
Pat Hubbell	SWB
Tom Bruno	Allen + Assoc.
Tom Burgess	Burgess & Assoc.
STEVE KEARNEY	KINI C.C.
Scott Richardson	SWB
DAVID SCHLOSSER	PETE McGILL & ASSOC.
WALKER HENDRIX	CURB
JASON PITSENBERGER	BRAD SMOOT
Bill Dufel	SWBT
DENNY KOCH	SW BELL TEL
BILL BLASE	SWBT
MELANIE FARMER	SWBT
Doug Smith	SITA
Roger Vanfleet	Rural Telephone Service Co.

SELECT COMM. ON TELECOMMUNICATIONS
COMMITTEE GUEST LIST

DATE: 1-30-96

NAME	REPRESENTING
Rob Hodges	KTA
JEFF RUSSELL	SPRINT
Marco M CARRISSIMEAUX	CLASSIC COMMUNICATIONS
Jeri Heil	Classic Communications
George Barber	Rural Tele Mgmt Council.

MEMORANDUM

Kansas Legislative Research Department

300 S.W. 10th Avenue
Room 545-N -- Statehouse
Topeka, Kansas 66612-1504
Telephone (913) 296-3181 FAX (913) 296-3824

September 12, 1995

To: Special Committee on Education

From: Lynne Holt, Principal Analyst

Re: Technology in the Schools

The intent of this memorandum is to provide the Committee with background information on:

1. the use of technology in classrooms and school libraries;
2. the implications of technology deployment for economic development;
3. the status of technology infrastructure in the United States and Kansas;
4. the barriers schools encounter in further deployment of the technology infrastructure;
5. available federal and state funding for the purchase and installation of educational technologies;
6. an evaluation of the effectiveness of technology deployment in the schools; and
7. an examination of technology applications and deployment in Iowa, Missouri, and Nebraska.

PART I -- USE OF TECHNOLOGY

A. Definition and Use of Technology

Technology is the set of real, usually tangible, tools by which we transform parts of our environment.[1] In the classroom or school library, we think of hardware and software configurations that support two-way interactive distance learning, which involves some sort of transmission technology (fiber

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[1]See Louis G. Tonatzky and Mitchell Fleischer, *The Processes of Technological Innovation* (Massachusetts: Lexington Books, 1990), pp. 9-11.

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1-30-1996
Attachment 1

optic lines, microwave technology, or satellite), in addition to monitors, cameras, and microphones. Access to Internet involves the availability of computers and either a dedicated communications line and special routing equipment or phone lines and high speed modems. The tangible tools are only part of the discussion. If technology is to "transform our environment," we need to ask how this will be accomplished. What human needs are being served? Is this an appropriate and effective method of providing instruction or information to students, teachers, counselors, and librarians? If so, why?

A distinction between educational and administrative applications needs to be made at the outset. In this context, we are not concerned with administrative applications, such as the use of FAX machines or computers used in the school administrative offices to monitor students' attendance, provide teacher payroll information, and balance expenditures. Instead, we will focus on educational applications, which may use some form or combination of audio channels, computer code, data, graphics, or text, to:

1. transmit information through a tutorial approach to students and educators;

2. enable students to access, discover, and construct knowledge through a self-directed learning process; and

3. hone students' writing, research, and data analysis skills.

Also included in this discussion are those applications which allow students and the teacher at different sites to send and receive written, vocal, or visual information. The teacher can see and hear the students; the students can see and hear the teacher. Communication between students and the teacher takes place in real time.

B. Kansas-Specific Example of Use of Educational Technologies

On September 1, 1995, Ben Barrett, Carolyn Rampey, Denise Moore (Department of Education), and I visited the Exploration of Technology Lab at the Shawnee Heights Middle School in Tecumseh. This lab introduces seventh and eighth graders to various technologies. All seventh graders and almost all eighth graders are required to participate in it. The seventh graders attend for nine weeks and the eighth graders for one semester. When we were there, a class of eighth graders was involved with a variety of projects related to the study of robotics, applied physics, graphic communication, meteorology, and mechanics (to name a few). Most of the instruction seemed to use a combination of the tutorial and exploratory approaches described above.

The Exploration of Technology Lab began operations in 1991. It is a modular lab where students work simultaneously on projects within 24 modules with no more than two students assigned to a module at any time. Each module lasts seven days and has the same structure: completion of a module guide; responses to research questions; preparation for a *post test;* and on the final day of the module assignment, completion of the *post test.* Seventh graders complete three modules and eighth graders, nine modules. These modules are also combined with some classroom activity. The philosophy of the modular labs is: we must teach the way students learn, not expect them to learn the way we teach. Teachers view themselves as facilitators and learning is self directed. The development of these modules was based on what was taught in other classes but the coordinator of the Lab's operations, Rick Taylor, acknowledged that there is no ongoing integration of the technologies into the curricula of other classes. Mr. Taylor considers the Lab to be the beginning of the Tech Prep program which will allow interested students to continue with applied programs in the high school.

Mr. Taylor explained some of the strengths of the program. He has encountered very few discipline problems which he attributes to the Lab accommodating students with many types of learning styles. Moreover, the program has realized an effective partnership with both businesses and parents. According to Mr. Taylor, operating such a lab is very expensive (electronics equipment costs are approximately $100,000 in the Lab). Therefore, fund raising is an important activity. Because businesses help fund the Lab, they feel some ownership in it. Businesses also are involved in developing the curriculum. Through one-on-one interactions with businesses, Mr. Taylor also has learned what businesses expect of their employees and how technology is used at the business site. His philosophy is that most students will eventually work for a business, so the modules are developed based on that premise. Because businesses have been so committed to the Lab, parents value its importance and have likewise become involved and supportive. Ingredients for a technology lab's apparent success include: committed and trained teachers, a supportive administration, involved businesses, and supportive parents.

The greatest obstacle, according to Mr. Taylor, is that there is no specified certification required for instructors of technology labs; therefore, many teachers are not adequately trained to instruct students in technology applications. However, the Board of Education is currently addressing this issue. Mr. Taylor observed that another problem, particularly in larger schools, is that resources for technologies are dispersed throughout the system and therefore have little effect. Mr. Taylor recommended that a school district apply its resources to the establishment of one showcase lab, make it operational, and provide inservice training to other teachers in the district.

Future plans for the Lab include obtaining access to the Internet through a dedicated network and redesigning the broadcasting studio.

C. Other Technology Applications

In addition to supporting straightforward student-teacher applications, instructional technologies also can be used to support: inservice teacher training; communications among students and between teachers and parents, teachers and their colleagues or teachers and professionals in postsecondary institutions; mentoring relationships between students and business employees; collaborative projects between students and professionals; and information searches and instruction by librarians to teachers and students on how to access information electronically. For example, in Indiana, the Selma Middle School has taught students to search and access information on the Internet. Students have assisted teachers with parent training sessions on Saturday morning to impart their knowledge to parents. Some students even coach teachers in two-day workshops at other schools.[2] Another example is the use of computers in the Shoreline district of Seattle which enabled students to write a bicyclist's guide for the Seattle region. The development of this guide involved making maps, calculating calorie consumption and elevations, and learning about the history of the region. The guide is intended for use by all area bicyclists.[3]

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[2]See *51 Reasons How We Use the Internet and What It Says About the Information Superhighway*, ed. Martha Stone-Martin and Laura Breeden, Farnet Inc.

[3]See Alex Chadwick, *Morning Edition: Computers & Education*, National Public Radio, February 13, 1995.

D. Kansas-Specific Needs

Consultants for the Telecommunications Strategic Planning Committee surveyed representatives from the Regents universities, K-12, and community colleges to assess their current and projected telecommunications needs. A draft version of their *User Needs Assessment* report disclosed that at the K-12 and postsecondary education levels, data base access via Internet and telecommunications was ranked as the highest near term need and remained as the highest need for the entire forecast period. Distance learning, with compressed and full motion video, was ranked next in importance, with the provision that as network capabilities allow, full motion will replace compressed. For K-12 end users, homework hotlines ranked third in importance. Of least importance was parent teacher video conferencing, although for K-12 end users, parent teacher voice mail conferencing ranked higher in importance. (See Attachment I.)[4]

PART II -- IMPLICATIONS FOR ECONOMIC DEVELOPMENT

In the frequently cited *Scans Report for America 2000*, five competencies are identified that employers want their employees to have. One of those competencies is familiarity with technologies. Employees will be expected to select and use appropriate technology, visualize operations, use technology to monitor tasks, and maintain and troubleshoot complex equipment. The report states that:

> . . . the expert worker of tomorrow will not simply "pick-up" these competencies. Their acquisition must begin in the schools and be refined through on-the-job experience and further training. Teaching and learning the competencies must become the tasks of our schools and students.[5]

Findings from a survey of 618 Kansas firms conducted in 1989 suggest that employers are more concerned about employees' basic academic skills and general work skills than about their microcomputer and technical skills. Improvement in microcomputer skills was deemed more important than improvement in reading skills by 47 percent of all firms expressing that need for new employees and by 56 percent of all firms expressing that need for current employees.[6] Clearly, applicants for those positions will have a competitive advantage if they have such skills. Schools are the most pervasive and accessible source for imparting those skills.

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[4]See draft version by Temin & Weber/DCI, consultants for the Telecommunications Strategic Planning Committee, August 16, 1995.

[5]See U.S. Department of Labor, *What Work Requires of Schools: A Scans Report for America 2000*, June 1991, p. 11.

[6]See Tables 18 and 19 in Institute for Public Policy and Business Research, the University of Kansas, *Work Force Training: The Challenge for Kansas*, under contract with Kansas Inc., December 1, 1989, pp. 18-19.

PART III -- INFRASTRUCTURE DEPLOYMENT

In Part I we noted that an understanding of technology is essentially two-pronged. How the technology transforms the environment is of paramount concern but the technology must be appropriate to realize the intended outcomes. Two studies were recently released which suggest that schools are not technologically equipped for the 21st Century. A GAO report released in April 1995 involved a random sample of 10,000 schools nationwide with a 78 percent response rate. The report found that three-quarters of the 7,800 responding schools have sufficient computers and television, but lack the infrastructure to fully support these technologies.[7] Another finding of the study is that one-third of schools with sufficient computers are not networked, limiting their access to available electronic equipment. Yet another finding of the study is that, in central cities, over 60 percent of schools reported insufficient networks, modems, phone lines (for modems or instruction), conduits, and fiber optic cables. Over half reported insufficient capability for electrical wiring for computer technology. The study contains state-specific data identifying the percentage of schools reporting insufficient technology components. For Kansas, the data generally correspond to the national patterns.

Technology	Percentage of Kansas Schools Reporting Insufficient Technology Components
Computers	22.9
Printers	27.7
Networks	44.0
Modems	47.3
Phone lines per Modem	44.4
Phone lines -- instructional use	61.7

The Department of Education reports that based on available information only five of the 304 school districts in Kansas have direct Internet access; the number of schools with dial up access is unknown.[8]

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[7]See GAO, *School Facilities: America's Schools Are Not Designed or Equipped for 21st Century*, April 4, 1995.

[8]Dial up access involves connection to the Internet using a computer, software, modem, and telephone line. The modem modifies the digital information used by the initiating computer so that it can pass across telephone lines. Another modem at the other end restores the information to a digital form that can be used by the receiving computer. Direct Internet access generally involves going through an Internet node. Nodes are allocated by regional network providers who provide networking hardware as well as the electrical connection.

The Survey of Advanced Telecommunications in U.S. Public Schools, K-12 was released by the Office of Educational Research and Improvement in February 1995. A total of 1,380 regular elementary, middle, and secondary schools throughout the United States completed telephone surveys in October and November, 1994. Some of the findings include the following:

> Overall, 35 percent of public schools have access to Internet but only 3 percent of all instructional rooms (classrooms, labs, and media centers) in public schools are connected to Internet. E-mail is the most widely available Internet capability, with 90 percent of surveyed schools indicating its availability. Only 21 percent of the schools report having some graphical user interface capabilities such as MOSAIC or Netscape.
>
> Seventy-five percent of public schools have computers with some type of telecommunication capabilities (*i.e.*, modem, local area networks, or wide area networks). Of that 75 percent, only 49 percent have access to wide area network, 35 percent have access to Internet, and 14 percent have access to other wide area networks.
>
> Smaller schools with enrollments of less than 300 are less likely to be on Internet than schools with larger enrollments. Only 30 percent of small schools reported having Internet access, while 58 percent of schools with enrollments of 1,000 or more reported having such access.

To put some of these findings in perspective, although a great percentage of schools report access to E-mail, only 1 percent of teachers have access to it and only one teacher in eight has a telephone in the classroom.[9] Of those schools which have computers, 54 percent confine them to lab use only.[10]

PART IV -- BARRIERS TO TECHNOLOGY DEPLOYMENT

A. General Barriers

The most commonly cited general barriers seem to be reflected in Attachment II, which is excerpted from the publication *Advanced Telecommunications in U.S. Public Schools, K-12*. Dedicated funding is ranked first as a major barrier, followed by lack of equipment or poor equipment, too few access points in the building, and problems with accessibility with telecommunications equipment and links. Over one-third of the 1,380 schools surveyed identified a lack of adequately trained staff as a major barrier and slightly less than a third identified it as a moderate barrier. A similar percentage identified as major or

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[9]See Office of Technology Assessment, *Teachers and Training: Making the Connection*, April 1995, p. 1.

[10]See Alex Chadwick, *Morning Edition: Computers and Education*, National Public Radio, February 17, 1995. This percentage was provided by the CCA Consulting Firm.

moderate barriers the lack of teacher awareness regarding ways to integrate telecommunications into the curriculum.[11]

With respect to the integration of technology into the curriculum, all but seven states reported that they require or recommend integrating computers or information technology into the curriculum (see Attachment III), but there is little explicit direction as to the way technology is to be integrated. In some states, technology policy is equated with mandating courses about computers rather than assisting teachers to learn to teach with a range of technologies.[12] At the other end of the spectrum, only a small percentage of the 1,380 schools surveyed cited as a major or moderate barrier the lack of integration of advanced telecommunications into the educational policy of the school (indicating that, at least conceptually, such integration is generally accepted). In addition, only a small percentage of schools cited lack of teacher interest, lack of parent or community interest, and lack of student interest as major barriers, although over a fourth of all schools surveyed indicated that lack of teacher interest was a moderate barrier.

The issue of inadequate training, although certainly not insuperable, is not easy to address. According to a study by the Office of Technology and Assessment, school districts, on average, devote no more than 15 percent of their technology budgets to teacher training, whereas some states have suggested that the figure be more like 30 percent. Moreover, federal funding, in particular, tends to focus more on inservice than on preservice education.[13] This approach may address current needs but fails to address teacher preparation or quality over the long term.

B. Constraints in Kansas

The draft version of *the User Needs Assessment* prepared for the Telecommunications Strategic Planning Committee indicated that Kansas educators echoed their counterparts in the rest of the country by citing as the most serious constraint costs and funding. According to those surveyed, telephone rate structures and slow penetration of high speed data services have slowed use of information services. Cost and funding constraints were particularly evident with respect to distance learning. Preliminary survey results indicated that the demarcation of school district boundaries complicates sharing of resources across counties and states. In addition, small schools in rural areas, decentralized control of costs, and involvement of multiple telephone companies were considered to pose major challenges for achieving broad-based technology deployment.

Despite these constraints, many potential pitfalls can be avoided with proper planning. In this regard, a resource may be found in the chapter on *Developing a Technology Plan* in the Department of

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[11]Another survey on barriers was conducted by telephone in April 1995 for certain education groups and Cable in the Classroom. Those surveyed were 600 teachers and media specialists, 300 principals, and 100 school administrators. In their identification of barriers, almost 21 percent cited the lack of time to learn how to use online services (America Online and Prodigy); 19.3 percent cited problems with access to telephone, cable, and data line in the classroom; 19 percent cited lack of workshops or training; and 19 percent cited inadequate knowledge about the service.

[12]*Teachers & Technology: Making the Connection*, p. 120. Kansas is one of the states that promotes the integration of technology into the curriculum.

[13]Ibid., pp. 2-3.

Education's *Planning Guide for Technology Integration in Kansas Public Schools* (draft version, August 1995), which outlines steps subsumed under three distinct stages -- planning, implementing, and institutionalizing. Following these steps would result in a smooth transition to integrating technology into the classroom and library.

(See also Attachment IV for a table included in a recent publication by the Office of Technology Assessment, which complements the findings of the survey in Attachment II and the points made in *Developing a Technology Plan*, calling for a clear definition of technology mission, needs, and the development of specific outcomes.[14])

PART V – FUNDING

A. Funding for Programs

There is some federal and state funding for the purchase of technological equipment and professional training and assistance. However, with respect to federal funding, much of it is highly competitive to access, programs are fragmented, and program expenditures are sometimes governed by restrictions in the form of specified purposes for use of technology, required local matches, or percentage caps on total expenditures. Moreover, although federal agency budgets for FY 1996 are as yet undecided, the Senate has proposed elimination or consolidation of 91 education programs. Reduced total funding could affect the available resources for technology-related initiatives.

Attachment V, although not exhaustive, identifies some of the federal funding sources currently available on a nationwide basis, although not necessarily available in Kansas.

B. Federal Funding

There are four major federal funding sources which the Kansas Department of Education accesses and which could be used for technology acquisitions:

1. Title I (Chapter 1) ESEA. The purpose of this program is to provide educational services to help low-achieving students in low-income areas to meet high standards. For the 1995-1996 school year, the Kansas Department of Education is awarding approximately $50 million in noncompetitive grants to Kansas schools. Schools may use up to 10 percent of their allocations for technology, but can use more if granted a waiver from the Department. There is no matching requirement.

2. Eisenhower State Grant. Program funding is used to improve teacher knowledge in math, science, and other core academic subjects. For the 1995-1996 school year, the Kansas Department of Education is awarding $1.7 million in noncompetitive grants to Kansas schools. Any portion of the allocations may be used for technology-related training purposes. A local match of 33 percent is required and this match can be in-kind.

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[14]See Office of Technology Assessment, *Teachers & Technology: Making the Connection,* April 1995, p. 19.

3. Title VI (Chapter 2) ESEA. The purpose of this program is to provide grants for a range of state and locally-determined school improvement programs. For the 1995-1996 school year, the Kansas Department of Education is awarding $2.9 million in noncompetitive grants to Kansas schools. Any portion of the allocations may be used for technology-related purposes and there is no matching requirement.

4. Goals 2000. As part of the Goals 2000 Educate America Act, states must develop comprehensive school reform plans, which could include a state educational technology plan. For the 1995-1996 school year, the Kansas Department of Education is awarding approximately $2.8 million in grants to Kansas schools for local reform efforts and partnerships with institutions of higher learning. Recently, the Kansas Goal 2000 State Improvement Plan was approved by the U.S. Department of Education. Local reform grants may include technology-related activities and there is no matching requirement.

C. State Funding

One state funding source may be viewed as targeting innovation in public schools including technology.

1. Educational Excellence Grant Program. This program awards "innovative grants" on a one-year competitive basis to school districts which focus on one or more specified funding priorities, including technology which increases productivity. Districts are required to provide a 100 percent match. For FY 1996, 108 applicants, requesting over $6.5 million, competed for $1,485,000 from the Economic Development Initiatives Fund. The Kansas State Board of Education awarded 21 grants. A summary report prepared for the 1993-1994 school year indicated that 81 percent of the grants included technology of some type.

2. State/Local Funding. Generally, school districts may use revenues from their general fund and other operating funds for technology expenditures, both personnel and materials, services and equipment. The limit is that expenditures from these funds must be for the purposes for which the funds were established. Of course, such expenditures must compete with a wide array of other needs, such as salaries and other operating expenses. State, local, and other resources to these funds approximate $2.5 billion.

D. Internet Access Providers

The Department of Education does not collect information on the number of schools with access to the Internet. There are several ways that schools can access the Internet -- through a subscription to the Information Network of Kansas (INK); through membership in the Kansas Research and Education Network (KANREN); and prospectively through the Kansas Department of Information Systems and Communications (DISC), which operates the Kansas Wide Area Information Network (KanWin) for state agencies but will include schools. Also there are a variety of commercial on-line, dial-up services, such as America Online, Scholastic Network, and Compuserve, which are not described below.

INK charges an annual subscription rate of $240 for 50 hours of connect time for dial-up access per account using a toll-free number. After 50 hours has been used, a subscriber can purchase five-hour increments for $30. Alternatively, if a school already has its own direct Internet connection but wants to access other INK services, the charge is an annual flat fee of $240. Information was unavailable about the number of schools using INK for access to the Internet.

KANREN provides direct access to the Internet through Midnet, a regional Internet provider. Although most of its membership consists of universities and community colleges, four USDs -- Olathe, Shawnee Mission, Kaw Valley, and Neodesha -- and the Northeast Kansas Education Service Center are members. KANREN charges an annual fee of $7,380 for direct access to the Internet via a 56 kb line and $3,100 for a one-time installation fee for a router.[15] Also included in the KANREN membership fee is training for four on-site representatives and support.

For direct access to the Internet through KanWin, schools will be assessed router and access charges of $470 per month. In addition, schools will have to pay monthly connection charges to their local exchange company. However, instead of the monthly fixed rate, schools could opt to pay dial-up via a toll-free number to DISC for usage only ($.076 per minute). There is no training and no support offered.

PART VI -- EFFECTIVENESS OF TECHNOLOGIES

A discussion about the effectiveness of technologies needs to take into account the intended beneficiaries. For example, is the technology intended for the science instruction of elementary school students, reading instruction of students with learning disabilities, inservice training for teachers, or preservice training of math teachers? Many evaluations have been undertaken about specific applications but the focus here is on the instructional applications of technology in the K-12 classroom. One of the problems with evaluating the effectiveness of technology usage is that it is difficult to isolate the "effects" of the technology itself.

Recent evaluations using what is called "contextualized research" have made strides toward a better understanding of relationships between these factors and the desired outcome (improved learning). Recognizing that student performance will be affected not just by hardware and software but also by the use a student or classroom makes of the technology, individuals using this type of research have provided detailed descriptions of specific implementations. One such example is a study of four classes of San Diego fourth graders who participated with students in Hawaii, Mexico, and Alaska in an on-line "newswire" service and production of a student newspaper. Students in all four classes showed an improvement of more than one grade level in their reading and writing skills. Those students who served as volunteer editors showed striking gains in language mechanics. The researcher concluded that the experience of editing others' writing produces more improvement than practice in correcting one's own mistakes and that students, while reluctant to edit their classmates' work, feel much freer to criticize and correct the work of distant peers.[16]

Despite research efforts of this sort, much remains to be done to respond to calls for evidence that technology investments improve student learning. The Office of Technology Assessment concluded:

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[15]Routers are intelligent bridges (linking local area networks and wide area networks) that read the address contained in the first few lines of each packet of information being transmitted via the Internet. After reading the address, the router determines how to best send the packet to its destination, taking into account how busy the network is.

[16]See *Using Technology to Support Education Reform*, pp. 76-77.

> Additional research is needed to develop a deeper understanding of which instructional uses of technology are most effective and under which circumstances, and how teacher interaction with technology plays into this effectiveness.[17]

However, even if the effectiveness of technology on improved student learning remains a complex issue for evaluators, other instructional benefits that may or may not be reflected immediately in measures of student learning include: bringing a wider range of materials into the classroom; motivating learners; providing new teaching tools; accommodating individual learning styles; and redefining the role of the teacher.

PART VII -- TECHNOLOGY IN THE CLASSROOM -- THREE OTHER STATES

The states of Iowa, Missouri, and Nebraska have adopted statewide policies for promoting technology investments in schools. This section profiles their respective approaches.

A. Iowa

Through its Department of Communications, the State of Iowa owns and operates a communications network which currently provides voice, data, and full-motion, two-way interactive video to roughly 126 sites, including 105 schools and colleges, three hospitals, three prisons, and a National Guard armory.[18] The ICN (Iowa Communications Network) is the only statewide publicly owned telecommunications network in the country. The network contains approximately 3,000 route miles of fiber optic cable financed by the state and installed by the private sector. The construction of the network will encompass three parts or phases. The entire cost to the state for the original construction and expansion of ICN is estimated to be $200 million, excluding certificate of participation indebtedness. The state's original intent was not to own the network, but vendor responses to the initial RFPs proved unsatisfactory. Consequently, the state elected to assume control and ownership of the network.

The first phase of construction, which began in 1991, linked 15 regional community colleges, three universities, and Iowa Public Television. The second phase connected 126 sites -- high schools and community college branches -- to 15 regional switching centers. Each regional switching center, in turn, was connected to the state-of-the-art ICN hub which is located in the Camp Dodge armory. This part of the project ensured that ICN has a presence in each county in Iowa, no matter how rural. The 1995 Legislature approved funding for the final phase of the project, which will link over a four-year period roughly 474 sites (libraries, public and private schools, state agencies, armories and area educational agencies) to the ICN. For Phase III, in contrast to the first two phases, the state will lease the lines from the vendors who construct them. The lease will be for seven years with a three-year extension option. The state will still be responsible for up-front costs, such as the installation of electronics. For schools that were

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[17]See *Teachers & Technology: Making the Connection*, p. 59.

[18]Information about ICN comes from Amy Schurr, *PCWeek Netweek*, September 12, 1994, pp. N/1-5; Michele Walsh, "When Government Cooperates," *Government Technology*, September 1995, p. 1 *et seq.*, and a report by Weber Temin & Co./DCI for the Telecommunications Strategic Planning Committee on *Potential Use of Government Networks*, August 10, 1995.

linked to the network in Phase II, classroom equipment ranged from $31,000 to $43,000, excluding $20,000 for a codec.[19] The first 103 schools received $14,000 each from a federal U.S. Department of Education STARS Program grant to help defray costs. The remainder was funded locally. Attachment VI is a map of the ICN reflecting completion of all phases of construction.

ICN only charges $8 per hour per site for distance learning. This is below the network's charge to many other users paying $40 per hour. The difference in rates is financed by a state educational fund established for that purpose.

The Legislature appointed an ad hoc task force to examine options for the disposition of ICN. Such options include selling the network, partnering with private companies, or retaining the network in the public domain. Proponents for retention of ICN as state owned and operated contend that the private sector would be less likely to invest in video (distance learning/telemedicine) than in data because of the profit motive. If such investments are made, rates might be too steep. In addition to ensuring service availability and affordability, proponents argue that a state-owned network is better positioned to integrate many services, and that this objective does not necessarily correspond to the self interest of telephone providers. Opponents argue that ICN in the future may compete with telephone companies and capture their most lucrative business customers.

B. Missouri

Of interest to this Committee is how Internet access is promoted in various states and Missouri's efforts to that end might prove instructive. The Missouri Research and Education Network (MOREnet) was established in 1991 to provide collaborative networked information services to its members and customers in support of education, research, public service, and government. In its mission, MOREnet is similar to the Kansas consortium called KANREN and both consortia have provided Internet access to higher education institutions in their respective states.

Missouri has adopted a policy of providing Internet access to all 530 school districts in the state. To realize that objective, the Missouri Department of Elementary and Secondary Education contracted with MOREnet to implement a statewide network connecting all the school districts over a three-year period. Funding for the three-year project totaled $6.75 million from legislative appropriations, a portion of which came from lottery proceeds. Prior to commencement of the project, the Missouri Department of Elementary and Secondary Education selected MOREnet to conduct in 1993-1994 a pilot project to provide Internet access to selected school districts. The first year (1994-1995), a total of 276 school districts participated to receive dedicated access (105 districts) or toll-free dial-up access (171 districts). The MOREnet project is now in its second year and 433 school districts have applied for Internet access (270 for dedicated access and 163 for dial-up access).

With financial assistance from the Missouri Department of Elementary and Secondary Education, Missouri school districts may acquire a 56 kb dedicated data connection for a one-time assessment of $4,000 and a yearly participation fee which ranges from $500-$2,000 based on the number of full-time certified employees. Dial-up access is also an option with rates for annual participation ($250-$1,000) likewise based on the number of full-time employees. Districts will be limited to the number of accounts

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[19]A codec changes the analog video and voice signal originating in the classroom into the digital light signal that is transmitted to the distant site.

(computer hookups) they may have with the largest districts (more than 500 full-time employees) to be allowed up to 40 accounts.

Training and ongoing support are significant components of the overall project. Through both central and regional locations, teachers in Missouri may receive hands-on training in use of the technology. In addition, MOREnet provides access to full-text magazine databases that enable teachers to search the Internet to provide good resources for their peers, and other innovative programs.

Not only is MOREnet responsible for connecting the Missouri school districts to Internet, it also is responsible for bringing all the state's public libraries on-line, providing Internet access to state agencies, and developing Community Information Networks. The intent is to link all these end user groups and have one reference entity serve all of them.

The Coordinator of the project noted that he encountered several problems with network implementation.[20] The biggest was the expense the Network incurred with dial-up access. Since the inception of the program, students have not been allowed dial-up access. However, teachers, who have been allowed dial-up access, have been using toll free services at a far greater rate than anticipated to search for instructional materials. Consequently, in order to contain costs, a limit has just been imposed on such usage. Another problem is related to training. When the program began, an insufficient number of trainers was available to assist teachers. The Department is currently entering into a contract for regional training support. Finally, there has been a problem in finding a vendor who is interested in developing a commercial database for all end user groups (K-12, libraries, state agencies, and communities).

C. Nebraska

In Nebraska, two laws were recently enacted (1993 LB 452 and 1995 LB 860) which encourage the acquisition of computers in public schools (K-12) and Internet access.[21] LB 452 authorizes educational service units (ESUs) to levy an additional property tax to provide access to telecomputing resources for all school districts within their geographic area. (ESUs have a similar mission to the regional education service centers in Kansas. However, in contrast to the Kansas centers, ESUs have tax levying authority.) LB 452 also contemplated expenditures for the installation of necessary equipment at the ESU locations to enable them to set up frame relay systems and serve as hubs for the school districts. Funding would be available for training system users. The Department of Education is required to coordinate the planning for, and purchasing of, equipment and software for the ESUs.

LB 860 authorizes the payment of incentives from the Education Innovation Fund to meet the state's goal of ensuring that all K-12 schools have direct access to the Internet by June 30, 2000. This Fund is capitalized by lottery proceeds totaling approximately $2.5 million annually. Proceeds may be used for other purposes as well. The law also established the School Technology Fund to finance school districts' direct access to the Internet through Local Area Networks connected to the hubs at the ESUs. Financing for this connectivity will come from two sources: proceeds from an authorized tax levy by ESUs and an amount of up to $13 million which is to be transferred over a period of ten years from the School

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[20]Conversation with Bill Giddings, Department of Elementary and Secondary Education Technology Network Project Coordinator, September 1, 1995.

[21]Some of the information on Nebraska's activities was derived from a conversation with Dean Bergman, Nebraska Department of Education, September 5, 1995.

Weatherization Fund to the newly established School Technology Fund. Moneys from this Fund will not be available until July 1, 1996. In the interim, the Nebraska Department of Education will be forming a committee to develop proposed rules for disbursement of the funds and to hold hearings on the proposed rules.

Currently, half the K-12 teachers (approximately 12,000) in Nebraska have access to the Internet. The goal is to provide all teachers with direct access. Some ESUs allow a small percentage of students access to the Internet but ESU policies generally provide such access only to teachers.

There is some inequity in the amount of revenue generated by ESU tax levies depending on the ESU's tax base. Therefore, the state has agreed to make no interest loans to ESUs in poorer regions that, absent such assistance, cannot generate sufficient revenues to provide connectivity to schools.

PART VIII -- CONCLUSION

In Iowa, Missouri, and Nebraska, the Legislature made a policy decision to ensure that all public schools (K-12) would be able to access the Internet at affordable rates. In Iowa and Missouri, that commitment extends to other users in the education network, including community colleges, universities, and libraries. Iowa's network not only allows for Internet access but for many other applications, such as data transmittal in the form of high resolution graphics, image transfer, computer aided design, document transmission, and high quality video transmissions for distance learning.

The Kansas Goals 2000 Technology Task Force articulated a vision in its draft report that an environment be promoted in which:

A. all Kansans have equal and adequate access to comprehensive information resources;

B. all educators have the technology, tools, and resources they need to provide students with superior knowledge and job skills; and

C. all segments of the Kansas educational community work together with a common sense of purpose to achieve this vision.

What is our collective vision for technology deployment in Kansas? Could available funding be aggregated toward realization of that vision or is another source of revenue needed? Should a certain percentage of funding be earmarked for technology-related initiatives?

With respect to Part A, the vision assumes that the environment will exist to promote equal access to informational resources, yet no state policy exists to address the means of ensuring equity. The decision to provide teachers and students access to the Internet remains a local decision, often influenced by geographic location, telephone rates, administrative priorities, funding availability, and other factors. If policymakers decide that all teachers and all students should be afforded access on the Internet, how should resources be mobilized and allocated to realize that objective?

With respect to Part B, the vision assumes that the environment will exist to endow *all* educators (not only those in K-12) with the technology, tools, and resources they need to provide students with superior knowledge and job skills. This vision appears to include technologies and tools of the sort found in the Exploration of Technology Lab in Shawnee Heights Middle School; interactive video technologies of the sort found in the Southwest Plains Regional Service Center or the Southeast Kansas Education Service Center; and computer networking configurations that allow schools to directly access the Internet, such as the Olathe school system. If all educators should be able to access the necessary technologies and tools, what incentives exist to encourage school districts to make investments in technology a high priority? How do policymakers ensure that there are a sufficient number of teachers to use technologies effectively and integrate them into the curriculum? How will Kansans know that teachers are qualified to that end? What type of incentive should businesses, particularly in less urban regions, be given to to encourage them to actively participate in the development of technology-based curricula?

With respect to Part C, the vision assumes that an environment will exist to encourage all segments of the Kansas educational community (K-12 through postsecondary education) to work together to make Kansas an education leader. If policymakers agree that cooperative efforts should be promoted, what form should these efforts take? Will Kansas postsecondary schools offer preservice training and continuing education that is easily accessible and affordable to all educators throughout the state? How can libraries play a role in introducing educators to new technologies and resources and how can they themselves access the necessary tools at reasonable rates?

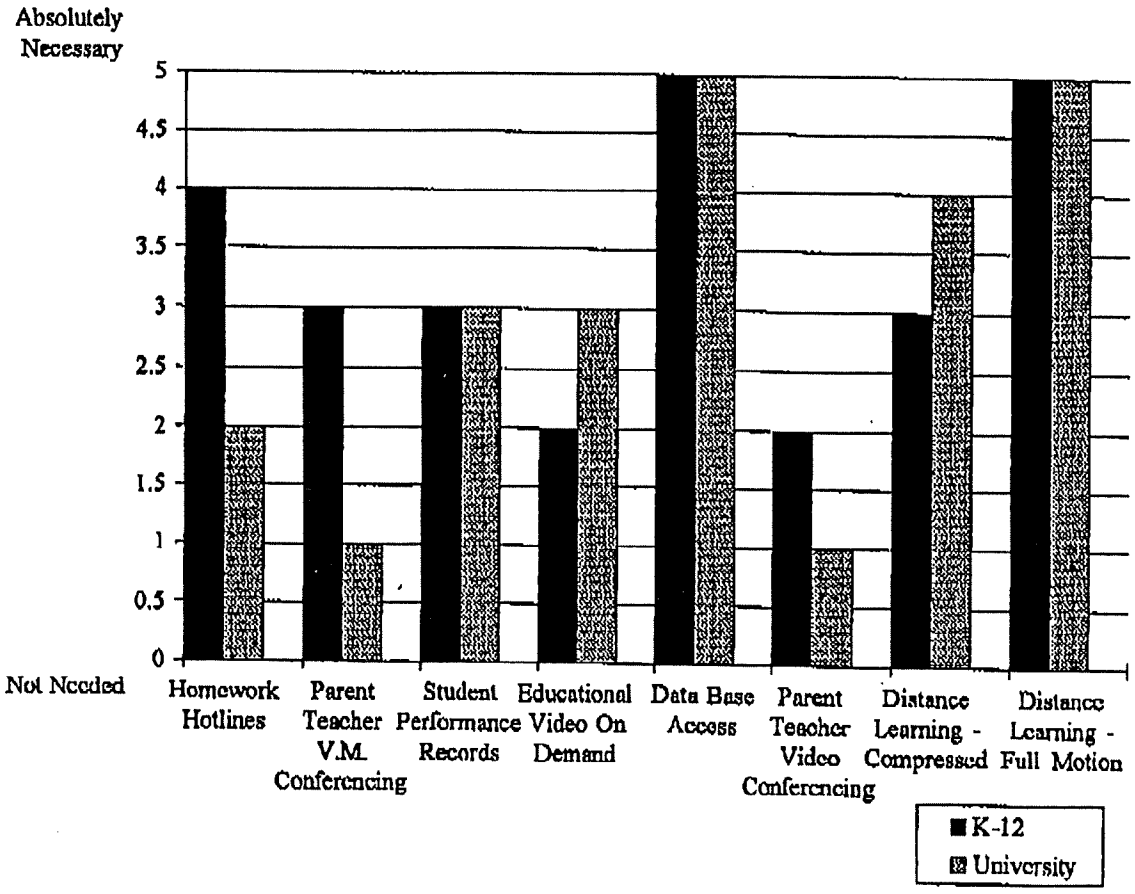
To conclude, what is a reasonable vision for making technologies more affordable and equally accessible to the educational community? Do we want to make the transition from locally-initiated practices to a statewide policy? If this state opts for that course of action, how should that be accomplished?

ATTACHMENT I

EDUCATIONAL FINDINGS

Industry-Specific Needs

- Data Base Access and Distance Learning scored as absolutely necessary for both K-12 and University segments.
- Five of the eight applications listed have widely differing levels of importance between K-12 and University segments.



Source: User Needs Assessment draft, Temin & Weber/DCI, August 16, 1995 prepared for the Kansas Telecommunications Strategic Planning Committee, in partial fulfillment of their consulting contract.

Table 14.--Percent of all public schools indicating the extent to which various factors are barriers to either the acquisition or the use of advanced telecommunications: 1994

Barrier	Minor or no barrier	Moderate barrier	Major barrier
Lack of or poor equipment	30	20	50
Inadequate hardware upkeep and repair	50	22	28
Lack of instructional software	47	28	24
Software too complicated to use	79	14	7
Too few access points in building	35	19	47
Telecommunications equipment not easily accessible	36	20	44
Telecommunications links not easily accessible	42	18	39
Variability of telecommunications rates from service providers	64	17	19
Problems with telecommunications service provider	78	9	13
Lack of time in school schedule	45	27	28
Lack of technical support or advice	46	27	27
Use of advanced telecommunications does not fit with the educational policy of this school	90	6	4
Lack of or inadequately trained staff	33	31	36
Lack of teacher awareness regarding ways to integrate telecommunications into curriculum	32	34	34
Not enough help for supervising student computer use	49	26	25
Lack of administrative support or initiative	69	17	14
Lack of teacher interest	65	28	8
Lack of parent or community interest	77	16	7
Lack of student interest	92	6	2
Funds not specifically allocated for telecommunications	16	15	69

NOTE: Percents may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, K-12," FRSS 51, 1994.

TABLE 3-2: State Education Technology Policies, September 1994[a]

State name	Promotes technology integration in curriculum (1)	Requires computer course for students (2)	Mandates computer competency for students (3)	Requires computer training for teacher certification (4)	Requires inservice technology training (5)	Students per computer (6)
Alabama	✓		✓		✓	17.7
Alaska	✓					8.6
Arizona	✓			✓		12.3
Arkansas	✓	✓		✓		14.0
California	✓			✓		19.5
Colorado				✓		11.2
Connecticut	✓					13.8
District of Columbia	✓		✓	✓	✓	12.9
Delaware	✓					18.5
Florida	✓					11.3
Georgia	✓					12.8
Hawaii	✓		✓			18.8
Idaho	✓					14.5
Illinois						15.9
Indiana	✓					11.1
Iowa	✓					10.2
Kansas	✓			✓		9.9
Kentucky	✓					12.0
Louisiana	✓		✓			19.5
Maine	✓		✓	✓		14.4
Maryland	✓		✓			13.8
Massachusetts	✓			✓		16.3
Michigan	✓			✓		13.4
Minnesota	✓					11.1
Mississippi	✓	✓	✓			17.9
Missouri	✓					13.4
Montana	✓					10.6
Nebraska	✓		✓			10.4
Nevada		✓	✓			13.6
New Hampshire	✓	✓		✓		22.0
New Jersey	✓		✓	✓		15.4
New Mexico	✓		✓	✓		12.4
New York	✓					12.3
North Carolina	✓		✓			13.1
North Dakota						10.4
Ohio	✓			✓		16.0
Oklahoma	✓	✓	✓	✓		13.5
Oregon	✓		✓			13.0
Pennsylvania	✓		✓			14.7
Rhode Island	✓	✓	✓			16.2

TABLE 3-2 (cont'd.): State Education Technology Policies, September 1994[a]

State name	Promotes technology integration in curriculum (1)	Requires computer course for students (2)	Mandates computer competency for students (3)	Requires computer training for teacher certification (4)	Requires inservice technology training (5)	Students per computer (6)
South Carolina	✓					13.7
South Dakota	✓	✓	✓			10.4
Tennessee	✓	✓		✓		18.4
Texas	✓	✓	✓			12.1
Utah	✓	✓	✓			13.3
Vermont	✓					19.9
Virginia	✓		✓			13.0
Washington	✓	✓		✓		10.9
West Virginia	✓	✓		✓		11.2
Wisconsin	✓			✓		11.4
Wyoming				✓		8.1

[a] An '✓' in the column means a state has that policy. A blank cell means that the policy does not exist.

The definitions of the column check lists are as follows:

(1) State requires (or recommends) that public schools integrate computers or information technology in the curriculum.

(2) State requires that public schools offer computer-related courses such as keyboarding or computer literacy.

(3) State has a mandate for computer competency or performance standards for students related to information technology.

(4) Teacher certification in the state includes a requirement for training in computers or technology (see chapter 5).

(5) State has a requirement for inservice computer or technology training (see chapter 4).

(6) Microdensity is defined as students per computer. (Data from QED, 1994 report on Technology in Public Schools, QED, Denver, Colorado.)

SOURCE: R.E. Anderson, "State Technology Activities Related to Teachers," OTA contractor report, Nov. 15, 1994.

taking a computer literacy course or passing a test of technology-related skills and knowledge.[72]

Many states, like Vermont, do not mandate technology competency, but recommend that districts make computer competency a graduation requirement. North Carolina recently has designed an innovative, detailed competency-based curriculum in technology including considerable emphasis upon "information skills." Beginning in 1995, students will have to pass a performance-based competency test.

The state survey suggests that the amount of educational technology hardware in a state is not correlated with the state's tendency to establish requirements in either student technology competency or in teacher technology training. **Therefore, OTA finds that the relative amount of computer technology available in a state should be used with great caution as an indicator of that state's commitment to technology in instruction** (see table 3-2).

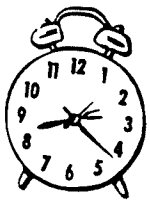
CONCLUSION: ISSUES WITH POLICY AND RESEARCH IMPLICATIONS

The data examined in this chapter suggest several themes, issues, and questions that have implications for future policy decisions and research

[72] Utah State Board of Education, "Elementary and Secondary Core Curriculum Standards," Instructional Technology, Utah State Board of Education, Salt Lake City, UT, n.d.

TABLE 1-2: Teaching and Technology: Current Barriers

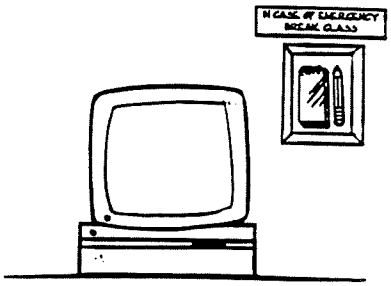
Teacher time



Teachers need time to:

- Experiment with new technologies.
- Share experiences with other teachers.
- Plan and debug lessons using new methods that incorporate technologies.
- Attend workshops or training sessions.

Access and costs



In addition to limited hardware and software, other factors affect access:

- Costs are high for purchasing, connecting, and training to use technologies.
- Technologies may not be located in or near the classroom.
- Hardware in schools today is old (50 percent of computers in schools are 8-bit machines) and cannot handle many newer applications.
- New or additional wiring or phone lines are necessary for telecommunications networks.

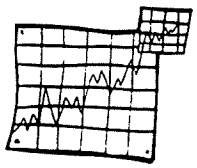
Vision or rationale for technology use

- Schools must have plans, and teachers a clear understanding of curricular uses of technology.
- It is difficult to keep up with the rapid rate of technology development and changing messages of best use.
- Teachers lack models showing the value of technology for their own professional use.

Training and support

- Overall, districts spend less than 15 percent of their technology budgets on training, but they spend 55 percent of the budget on hardware and 30 percent on software.
- Technology training today focuses primarily on the mechanics of operating equipment, not on integrating technology into the curriculum or selecting appropriate software.
- Only 6 percent of elementary and 3 percent of secondary schools have a full-time, school-level computer coordinator for technical support.

Current assessment practices



- Existing standardized measurements of student achievement may not reflect what has been learned with technology.
- Teachers are held immediately accountable for changes that take time to show results.

SOURCE: Office of Technology Assessment, 1995.

TABLE 6-2: Key Current Programs for Technology-Related Teacher Development

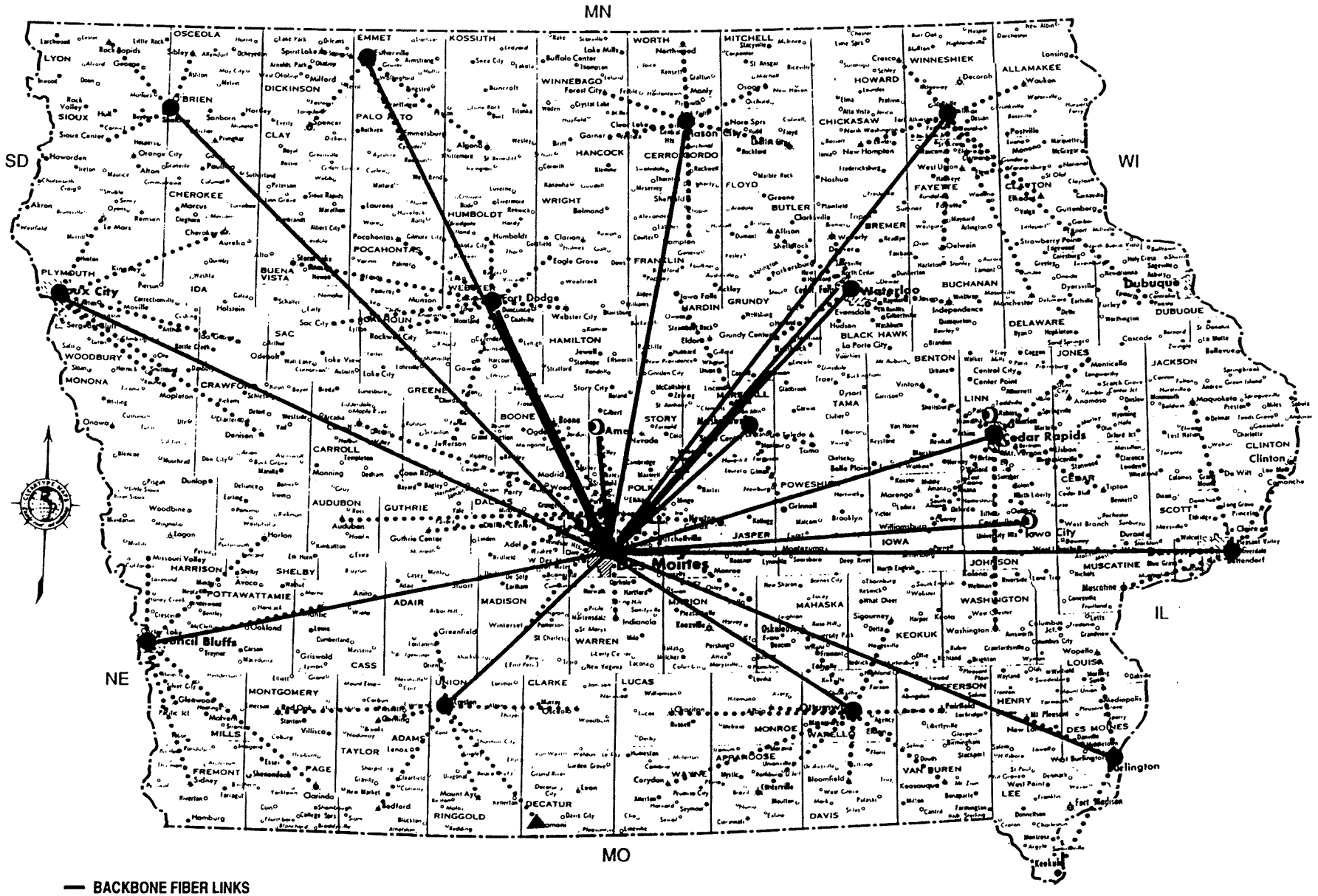
Program	Funding[a]	Purpose	Treatment of Technology-Related Training
Department of Education			
Title III, ESEA, Technology for Education	$40 million	Provide federal leadership and financial support to expand access to and use of educational technologies.	Secretary develops long-range technology plan; state and local grants must provide for ongoing professional development to integrate technologies in education.
Goals 2000: Educate America Act	$403 million	Encourage states to develop comprehensive school reform plans based on standards for student learning.	States must develop educational technology plans as part of overall improvement plans; act also established Office of Educational Technology in U.S. Department of Education.
Eisenhower State Grant	$321 million	Improve teacher knowledge and skills in math, science, and other core academic subjects.	Funds may be used for professional development in effective use of technology as instructional tool.
Eisenhower National Program	$39 million	Develop models of national significance in professional development in core subjects.	Funds may be used for training teachers in innovative uses of technology.
Star Schools	$30 million	Support acquisition and use of distance-learning technologies for education.	Funds may be used to develop and provide preservice and inservice distance learning for teachers and to train teachers to integrate telecourses for students into instruction.
IDEA Part D, Special Education Personnel Development	$91 million	Provide preparation and professional development to help teachers educate children with disabilities.	Technology-related training programs authorized; emphasis on assistive technologies.
IDEA Part G, Technology, Educational Media, and Materials	$11 million	Support research and development and technical assistance to advance technologies for persons with disabilities.	FY 1994 priority on organizational support and professional development.
Title I (Chapter 1) ESEA	$7,232million	Provide educational services to help low-achieving children in low-income areas meet high standards.	Schools must devote sufficient resources to professional development; may include instruction in use of technology.
Bilingual Education Training Grants	$25 million	Support teacher preparation and professional development for bilingual education teachers.	Some projects involve technology; no specific encouragement for technology-related training in law.
Library Personnel Development	$5 million	Train and retrain school librarians and other library personnel.	Training in new technologies encouraged.
Christa McAuliffe Fellowships	$2 million	Provide fellowships for outstanding teachers to continue education, develop innovative programs, train colleagues.	Several fellows develop technology-related projects.

Title VI/Chapter 2, ESEA	$347 million	Provide grants for range of state and locally determined school improvement activities.	Funds may be used for technology-related professional development at state/local option.
National Diffusion Network	$15 million	Disseminate and encourage adoption of exemplary education programs through staff training and other means.	Some current projects available for adoption have technology focus; professional development is primary strategy for helping schools adopt programs.
National Science Foundation			
Teacher Enhancement	$101 million	Fund teacher training programs in math, science, technology.	Many programs involve technology.
Teacher Preparation	$18 million	Support projects to improve undergraduate teacher preparation.	Projects must address preparation in new technologies.
Applications of Advanced Technologies	$10 million	Fund research and demonstration in revolutionary technologies for education.	Some projects have components for teacher support and development.
National Education Infrastructure for Networking	$15 million	Demonstrate innovative applications of networking for education.	Teacher support and development integral part of all projects.
OTHER FEDERAL AGENCIES			
Department of Commerce (NTIA) Public Telecommunications Facilities Program	$29 million	Supports innovation and capacity building of the nation's telecommunications infrastructure.	Supports distance-learning activities for teachers and students.
Telecommunications and Information Infrastructure Assistance Program	$64 million	Accelerate the use of telecommunications and information technology.	Supports telecommunications networks that can provide professional development for teachers as well as new teaching opportunities in K-12 classrooms.
National Endowment for Children's Educational Television	$2.5 million	Supports creation and production of television directed toward development of children's intellectual skills.	Much of the programming can be used in the classroom.
Department of Energy			
Summer Teacher Enhancement	$2 million (FY 1994)	Provide teacher training and research opportunities in federal laboratories.	Many projects involve training teachers in high technology applications in science.
Teacher Research Associates	$1.9 million	Provide teacher summer laboratory experiences and training in science.	Some projects involve training in technology.
Environmental Protection Agency			
Environmental Education and Training	$2 million (FY 1994)	Train teachers and improve materials in K-12 environmental education.	Use of technologies encouraged.

[a] Funding levels are for the entire program, not just the technology-related teacher training projects or components. All figures are FY 1995 unless noted otherwise.

SOURCE: Office of Technology Assessment, 1994. Based on Nancy Kober, "Teachers and Technology: The Federal Role," contractor report prepared for the Office of Technology Assessment, May 25, 1994.

ICN Iowa Communications Network



— BACKBONE FIBER LINKS
••• REGIONAL FIBER LINKS
● REGIONAL SWITCHING CENTERS
■ NETWORK SWITCHING CENTER
◑ SATELLITE UPLINKS
▲ INDEPENDENT COLLEGES & UNIVERSITIES

ATTACHMENT VI

1-23

MEMORANDUM

Kansas Legislative Research Department

300 S.W. 10th Avenue
Room 545-N -- Statehouse
Topeka, Kansas 66612-1504
Telephone (913) 296-3181 FAX (913) 296-3824

January 30, 1996

To: House Select Committee on Telecommunications

From: Lynne Holt, Principal Analyst

Re: Setting up a Matrix to Address Telecommunications Issues

In response to the Chairman's request, I am attempting to set up a matrix to organize the information that you are and will be receiving on various telecommunications issues. The intent is to organize information to make it easier for you to consider given the multiple positions taken on many of these issues.

One approach might be to:

1. List problems (also indicating from whose perspective).

2. Identify policy objectives (what one would like to achieve or avoid).

3. Describe strategies to realize policy objectives.

4. Explain how strategies are tied to the proposed vision statement.

5. Explain how strategies are tied to the proposed policy framework of the Telecommunications Strategic Planning Committee.

6. Explain how strategies correspond to federal telecommunication legislation.

Perhaps the best way to proceed is to address the first three issues at the outset. In the first part of this memorandum, I will illustrate how this might work by using access to the Internet as an example. When we address issues related to a regulatory framework, the idea would be to have the strategies written by those organizations and companies included in the Directory assembled for your Committee but also include the Kansas Corporation Commission and CURB. (To the extent that organizations and companies can consolidate their positions, such as AT&T and MCI or the LECs, they should be encouraged to do so.) Guidelines could be established to confine a description of each strategy to two or three concise paragraphs (the shorter, the better). In addition, each respondent would indicate either agreement or disagreement with the identification of problem and policy objective, as stated. If there is disagreement with the problem or policy objective, as stated, the respondent would be afforded the opportunity to provide alternative language. In the description of strategy, the respondent should indicate whether such strategy should be addressed

House Sel/Comm Telecomm
1-30-1996
Attachment 2

through Commission proceedings, resolution, or legislation. All this information would be compiled on a matrix for Committee members to consider. In the second part of this memorandum, I will attempt to identify problems and policy objectives for various aspects of the framework and will have suggested subcategories for the strategies.

PART I -- Access to the Internet

I. What is the problem?

A. From the perspective of many rural consumers in Kansas, toll rates are too high to access the Internet.

II. Do you agree with the statement of the problem? If you disagree, please provide alternative language.

III. What is the policy objective?

A. Access to an Internet provider at a reasonable price for residential, business, governmental, and educational use throughout the state. (Taken from proposed vision statement of Telecommunications Strategic Planning Committee.)

IV. Do you agree with stated policy objective? If you disagree, please provide alternative language.

V. What are the strategies? (To be provided by others in future. For example, I would have listed three headings -- Take No Action, Regulatory, and Nonregulatory -- under Strategies and allowed conferees to fill in the rest.)

TAKE NO ACTION

A. Take no action and allow Internet Service Providers to provide local service throughout the state as demand warrants. This requires no regulatory or legislative action.

REGULATORY

B. Require or authorize LECs to provide local access or toll discount plan for use in accessing the Internet. (This option was raised, but not endorsed, by KCC staff.) This could be done through regulatory or legislative action or a combination thereof. Strategies should specify:

1. if targeting is to occur, the category of users (*e.g.* residential users, persons with special needs, businesses, governments, or educational institutions) to which such plan is to be targeted;

2. the class of user, if any, to pay for the subsidy;

3. the methods of addressing reduced revenues to LECs in separations allocations resulting from dramatic changes in the traffic mix; or by statute if pricing is established at a sufficiently compensatory level;

4. structure of plan (local rate, flat rate, or discounted minutes of use);

5. intended scope of service (no limitation on use or limited to Internet access only); and

6. level of access service (what degree of blockage is the network designed for?).

C. Require an Internet calling plan which:

1. provides unlimited one-way calling in the range of $7- $12 per month statewide to a designated Internet number;

2. depending upon how much basic local rates may increase due to any rate rebalancing plan implemented by legislation or the Commission, the plan might include the provision of Internet at no additional charge within the basic local monthly rate; and

3. the plan would authorize customers to select the carrier of choice between LECs and IXCs. (Features of plan identified by CURB. Also noted was the inability of IXCs to currently offer Internet at competitive rates.) Such calling plan could be authorized by the KCC, or by statute if pricing is established at a sufficiently compensatory level.

D. Provide that universal access to the Internet and E-mail availability be funded by the proposed Telecommunications End User Support Fund (suggested in a presentation by CURB).

NONREGULATORY

E. Provide technical assistance and\or funding to rural communities to establish a point of presence in the community. The Legislature might appropriate some funding to the Kansas Department of Commerce and Housing to provide low interest loans to rural communities for developing a strategy to bring a point of presence to those communities. Such funding could be used by the community for developing citizen surveys and for making loans to a company to establish a point of presence (based on Hesston model). This could be done through legislation or simply through the appropriations process.

F. Encourage alliances between telecommunications carriers and Internet Service Providers to provide rural consumers with access to the Internet. (This option was raised, but not endorsed, by the KCC staff.) The Legislature might appropriate funding for customer support for software and hardware to encourage the activities of alliances between carriers and Internet Service Providers.

G. Enact legislation to ensure Internet access to specified populations, such as schools (see Nebraska, Missouri, and Kentucky models cited in testimony from USD 461 (Neodesha)).

H. Consider any findings of the Internet Task Force (K-12 and public libraries) headed by Fred Boesch in decisions on a Committee policy. Such findings are expected to be submitted at the end of March, 1996.

PART II -- Policy Framework

UNIVERSAL SERVICE

I. What is the problem?

A. With the advent of competition and without some form of intervening regulatory action, many Kansans, particularly those located in remote rural areas, are less likely to have access at affordable rates to the same level and array of services as their counterparts in metropolitan areas. (*Regulatory* is defined here as action directed by the KCC, legislation, or both.)

II. Do you agree with the statement of the problem? If you disagree, please provide alternative language.

III. What is the policy objective?

A. Kansas telecommunications policies should preserve and enhance universal service at an affordable price for every Kansan, including the poor and those who live in remote areas. (Taken from the vision statement of the Telecommunications Strategic Planning Committee.)

IV. Do you agree with stated policy objective? If you disagree, please provide alternative language.

V. What are the strategies?

A. The method of defining universal service and, if applicable, services to be included in the initial definition.

B. The need for establishing a state universal service fund and, if needed, the structure and characteristics of such fund, including, but not limited to, size, eligible recipients, eligible

contributors, form of payment and method of assessment, criteria governing provision of support, criteria for initiating and terminating funding to providers of last resort; criteria and filing procedures for supplemental funding (assuming supplemental funding is recommended); and the method of administration of the fund.

C. The need for establishing a lifeline service fund and the characteristics of such fund (see above).

D. The need for continued geographical averaging of intraLATA toll rates.

COMPETITION

I. What is the problem?

A. Without regulatory intervention to determine the timing and procedure for resale, interconnection, and unbundling, an orderly transition to a fully competitive infrastructure is unlikely to occur throughout the state. (*Regulatory* is defined here as action directed by the KCC, legislation, or both.)

II. Do you agree with the statement of the problem? If you disagree, please provide alternative language.

III. What is the policy objective?

A. Kansas telecommunications policies should ensure an orderly transition to a fully-competitive telecommunications infrastructure.

IV. Do you agree with stated policy objective? If you disagree, please provide alternative language.

V. What are the strategies?

A. The conditions under which, and the timing for, LECs to be required to lift restrictions on resale.

B. The pricing of resold services and the type of services required to be resold.

C. The process and terms for interconnection to occur and the functions and services to be shared.

D. The need for unbundling of network switched services, and if unbundling is to be required, the components that are to be unbundled and the basis upon which components are to be selected for unbundling.

REGULATORY PLAN

I. What is the problem?

A. If local rates (assumed to be below cost) and intrastate switched access rates (assumed to be above cost) are not brought closer to cost and a method of alternative regulation for LECs is not adopted, the transition to effective competition among all telecommunications providers in Kansas is likely to be impeded.

II. Do you agree with the statement of the problem? If you disagree, please provide alternative language.

III. What is the policy objective?

A. Kansas telecommunications policies should encourage competition in all markets, with a transition from monopoly as rapidly as possible consistent with consumer benefit and industry stability.

IV. Do you agree with stated policy objective? If you disagree, please provide alternative language.

V. What are the strategies?

This section assumes, at a minimum, that alternative regulation, in the form of price cap regulation would be the overall strategy and that some method of rate rebalancing would be necessary.

A. With respect to *the features of price cap regulation* (assuming there is consensus on this form of regulation as an option for LECs), the criteria to determine which services should be subject to price caps; the method of determining initial prices of services subject to price caps; the conditions under which price capped services should be deregulated and, if necessary, deregulated services should be price regulated; the means by which price floors should be determined and the services to which they should apply; and the conditions under which the Kansas Corporation Commission may reduce prices within a given basket.

B. With respect to *price cap adjustments* (once again assuming there is consensus on price cap regulation as an option for LECs), the need for such adjustments; the mechanism (formula or index) by which such adjustments should be made and the reason for the selection of such mechanism; any limitations on monthly per line adjustments; and the type of review process for price cap adjustments.

C. With respect to *rate rebalancing*, the need for rate rebalancing, the rates to be rebalanced, and the period of time over which rate rebalancing should occur.

TELECOMMUNICATIONS INFRASTRUCTURE

I. What is the problem?

A. From the perspective of LECs, incentives, such as relaxed regulation, are often needed to justify investments in certain advanced telecommunications infrastructure. Absent such incentives, advanced services, such as ISDN and two-way interactive video, might be deployed less rapidly and extensively.

II. Do you agree with the statement of the problem? If you disagree, please provide alternative language.

III. What is the policy objective?

A. Telecommunications policies should promote investment in Kansas, including the upgrading of the telecommunications infrastructure throughout the entire state in a timely manner.

IV. Do you agree with stated policy objective? If you disagree, please provide alternative language.

V. What are the strategies?

A. The need for a required infrastructure plan as a precondition for relaxed regulation.

B. If such a plan is required, the facilities and services to be included in such a plan, in addition to other issues, such as quality of service.

C. Services for which discounted prices should apply.