

Approved: February 10, 1992
Date

MINUTES OF THE HOUSE COMMITTEE ON EDUCATION.

The meeting was called to order by Chairperson Rick Bowden at 3:30 p.m. on February 6, 1992 in room Room 519-S of the Capitol.

All members were present except:

Committee staff present:

Dale Dennis, State Department of Education
Avis Schwartzman, Revisor of Statutes Office
Ben Barrett, Legislative Research
Shirley Wilds, Secretary to the Committee

Conferees appearing before the committee:

Senator David Kerr
Mark Tallman, KASB
Connie Hubbell, Department of Education
Gerry Henderson, USA
Lynn Holt, Legislative Research Department
Lee Droegemueller, Commissioner, KS State Board of Education

The meeting was called to order by Chairman Rick Bowden.

Hearing on SCR 1618:

Senator David Kerr. As sponsor of SCR 1618, Senator Kerr referred the committee to Page 2, lines 11-16 stating that represented key language in this resolution, along with the language on Page 3, lines 8 and 9, speaking of the strategy for developing compacts between school districts and parents. Urging the committee to consider this resolution favorably, he emphasized the interest of the bi-partisan sponsorship. (See Attachment #1.)

Mark Tallman. Mr. Tallman said that KASB is confident that there will be strong interest in the type of program proposed in SCR 1618 and urged its adoption, with appropriate amendments to change the dates. (See Attachment #2.)

Connie Hubbell. Ms. Hubbell reported that the State Board of Education supports the concept of SCR 1618, but believes the resolution is unnecessary. (See Attachment #3.)

Gerry Henderson. Mr. Henderson is in agreement with Ms. Hubbell and said USA supports the adoption of this resolution.

(See Attachment #4.)

Hearing on SCR 1622:

Lynn Holt. Ms. Holt presented an overview of the joint committee report on economic development to the 1992 Legislature. (See Attachment 5.)

Lee Droegemueller. Reporting that the State Board supports SCR 1622, Mr. Droegemueller said that more than 55 communities are presently sharing community resources through this technology, with many courses being offered at a considerable investment. He supplied a publication providing current areas in the state where two-way interactive video networks are implemented. (See Attachment #6.)

In addition, Mr. Droegemueller gave committee members the booklet A plan for Telecommunications in Kansas, summarizing the entire program. (See Attachment #7.)

Action on SCR 1620:

Representative Empson moved to change the date on SCR 1620 to 1991 and was seconded by Representative

CONTINUATION SHEET

MINUTES OF THE HOUSE COMMITTEE ON EDUCATION, Room 519-S Statehouse, at 3:30 p.m. on February 6, 1992.

Benlon. Motion carried.

Representative Empson moved to favorably pass SCR 1620 and Representative Benlon seconded. Motion carried.

Action on HB 2666:

On HB 2666, Representative Reardon moved to strike on Page 2, and on line 18, and strike Section d, lines 19-24. Seconded by Representative Hackler. Motion carried.

Representative Jones made a motion that on Page 2 of HB 2666, Line 16, add at end of line "institution the negotiated." Representative Reardon seconded the motion. Motion carried.

Representative Lane made a motion to pass HB 2666 out of committee. Seconded by Representative Crumbaker. Motion carried.

Representative Amos moved that minutes for February 4 be approved, changing joint committee name and Representative Jones seconded the motion. Motion carried.

Chairman Bowden announced to the committee that the Technology Resolution is in his office for those interested.

Chairman Bowden said there will be a briefing tomorrow in the Old Supreme Court Room to explain the components of the school finance bill run by Ben Barrett.

The next scheduled meeting is February 7, after adjournment of the House in the Old Supreme Court Room, Room 313-S

Upon completion of its business, the Chairman adjourned the meeting at 4:45.



GUEST LIST

COMMITTEE: Education

Date: 2/6/92

Name (Please Print)	COMPANY ORGANIZATION	ADDRESS
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Craig Grant	K-NEA	Topeka
Barbara Cole	K-NEA	Topeka
Bill King	DISC	Topeka
Paula May	ATT	Topeka
Steve Carroll	Intervu	Emporia
GAYLE GORDON	COMMUNICATIONS CONSULTING	Topeka
Ladislav Hranec	Gov. Office	Topeka
John Bishop	K. So. Education	Topeka
General Kuderna	1) STA of KS	Topeka
Paula Nielson	257	Wichita
Jill DeRoche	BV	Topeka

#1

**TESTIMONY OF SENATOR DAVE KERR
IN SUPPORT OF SCR 1618**

Presented to the House Education Committee

February 6, 1992

Chairman Bowden, and esteemed members of the House Education Committee, I appear before you today in support of SCR 1618 because I believe it offers us the opportunity to make a substantial leap forward in a direction which Kansas education, and to some extent, education nationwide, is beginning to move. As it is presently configured, our education system is fraught with artificial and unnecessary barriers and impediments. Credits, units, grade levels, periods, summer vacation, elementary school, middle school and high school serve as artificial impediments and constrictions in what should be a free flowing, seamless pipeline of educational progress. Most of the barriers that presently exist are unnecessary and persist due to tradition rather than functionality.

Kansas schools have begun the migration away from discreet teaching units and blocks of time toward measuring student outcomes. The Quality Performance Accreditation Program will, for the first time, evaluate the effectiveness of Kansas schools based upon the results achieved rather than the perceived quality of the effort expended to achieve those results. In Kansas City, Kansas, the New Stanley School has combined the first three years of education into a gradeless, outcome-focused system. Students don't fail in this system, they are either "in progress" or have "mastered" a concept or body of knowledge. Various individual school districts around the state, most notably

*Education
Attachment #1
February 6, 1992*

Fort Scott, Junction City and Dodge City, are well along toward an outcome based education system. It is our hope, Mr. Chairman, that by requiring the State Board to look at and beyond these valuable efforts, we would be placing ourselves in a position of national prominence and leadership in advancing education development.

With one exception, the list of items to be done by the State Board of Education Section are for the purpose of suggestion or reminder. The exception is the requirement that their plan include a strategy for developing compacts between a school district and the childrens' parents regarding parental involvement and responsibility for their child's educational progress. The literature is so consistent on this point we felt justified in making it a requirement. Perhaps the most compelling evidence that parental involvement results in higher educational achievement comes from studies of Asian children who have been inserted into the American education system. Despite all of the known shortcomings of American education, these children excel. Asian mothers take a lead role in what becomes a family project, their childrens' education. Achieving parental involvement appears to be essential to rapid educational outcome improvement.

Finally, Mr. Chairman, I would call to your attention the broad bi-partisan sponsorship of this resolution. Represented there are Senators with widely differing opinions on education. Yet we readily agreed that an effort, like the one described here, would be of substantial benefit to Kansas education.

Thank you for your time and attention, and should you have questions, I would be pleased to try to answer them.

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Attach # 1-2



Testimony on S.C.R. 1618
before the
House Committee on Education

by

Mark Tallman
Coordinator of Governmental Relations
Kansas Association of School Boards

February 5, 1992

Mr. Chairman, members of the committee, thank you for the opportunity to express our strong support for S.C.R. 1618.

The KASB Board of Directors has endorsed the Quality Performance Accreditation plan approved by the State Board of Education, and our delegate assembly has adopted support for outcomes based education. We agree that the pilot program proposed by this resolution is consistent with that direction. We believe the key component for school improvement is shifting from rigid regulations and mandates to accountability based on student mastery of concepts and skills.

Many schools are already well on their way to outcomes-based accountability. We are confident that there will be strong interest in the type of program proposed in S.C.R. 1618, and we urge its adoption with appropriate amendments to change the dates.

Thank you for your consideration.

*Education
Attachment #2
February 5, 1992*

#3

Kansas State Board of Education

120 S.E. 10th Avenue, Topeka, Kansas 66612-1182

February 6, 1992

TO: House Education Committee

FROM: State Board of Education

SUBJECT: 1992 Senate Concurrent Resolution 1618

My name is Connie Hubbell, Legislative Coordinator of the State Board of Education. I appreciate the opportunity to appear before this Committee on behalf of the State Board.

Senate Concurrent Resolution 1618 requests the State Board of Education to develop a plan for a pilot program whereby incentives would be offered to one or more school districts which desire to redirect their K-12 programs so that the sole driving force for progress through the system becomes the student's mastery of concepts and demonstration of abilities, instead of the amount of time spent on an individual subject.

The State Board of Education has developed its Quality Performance Accreditation (QPA) program which is currently being pilot tested in 50 unified school districts. The purpose of the QPA process is to involve the community, including parents, in the development of an outcomes accrediting system.

The State Board is also in the process of developing standards which will be reviewed at its February 11-12, 1992, meeting. These standards will be a supplement to the QPA process.

The QPA process does include monitoring progress of individual students and a breakdown of gender and ethnic background.

Under this type of accountability system, the student would not progress until they have demonstrated mastery in the concepts required for that particular grade level and subject matter. Remediation would be required for those students who do not meet the requirements.

The State Board of Education supports the concept of Senate Concurrent Resolution 1618 but believes the resolution is unnecessary.

Dale M. Dennis
 Deputy/Assistant Commissioner
 Division of Fiscal Services and Quality Control
 (913) 296-3871

*Education
 Attachment #3
 February 6, 1992*



#4

SCR 1618

February 6, 1992

Testimony presented before the House Committee on Education
by Gerald W. Henderson, Executive Director
United School Administrators of Kansas

Mister Chairman and Members of the Committee:

United School Administrators is in support of the provisions of **SCR 1618**. While **all** Kansas schools will in the near future be accredited on what students know and are able to do, perhaps the provisions of this resolution will serve to enhance the process.

We appreciate the opportunity to support **SCR 1618**.

GWHLEG\SCR1618

*Education
Attachment #4
February 6, 1992*

#5

**REPORT OF THE
JOINT COMMITTEE ON ECONOMIC DEVELOPMENT
TO THE
1992 LEGISLATURE**

**Kansas Legislative Research Department
Room 545-N -- Statehouse
Topeka, Kansas 66612-1586**

January, 1992

*Education
Attachment #5
February 6, 1992*

TOPIC III*

VIDEO TECHNOLOGIES AND APPLICATIONS

Policy Questions

1. Should the state have any role in promoting the use of video technologies in public education institutions and state government agencies?
2. Should the state expand its telecommunications network?
3. If so should that network be expanded to link the universities, community colleges, vocational technical schools, public school clusters, public libraries, and other sites?
4. If the various video sites and systems should be connected, who decides how this should be accomplished?
5. Are there any regulatory or other impediments to the formation of a state network that includes nonstate entities?
6. In what forum should these issues be discussed?

Background

The Legislative Coordinating Council referred the subject matter of 1991 S.C.R. 1622 to the Joint Committee on Economic Development for its review. Had this resolution been adopted, a special study committee would have been directed to study and review the issue of interactive video technologies and other telecommunications systems. The Joint Committee on Economic Development in essence assumed that responsibility. The directives included in S.C.R. 1622 were to study and review the following:

the work and plans of the Educational Interactive Video Task Force; the extent to which Kansas public educational institutions and agencies and other governmental units have implemented, are in the process of implementing, or are proposing to implement two-way interactive video and other telecommunications technology; use of cooperative ventures and collaborative efforts to secure this technology; methods being used and available to be used to finance acquisition of this technology; current status of coordination among public educational institutions and agencies and other governmental units concerning the exploration and acquisition of interactive video and telecommunications technology; and such other matters as the Legislative Coordinating Council may specify.

* H.B. 2682 is included in the Appendix at the end of this report.

Committee Activity

The Committee heard presentations from Commissioner Lee Droege Mueller, Department of Education; Dr. Bill Brundage, Kansas Technology Enterprise Corporation (KTEC); representatives of six school clusters; representatives from the Board of Regents and five Regents' institutions; and representatives of the Kansas Department of Transportation, the Kansas Department of Revenue, the 3rd Judicial District Court (Shawnee County), the Division of Information Systems and Communications (DISC), and the Kansas Corporation Commission (KCC).

Schools (K-12)

Dr. Droege Mueller reviewed the executive summary of the Educational Interactive Video Task Force plan, *A Plan for Telecommunications in Kansas*. This plan outlined recommendations for fiber optic providers and federal, state, and local governments to foster implementation of a statewide telecommunications system. Such responsibilities included, among others: the establishment of guidelines for interactive video access and technologies; the development of a plan engaging the collaborative input of certain agencies for the use of advanced network services and features; and the review of regulations affecting interactive video service, such as service definition, rate structures, and costing methodologies.

Representatives of the following six school clusters presented information to the Committee: Southwest Plains Regional Service Center; Northwest Kansas Educational Service Center; the Learning Consortium; North Central Kansas Educational Interactive Television Consortium; A PLUS Network; and Southeast Kansas Education Service Center. (A map of the clusters is found in Attachment I.) Several schools are linked through fiber optics in each cluster and through this transmission medium are able to provide to their students full motion two-way interactive audio and video. Each site can originate and receive programming. (Attachment II is a list of the schools included in each cluster, including two that were not represented at the meeting. Although six clusters were represented at the Committee meeting, there are currently eight in operation. This attachment also includes other pertinent features of the school clusters' two-way interactive video systems.)

Applications vary among the schools but the primary focus is distance learning. Examples of offerings by these clusters include: college level courses; advanced courses in the sciences; foreign language courses; speech therapy; classes for at-risk students; staff development courses; individualized enrichment seminars for gifted students; administrative meetings; reading instruction seminars; extracurricular activities, such as student broadcasting and fine arts performances; training for bus drivers and food services personnel; and others. Not only is two-way interactive video technology used to provide courses for high school students, this technology also is used for: continuing education (five clusters have teaching arrangements with community colleges or other postsecondary institutions); training for volunteer firemen and law enforcement personnel; meetings of professional and civic organizations; city hall meetings; and business teleconferencing.

Funding of the systems in each cluster varies. For the most part, state grants assisted school clusters in the initial phases. The Southwest Plains Regional Service Center was able to purchase studio equipment through a special education grant. The Southeast Education Service and A PLUS networks relied, in part, on a state enhancement grant for their initial equipment costs. The Northwest Kansas Educational Service Center likewise received funding from that grant for start-up expenditures. The Learning Consortium received approximately 60 percent of total costs of system installation and equipment from a state educational excellence grant. Leasing and maintenance of fiber are generally the fiscal responsibilities of the participating schools in the clusters.

The clusters attribute the following advantages to the use of two-way interactive video: it provides expanded learning opportunities to students and provides some courses and services that would otherwise not be available; makes delivery of special education services and use of personnel more efficient; improves the quality

of instruction; reduces travel time and associated costs; makes available services and education to the community; and promotes partnerships with postsecondary institutions and with community organizations.

However, despite the benefits, the use of the technology has posed several problems (many of which have been surmountable), such as scheduling conflicts encountered by schools in a cluster, lack of face-to-face interaction, funding and expanding the networks given fiscal constraints, and, for some schools, a lack of facilitators at each site. Perhaps the most problematic area is a regulatory one, involving the high rates associated with transmission of interactive video services to certain clusters. The representative of the Southeast Kansas Network, Mr. Dave DeMoss, informed the Committee that the cost for 58 miles of new fiber optic construction connecting the five participating sites in that Network is \$7.75 per mile per month (24 hours a day, 365 days a year). Mr. DeMoss reported that if Paola were added to the Network through compressed video over copper telephone wire, it would cost, using Southwestern Bell's estimates, \$1,899 for installation and a monthly rate of \$2,316. Moreover, according to Mr. DeMoss, DISC would charge the Network an additional \$35 per hour for use of the state network. Competitive pricing for fiber optic cable leasing was also a concern expressed by the representative of the Northwest Kansas Educational Service Center.

A representative from KCC informed the Committee that although "economic development" rates or lower rates have been allowed for school clusters, the rates allocated to clusters vary depending on several factors, such as the mix of telephone and nontelephone (cable TV) companies involved in service transmission, whether fiber optic cable is already in the ground, and the effect on other ratepayers of rate subsidies to school clusters. If a utility company has to install cable (and was not planning to do so), rates for video telecommunications services will be higher than if the cable is already in the ground. Total miles required for video transmission and the number of sites involved in the network also affect costs to clusters. Although at least two school clusters (the Learning consortium and the Northwest Kansas Educational Service Center consortium) own all or part of their own fiber optic cable, the other six clusters lease and receive maintenance from their telephone companies. (See Attachment I for further information.) Moreover, expansion plans for these clusters are predicated upon affordable rates for either installing or leasing fiber optic cable or obtaining funding for compressed video. The KCC representative also informed the Committee that the KCC will be considering intraLATA competition. She noted that if such competition is authorized, the options available to clusters for providers of facilities to link those clusters may greatly increase; with more bidders for the services, prices should decrease.

Compressed Video Projects

Compression of video signals is a technique which reduces the amount of transmission (bandwidth) capacity required. By using coder-decoder devices (codecs) to compress the signal, two-way audio and video can be transmitted over "bundles" of ordinary copper telephone lines, or other transmission media (fiber optics or microwave radio). Because compressed video uses less transmission capacity, it is usually less costly than full motion video; however, the quality of the picture associated with compressed video is not as good as it is with full motion video which requires greater capacity. Nonetheless, for many purposes, compressed video offers adequate pictures and the picture quality is continuously being upgraded.

There are plans for compressed video to be used in the Southeast Kansas Education Services Network, on a pilot project basis, to enable school districts in Paola to share staff development services with school districts in Greenbush. This project should be implemented by January 2, 1992. However, high transmission costs have not made it feasible to add Paola to the Southeast Kansas Network nor to link it to the Kansas University Medical Center (KUMC). However, a pilot project between KUMC, the Hays Medical Center, and the Western Area Health Education Center has, according to a representative from KUMC, demonstrated promise for enhancing quality health care in rural Kansas. Medical specialists at KUMC have been able to consult with physicians and patients in Hays and share their diagnostic expertise. A steering committee has been established to develop guidelines, determine which patient care services should be made available through the use of compressed video technology, and resolve medical, ethical, and legal issues. In addition, the compressed video technology, audio, and peripheral medical diagnostic equipment will be evaluated. The Committee was informed that initial funding for the pilot project totaled \$390,000 and came from four sources: KTEC (\$80,000); Meade

Johnson Pharmaceutical Company (\$50,000); KUMC (\$200,000); and the School of Medicine-Wichita (\$60,000). Included in this funding was \$40,000 from KTEC to the Western Area Health Education Center for its participation in the pilot project with KUMC. Other recipients of KTEC funding for pilot projects were KTEC's Advanced Manufacturing Institute to deliver services via compressed video to companies and the KSU-Salina, College of Technology which will serve as a compressed video site for business and medical conferencing.

Although KUMC, the University of Kansas (Lawrence), and Kansas State University have compressed video equipment (codecs), Pittsburg State University, Wichita State University, Emporia State University, and Fort Hays State University do not and, therefore, cannot use the state network to communicate via compressed video.

Universities

Presentation to the Committee from conferees of Wichita State University (WSU), the University of Kansas (KU) (Lawrence), Fort Hays State University (FHSU), and Kansas State University (KSU) revealed a diversity of video technologies used to provide course materials.

WSU's Media Resources Center provides video services and other media services for faculty, staff, and students. Technologies are determined by the intended applications of the user, and the Media Center, with 24 full-time employees and 40 part-time student employees, provides needed services. Video courses currently use two formats:

1. telecourses (now 14) purchased from national producers; and
2. live interactive courses broadcast from WSU's electronic classroom via microwave to businesses, hospitals, and school sites in and around Wichita.

The conferee from WSU informed the Committee of the University's ability to broadcast telecourses 30 miles beyond Wichita, due to a partnership with Multimedia, using "wireless technology." WSU uses one Instructional Television Fixed Service (ITFS) channel to broadcast telecourses and another ITFS channel to broadcast courses live. This technology allows the University to reach multiple points within the 30-mile radius. Audio from the receiver sites to the instructor at WSU is provided by telephone. Funding from the U.S. Department of Commerce will enable WSU to extend its ITFS broadcast range with a repeater station to sites at Hutchinson Community College, the Hutchinson State Reformatory, Hesston College, and McPherson College.

The conferee from KU focused on three different technologies: satellite communications; low-power television (LPTV); and compressed video. The University does not own a satellite uplink nor does it have an active link to one and, therefore, must rent a mobile uplink when the need arises. KU has purchased a microwave system to transmit instructional programming to Overland Park, Kansas, and plans construction of LPTV facilities in Lawrence, at KUMC, two repeater stations at Bonner Springs, and at the Regents' Center in Overland Park. The University has just acquired equipment which will allow it to use compressed video technology.

The conferee from FHSU identified four objectives for video technologies. Distance learning is already being delivered through those technologies but other long-term objectives include continuing education, rural health care, and economic development. The installation by Kansas Independent Networks Incorporated (KINI) of cellular telephone service using fiber optics to connect all the cell sites on the network has afforded FHSU with access to fiber less than 1,500 feet from the University's electronic classroom/studio, which was just constructed, and from which six courses will originate beginning in January, 1992. The transmission of the signal from the electronic classroom to the KINI network is the responsibility of the University. Funding has recently become available for the University to link through fiber optics with a grade school in Hays. This point-to-point

mini network will be used for two-way interactive presentations, teacher in-service, observation of student teachers, and an information data link. This project is scheduled for completion in 1992.

The presentation from the representative of KSU outlined several video technologies available at the KSU campus. Central to video communications delivery is the Kansas Regents' Educational Communications Center (RECC), funded from \$5.9 million of federal moneys. A point made by the WSU conferee was reinforced by the Director of RECC -- the technological and programmatic solutions are determined by the intended application. Video transmission technologies currently available from RECC include satellite (RECC has both fixed and transportable production and uplink capability) and compressed video. RECC is a 32,000-square-foot building, which houses six production studios (a technical operating center; editing quarters; educational development laboratory; conventional and television graphics facilities; mobile production equipment; and other components).

One concern raised in these presentations was the need for a stable funding source to ensure equipment replacements. A suggestion offered by the KSU conferee was the establishment of a trust fund, to which revenues generated from media operations in excess of expenditures would be credited. The same conferee raised policy concerns about guaranteeing equalized access of media resources to university departments which are not as well endowed as professional schools; the paucity of incentives available to faculty, who are interested in creating mediated courses, and ownership of the content of mediated programs (there are no uniform standards across universities).

State Agencies

Unlike school clusters and a few of the Regents' institutions, state agencies have yet to use two-way interactive video technologies. Conferees from the Kansas Department of Transportation and the Kansas Department of Revenue, and written testimony from the Department of Social and Rehabilitation Services expressed interest in potential applications for various agency operations, primarily training of employees in outlying areas. For example, the Kansas Department of Revenue conferee considered use of two-way interactive video to be a viable option for the instruction of county appraisers. A court administrator from the 3rd Judicial District Court (Shawnee County) described the use of two-way interactive video for arraignments of prisoners and, under certain circumstances, for youth detention cases.

The Assistant Deputy Director of DISC, Mr. Andy Scharf, informed the Committee of DISC's role in providing video telecommunications services. According to Mr. Scharf, the telecommunications network maintained by DISC is designed to provide voice, data, and video services for all state agencies. However, the Committee also learned that the state network needs to be extended to more locations, and codec equipment needs to be purchased and installed at each site in order for video-conferencing to occur over the state network. Moreover, it is DISC's responsibility to adopt and require adherence to all network standards by all components of the network.

Coordination

The state's digital network was not completely in place when the older school clusters and several of the Regents' institutions made policy decisions to purchase or lease video systems. Many users simply took advantage of the most economical options available to them at the time given their intended applications. Examples of influential factors include: availability of federal funding for RECC and satellite uplinks at KSU; the availability of microwave as the most economical option for KU in 1988; and the decision of Southwestern Bell Telephone Company to install fiber at the time the A PLUS consortium was under consideration.

Mr. Scharf of DISC pointed out, there is a need to require standardization at the point at which users connect to the statewide network. All school clusters and university users have some plans for expansion although some plans are closer to being realized than are others. The Southeast Kansas Education Center consortium plans to add seven high schools and connect these schools, in part, through compressed video. At least two other school clusters (A PLUS and Southwest Plains Regional Service Center) view installation of codecs as a major component in their expansion plans. If A PLUS' plans are realized, that consortium would use compressed video over the KANS-A-N network to link to Regents' institutions, state medical centers, the Department of Education, and university libraries. KU's plan to build LPTV facilities at five sites and, if funding permits, at other sites in the Kansas City metropolitan area and WSU's plans to extend ITFS broadcasting to Cowley County Community College in Arkansas City, as well as to school clusters in those areas, are further examples and raise policy questions about the interoperability of video services components.

Committee Conclusions and Recommendations

The Committee observes that there are many applications for two-way interactive video systems but also recognizes that video technologies have enormous and still untapped potential, particularly for rural areas of the state. The Committee believes that, in particular, applications for distance learning and health care might result in expanded service delivery with the possible associated benefits of long-term savings.

The Committee notes that several conferees, among them Commissioner Droegemueller, representatives of several school clusters, and the Director of RECC at KSU, supported comprehensive state-wide telecommunications planning. The Committee agrees with that position and, to that end, recommended that a letter be sent to Dr. Stan Koplik, Executive Director, Kansas Board of Regents. It was recommended that this letter request that the Governor's Telecommunications Task Force, which was assigned the mission of articulating a statewide vision for telecommunications, also assume the responsibility of reviewing issues related to video technologies. Because these technologies are changing so rapidly and their costs are decreasing, the Committee determined that the Governor's Task Force, which has already been established, would be the most appropriate forum to address issues related to video technologies in a timely manner.

The Committee recommended that the letter request an expanded mission for the Task Force, to include an examination of barriers to further expansion of video-telecommunications in Kansas. Such barriers might be regulatory, fiscal, or institutional. The Task Force also should review potential applications for state agencies (training for county appraisers and employees in regional offices), and for health care providers, small businesses, and local government units which interface with state government. Furthermore, the Committee noted that the Task Force might consider a funding mechanism for expansion of the state video communications network and for funding of video equipment.

Because the scope of a statewide interactive video network affects many service providers outside the realm of the Regents' institutions, the Committee recommended that the letter request the Task Force to actively involve representation from the Department of Education, DISC, a few of the larger state agencies, KCC, and the telephone and cable industries.

The Committee notes that the letter to Dr. Koplik was sent by Representative Gjerstad, on behalf of the Committee, with a request that Dr. Koplik respond prior to the Committee's meeting in November. The Committee has learned that Dr. Koplik endorsed the request in his response to Representative Gjerstad, and sent Dr. Larry Gould, who chairs the Task Force, a letter relaying the Committee's wishes.

Because this issue is of such importance to the Committee, the Task Force is requested to share its findings and recommendations with the Joint Committee on Economic Development at its first meeting in 1992.

Finally, the Committee recommends introduction of legislation to authorize DISC to provide services from the KANS-A-N network to nonstate governmental units, such as the unified school districts, and to bill them for use of such services. The Committee was informed by the Deputy Director of DISC that availability of services from the state telecommunications network to nonstate governmental units is limited, in part by DISC's inability to charge them for those services.

Features of School Clusters

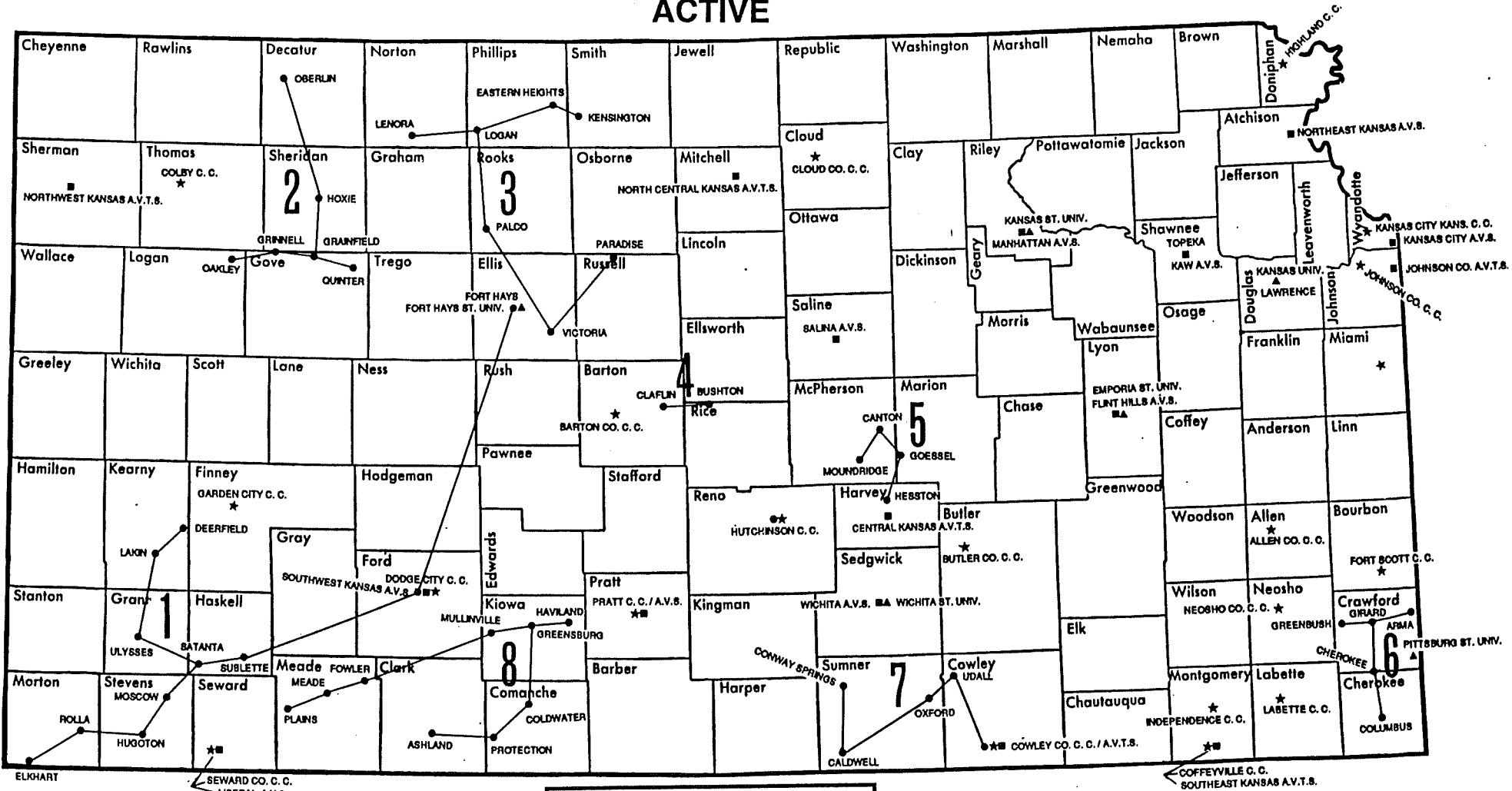
Attachment II

<u>Cluster Name</u>	<u>Sites</u>	<u>Towns</u>	<u>Cost</u>	<u>Miles</u>	<u>Fiber</u>	<u>Terminal</u>	<u>Classroom</u>	<u>Telephone</u>	<u>Post Secondary</u>
Date Activated						Equipment	Equipment	Companies	Participation ***
High-Southwest Plains Network (HSPN) Jan. 1990	11	Deerfield, Lakin, Ulysses, Satanta, Sublette, Copeland, Moscow, Rolla, Elkhart, Hugoton, SWKESC	\$15,000/yr/site	160	lease	lease	own	* Pioneer Telephone Elkhart Telephone Southwestern Bell Sunflower Phone Co. TCI Cable	Fort Hays State University Seward Co. Comm. College Garden City Comm. College
Northwest Kansas Educational Service Center Eastern Cluster Dec. 1990	7	Oberlin, Hoxie, Oakley, Grinnell, Grainfield, Quinter, NWKESC	\$10,050/yr/site	35	lease/own	own	own	Rural Telephone S & T Telephone	Colby Comm. College Fort Hays State University
North Central Kansas Educational Interactive Television Consortium Sept. 1991	7	Lenora, Logan, Eastern Heights, Kensington, Palco, Victoria, Paradise	\$12,200/yr/site	211	lease	lease	own	Rural Telephone	None at present.
Clafflin-Bushton Sept. 1991	2	Clafflin, Bushton	\$10,790/yr/site	7	lease	lease	lease	H & B Comm.	None at present.
The Learning Consortium Sept. 1991	4	Canton-Galva, Goessel, Hesston, Moundridge	\$62,000 total/site Will contract for maintenance.	52	own	own	own	Self-Owned	Hutchinson Comm. College Wichita State University Emporia State University
Southeast Kansas Education Service Center Aug. 1990	5	Girard, Arma, Cherokee, Columbus, SEKESC (Uniontown, St. Paul, Erie, Thayer, Riverton, Galena, Baxter Springs)	\$5,400/yr/site	50	lease	own	own	* Craw-Kan Telephone Columbus Telephone	University of Kansas Univ. of Ks. - Med Center Pittsburg State University Fort Scott Comm. College Labette Co. Comm. College

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Attach # 5-10

----- TWO-WAY INTERACTIVE VIDEO NETWORKS -----
ACTIVE



August 1991

LEGEND

- Active within the 1991 Calendar
- ★ Community College
- Area Vocational-Technical School
- ▲ Regents' Institution

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Attch # 5-9

Features of School Clusters

<u>Cluster Name</u>	<u>Sites</u>	<u>Towns</u>	<u>Cost</u>	<u>Miles</u>	<u>Fiber</u>	<u>Terminal</u>	<u>Classroom</u>	<u>Telephone</u>	<u>Post Secondary</u>
Southcentral Kansas Education Service Center Interactive Learning Project Dec. 1991	5	Caldwell, Conway Springs, Oxford, Udall, Arkansas City	\$28,000/yr/site	65	lease	lease	own	* Southwestern Bell Wheat State Tele. Kan-Oklahoma Tele. Haviland Telephone United Telephone	Cowley Co. Comm. College
A-PLUS Network Sept. 1990	9	Kismet-Plains, Meade, Coldwater, Mullinville, Haviland, Greensburg, Fowler, Protection, Ashland	\$27,200/yr/site	180	lease	lease	own	* Southwestern Bell Haviland Telephone United Telephone	Fort Hays State University Pratt Comm. College Dodge City Comm. College Seward Co. Comm. College Barklay College ** College of Tech.-Salina ** Associated Colleges of Central Kansas (ACCK)

* Major Contracting Firm

** Proposed

*** Currently not directly connected through optical fiber video technology, although a few institutions have plans to do so.

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Attachment # 5-11

Kansas State Board of Education

120 S.E. 10th Avenue, Topeka, Kansas 66612-1182

February 6, 1992

TO: House Education Committee

FROM: State Board of Education

SUBJECT: 1992 Senate Concurrent Resolution 1622

My name is Lee Droegemuller, Commissioner of Education. I appreciate the opportunity to appear before this Committee on behalf of the State Board of Education.

The State Board of Education has been working diligently with unified school districts and interlocals in developing an interactive video technology and telecommunication system for the purpose of delivering instruction in a more efficient and effective manner. Many of the programs currently being offered via two-way interactive video transmission were not previously available. These classes include advanced mathematics, advanced literature, foreign languages, etc.

School districts have had difficulty implementing a telecommunications system due to the following reasons.

- * Facilities--Proper telephone facilities, either fiber optic and/or copper, are not available in all communities to make the type of communications necessary.
- * Cost--In existing facilities, there is excess capacity to carry more traffic by the telephone companies (particularly the major companies). The companies are charging windfall prices (same charge for two-way interactive transmissions as voice traffic). This makes the cost factor prohibitive.
- * Leadership--The state should be an active, positive, proactive force in establishing interactive video rather than reacting to what is happening in the market place. The state should influence the market place.
- * Regulations--We need to seek regulatory avenues to create an environment for interactive video to be successful.

The State Board has created an education interactive task force which would help the schools in implementation of these programs for delivery of services.

We believe that telecommunications should go beyond its current level to include such things as health care, nutrition, agriculture practices, economic community development, parenting, and family living.

Dale M. Dennis
 Deputy/Assistant Commissioner
 Division of Fiscal Services and Quality Control
 (913) 296-3871

Educator
 Attachment #6
 February 6, 1992

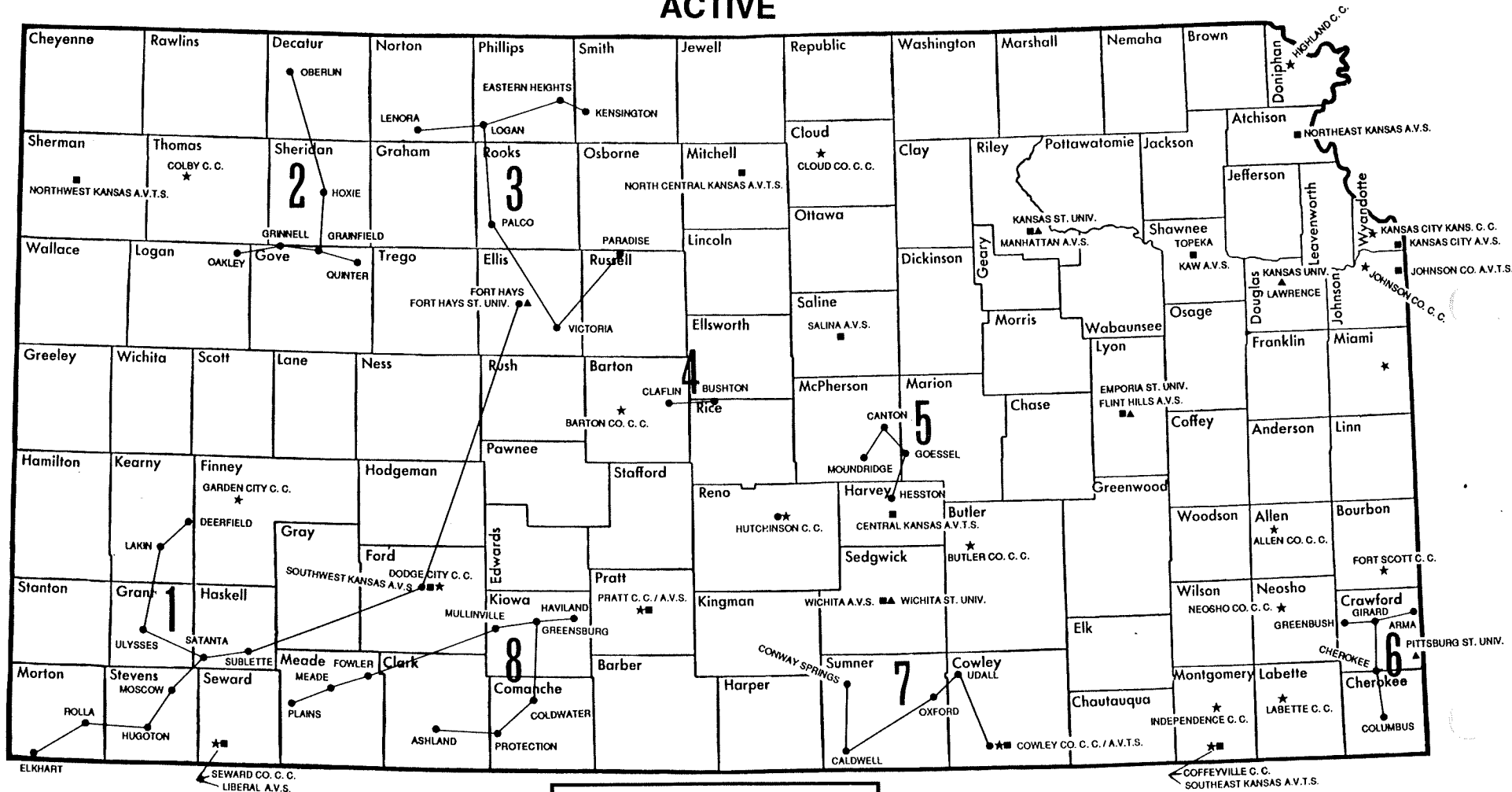
We would be pleased to cooperate and work with a legislative committee any way which would develop and sophisticate the telecommunication system in order to enhance education and economic development of our communities.

Attached is a publication which will provide supplemental information on our work in telecommunications with public schools.

The State Board of Education supports Senate Concurrent Resolution 1622.

Attach #6-2

----- TWO-WAY INTERACTIVE VIDEO NETWORKS -----
ACTIVE



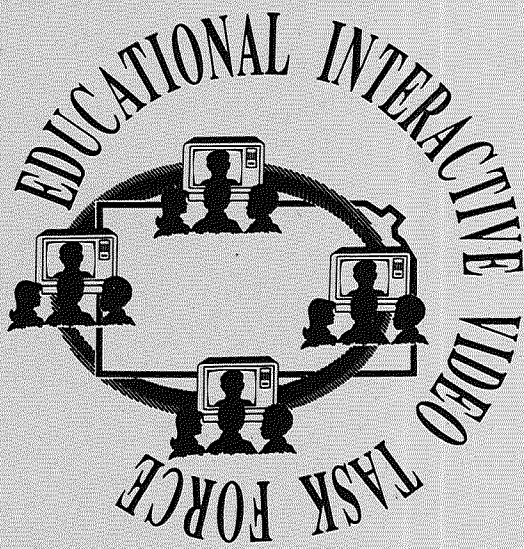
August 1991

LEGEND

- Active within the 1991 Calendar
- ★ Community College
- Area Vocational-Technical School
- ▲ Regents' Institution

Attach # 6-3

A Plan for Telecommunications in Kansas



EXECUTIVE SUMMARY

Prepared by

Dr. Lee Droegemueller, Commissioner of Education

April 1991

Revised October 1991

*Education
Attachment #7
February 6, 1992*

For more information contact:



Kansas State Board of Education

Kansas State Education Building
120 East 10th Street Topeka, Kansas 66612-1103

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*Education
Attachment #92*

EXECUTIVE SUMMARY

Goal: Sharing of human resources and access to information through a telecommunication infrastructure provide to Kansans the opportunities for a high quality of life in the twenty-first century.

For Kansas to have a favorable economic future, the state must capitalize on the two most valuable resources: information and people. To develop these resources, Kansas must assist its communities to cluster and share resources. The clustering of communities will encourage them to integrate learning and working, resulting in greater business opportunities, positive community climate, and a better quality of life.

The vehicle which will develop the information and human capital resource is a wideband telecommunication system. By including an information highway of communication in the state's infrastructure, all communities can participate in 1) training and retraining, 2) business and economic development, and 3) a learning community. Of the myriad of technologies to use for a communication system, the state could invest in fiber-optic cable, which has the most capacity and flexibility of all wideband telecommunications transport systems.

The recommended approach to developing a statewide telecommunication network is from the bottom-up rather than a state top-down to locals. There are already locals that exemplify the success of this approach. Starting as a self-reliant enterprise, with assistance from the state, eight fiber-optic, two-way video clusters are operating. These clusters include fifty high schools and communities. At least five other clusters are in the planning stages. Within two years each will be operating at capacity

and be examining the possibility of expansion. As financing and access to fiber become available, additional two-way video clusters will begin operation.

The clustering of Kansas communities is structured to serve the people, using technology-driven communication systems and lifelong learning centers. The communities working together, sharing resources, and having successful access to information and application of technology will determine the economic livelihood of Kansas.

A PLAN FOR TELECOMMUNICATIONS IN KANSAS

A Vision of the 21st Century in Kansas

Information and human capital are the important resources in the economy of the information age. Productivity is no longer a matter of making more of what we already make at less cost. The foundation of a healthy economy is people — the human capital represented by their knowledge, skills, organizations, and motivations. Employers have workers with good basic academic, problem-solving, and information-gathering skills. The twenty-first century workforce knows how to learn, think creatively and critically, and communicate effectively. The job requirements in an information society demand that employees be highly numerate, literate, and innovative. To meet the challenges of a changed information society, effective educational institutions prepare workers to take responsibility for their lifelong learning and training, to set and achieve goals, and to collaborate with others in overcoming barriers.

In our information society, communities are structured to encourage a favorable economic future for Kansas by fully capitalizing on the two most valuable resources — people and information. The initial development of Kansans' education is in the home and continues into the schools and community. Education is not an island unto itself but a part of a dynamic, changing society. To meet the challenges of the twenty-first century, there is an interdependence between educational in-

stitutions and the community at large which encompasses the working, living, and learning interests and pursuits of its citizens.

As the organization of work changes in our technological, information society, the people within the organization also change. A community's ability to prosper and grow depends upon the success of the workforce within the community and the immediate area. Schools are community resource development institutions. Businesses are a collaborator as the school becomes a learning center for citizens of all ages to acquire continuous knowledge and skills needed for the economic well-being of the community.

School is a learning community that serves as the hub of human resource development activities where persons of various age groups are involved. The school works with social agencies, businesses, and community groups to develop methods of strengthening learners' experiences and the larger community. Examples of some of the programs that are provided in a learning community center are offices for social security workers, counselors, family social workers, child care centers, latch-key programs, fitness programs for adults, meal services for senior citizens, job training for adults, adult education, city/school libraries, and health care.

Learning community centers are not simply a means of providing multipurpose use of a building. Rather, they are designed to ensure interaction and learning opportunities among groups. Some schools and communities moved in this direction initially as a means of cost effectiveness. Most found that the values of interaction and service have produced greater learnings, a sense of self-confidence, and a profound sense of community and

responsibility for individuals involved in the activity. The values which are inherent in the learning community are the values needed in a global, information society. They include the following:

- learning is a continuing need from birth to death
- learning involves the physical, emotional, and intellectual capabilities of an individual; holistic approaches are needed to support integration and growth
- learning is the result of positive human interactions — all of us are learners and all of us are teachers
- learning is essential to the community, and schools must be part of the mainstream of the community.

Many communities overcame a multitude of overlapping problems — such as scarce dollars, declining school enrollment, and no major source of employment — by sharing human resources with those in nearby communities. This sharing is called *clustering*. The communities pool their similar problems and share their resources to find common solutions, yet each community maintains its independence. The cluster of communities takes advantage of their positive characteristics: the connection of the schools to the communities which allows expanded learning and working environments, their small size that encourages personal interactions, and their self-sufficiency that helps them get things done without relying on the “state” or outside consultants who many times have the one solution that fits all problems everywhere in Kansas.

The clustering of Kansas communities is structured to serve the people, using technology-driven communication systems and

lifelong learning centers. The integration of learning and working within and among the communities in the cluster results in greater business opportunities, positive community climate, and a better quality of life. The communities working together, sharing resources, and having successful access to information and application of technology determine the economic livelihood of Kansas.

In summary, the combination of each Kansan having the skills and values necessary to contribute to society with our traditional strong work ethics makes Kansas a super state of super workers and learners.

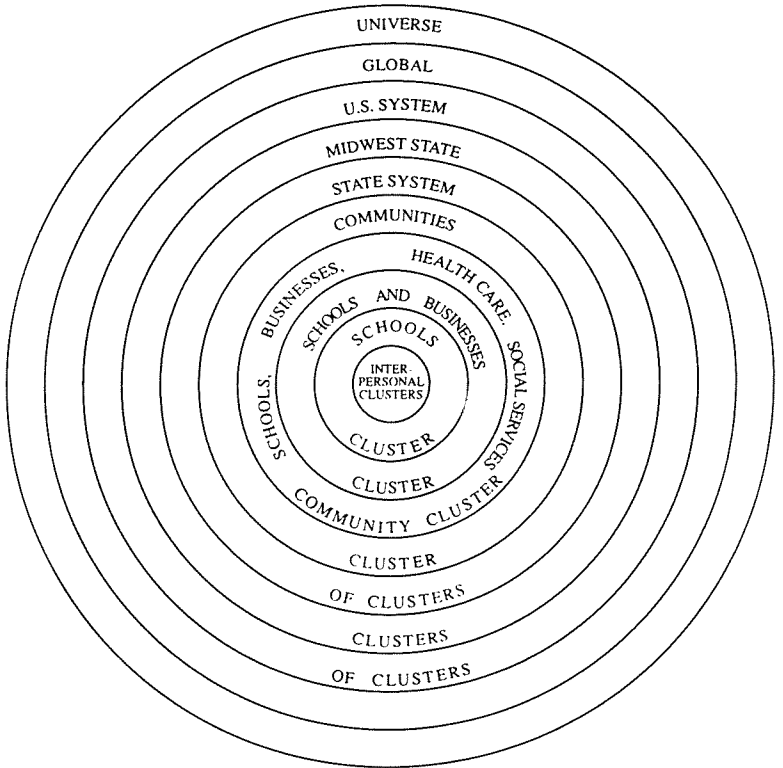
Goal

Sharing of Human Resources and Access to Information through a Telecommunication Infrastructure Provide to Kansans the Opportunities for a High Quality of Life in the Twenty-First Century.

Rationale

This vision must become a reality if Kansas is going to become and remain competitive in the national and global economies. To ensure economic rights to Kansans, communications — the means of transmitting all types of information at great speed, volume, and distance — must be a part of the state's infrastructure. The information highways of communications can be made possible through a coordinated state plan which assists communities in the acquisition and use of fiber optics, microwave, cable television, and satellite linkages across the state. Three major areas would be emphasized: community training and retraining, business and economic development, and learning community.

Embedded Cluster Design



Community Training and Updating

In many of the smaller rural communities, access to training and retraining is severely limited. The workforce must be kept at its highest productive position through training and retraining. Access to training could be greatly enhanced with telecommunications.

At the present time, police and fire department personnel must leave a community to receive professional updating. Many times these departments consist of few employees and during their absences the citizens are without fire and police services. To avoid this type of community situation, officers often stagger their training which increases the cost of transportation and instruction. With a telecommunication network, training could be delivered to these professionals within their own communities.

Health care personnel constantly update their skills. Geriatric workers, nurses, Red Cross workers, and doctors could receive inservice programs, seminars, and recertification classes over a two-way video communication system. Regional centers, hospitals, and universities could serve each of these communities.

To stay certified, school personnel also need continuous inservice and professional development. Food service workers, school nurses, counselors, instructional aides, teachers, and administrators are required to attend professional classes. University professors and State Board of Education personnel could deliver inservice without leaving their home locations, and school personnel could receive training at the local school using telecommunications and eliminating travel cost and loss of student contact time.

University, community college, and vocational education classes could be delivered to participants of the communities in the telecommunications network. Citizens could receive the same instruction delivered by the professors and instructors on the main campuses. This instructional method would eliminate the need for additional adjunct professors and for teachers to travel off campus to instruct participants' classes. Savings would be realized to both the state and the citizens by reducing travel costs and time. Both would benefit from increased access. The potential benefits of a telecommunication system as a community training tool appear to be highly significant. The students, schools, and the whole community benefit.

Business and Economic Development

One of the major problems in the small rural communities is maintaining a large enough support base to ensure continued growth of small businesses. A healthy support base consists of a market large enough to support a competitive business environment, a population with resources to maintain the business, and a climate to keep management updated and inventories current. Due to changing demographics and mobile populations, many of the small communities and their service areas cannot support the small businesses needed to keep the community healthy.

One possible way to promote small business growth within a community is to expand service areas by clustering communities and adding a high-speed, low-cost communication network using fiber optics. The same technologies used to carry cable TV, classroom instruction, training, retraining, and expanded health services could be used by the business cluster. New product demonstrations, training on how to use new products, and basic retail customer support could be provided to every

community in the cluster by businesses located in any one of the communities. Thus one retail hardware store could service several communities by having customers select items over two-way video and providing deliveries using service vehicles that support both the public sector (regional educational service centers) and the private sector. The concept of sharing support services and cost by forming partnerships between the public and private sectors could produce savings in both sectors. By consolidating services and forming working partnerships, communities within a cluster could support the small businesses that keep their communities prosperous.

A key component to economic growth of any community is a highly educated, motivated workforce. A telecommunication system could bring customized short-term training to each of the communities by networking with vocational schools, community colleges, and the state universities. Business seminars on marketing programs, investment and tax strategies, as well as agriculture extension courses could be delivered in each community. Leadership training programs for community leaders and local citizens could be the basis for disseminating information and offering suggestions for community revitalization. Programs for aspiring entrepreneurs could be delivered to assist citizens in creating successful jobs and businesses using the telecommunication systems. By sharing resources, working together, and consolidating services, Kansans have many possibilities for enhancing the quality of life and maintaining the values that have made rural Kansas strong.

Learning Communities

The schools are the focal point of a learning community. Telecommunication ensures the continued existence of the school, thus keeping the heart of the community beating. Such

a communication system could include two-way interactive video classrooms in various schools.

Interactive video classes in each of the schools are small (less than ten) so an extensive amount of interaction is expected. If students need additional help, the same classroom can be used for individual tutoring before or after school. Homework and tests are faxed to the teacher. Assignments are sent to the students with the same technology. Several times each semester all of the students and the teacher get together at one location for discussions and socializing.

The extended classroom is more than a vehicle for instruction and learning. It is the framework whereby students, teachers, and schools cluster, sharing resources and information. Access to low incidence and advanced classes expands students' options. In addition, classroom technology provides opportunities for schools in the area to share resources in response to declining enrollments, escalating transportation costs, and increasing state graduation requirements.

Some schools and communities may adopt an expanded learning community concept. While schools are already heavily involved in providing numerous services such as health care, counseling, special education, food service, and drug and substance abuse support services, the school's role in a learning community concept can be expanded even more.

As smaller rural communities continue to lose health care and other social services, it is feasible that the school will be the site where many of the services can be consolidated. The schools already have nurses, psychologists, counselors, food service, and space for physical conditioning. In order to maintain some form of quality of life in small communities and to increase the

success rate of the poorly motivated, underachieving student, the schools will restructure to become learning communities.

Each community and school will determine what services can best be delivered by the school in order to maximize lifelong learning and to enhance the quality of life of its citizens. Some services frequently discussed in community restructuring include nursing and counseling, early childhood education, training parents as teachers, parenting support groups, drug and substance abuse counseling, teenage parenting, geriatric services, and expanded food services. Providing such services would require a high degree of coordination at statewide agency levels.

As the implementation of a statewide network for broadband telecommunications evolves, many services in a community could be consolidated. Counselors and nurses could use two-way video communication to access specialized consultation from distant locations such as county seats, regional and state service centers, and state universities and hospitals, thus eliminating costly, time-consuming travel. Urban, suburban, and rural populations would benefit from the expanded services; and the number of staff within the school and community could be limited.

Strategy

Working from the premise that a critical instrument for strengthening a state's economic base is telecommunication, states have taken charge of their own destinies. For more than fifty years state governments, along with individual citizens, relied on the monolithic Bell system to deliver all their local and long-distance voice, data, and video traffic over one network. In 1984 breakup of the Bell system fragmented that network and elimi-

nated cost-savings traditionally derived from AT&T nationwide economies of scale. The industry's restructuring forced state governments to shoulder a bigger share of the responsibility for meeting their telecommunication needs and for finding the most cost effective and efficient ways to do so.

Kansas' current telecommunication system consists of a myriad of technologies: satellite, microwave radio, copper wire, fiber-optic cable. Some are leased from telephone companies; others are customer-owned. However, fiber-optic cable is the mature technology with the most capacity and flexibility.

Telecommunication — Fiber-Optic Cable

A fiber-optic communication system permits cost-effective two-way communication, whereas other technologies such as broadcasting and satellites are used predominantly for one-way communication. Fiber-optic cable is used for interoffice trunking, and now relative costs of fiber versus copper and anticipated new services are driving fiber to the local loop. Fiber is cost effective because it has extraordinary bandwidth, is buried underground, has low maintenance, and permits consolidation of all information delivery into one transmission medium. Dollar for dollar, fiber yields one thousand times the bandwidth of ordinary copper wires. One pair of fiber will yield as much bandwidth as exists in all of common carrier radio frequencies available for microwave. As the electronics improve on each end, the channel capacity increases.

Fiber can transmit all signals including telephone calls, data transmission, fax (facsimile), graphics, animation, compressed television, full motion television, and high definition television. A statewide network would allow the distribution of one hundred TV channels to every local cable TV system, distribute

public TV to every Kansas community, and permit interconnection of public TV stations. Local communities, using fiber-optic cable two-way interactive video, could cluster together to share teachers for K-12 education, connect to community colleges and vocational schools for training and retraining, and receive undergraduate and graduate courses from Kansas universities. The same communication system could be used to enhance the business community and to network health and social services delivery systems.

Fiber-optic facilities are currently, and for some time to come, the technology of choice for telecommunications transmission applications. Fiber optics are widely deployed and available in Kansas from a number of providers. More fiber-optic cable is being laid every day. Fiber-optic facilities of existing telecommunications network providers can be used for interactive video applications whenever possible. But, in cases where fiber facilities do not exist and cannot be placed, alternate technologies or providers can be considered. Such alternatives include compressed video signals and coaxial cable (perhaps provided by cable TV companies).

Fiber is the super highway of tomorrow's communication systems for that super society described in the vision.

Fiber-Optic Network

Traditionally, the next step in proposing a telecommunication network strategy would be to develop a plan based on the state's informational needs. This plan would establish a comprehensive state system that is accessible and integrated and could incorporate switched broadband technologies. **Unfortunately such a statewide plan would require the accompaniment of a bureaucratic process, state standards, and financial in-**

vestment, funding which does not come easily for a state that must balance its budget. Although the plan would develop an efficient telecommunication architecture to equalize access to information across Kansas, state initiatives often prevent the local level from undertaking an activity or providing a service in which local people have ownership.

The growing movement today is “grassroots” or bottom-up initiatives. Similar to the 1980’s need for decentralization of the federal level to the state level, there is widespread disillusionment with a state government so overloaded with responsibilities that it does not function efficiently and equitably. Even the state realizes more and more that locals can deal better with local issues than the state can. The diversity of Kansas complicates a state’s solution to problems.

Thus, the recommended approach to developing a statewide telecommunication network is from the bottom-up rather than a state top-down to locals. There are already locals that exemplify the success of this approach. Starting as a self-reliant enterprise, with assistance from the state, four fiber-optic, two-way video clusters are operating. These clusters include over twenty-seven high schools and communities. At least five other clusters are in the planning stages. As financing and access to fiber become available, additional two-way video clusters will begin operation. Within two years each will be operating at capacity and be examining the possibility of expansion.

The State Board of Education is presently setting up a studio for the purpose of communicating with each of the clusters. The establishment of additional studios at the colleges of education and in several of the community colleges is under consideration. In addition, medical colleges are planning to use two-way video with remote hospitals. Kansas Technology Enterprise

Corporation's (KTEC) centers of excellence are in the process of developing video communication linkages. All of these developments will require a statewide plan for video conferencing utilizing variable bandwidths.

Local Initiatives

This section of the plan identifies three local initiatives which exemplify how a two-way communication system can be implemented in the state. There is a common theme of all the network clusters: to enhance and expand the schools' curriculum and services, to broaden staff development, to provide community services, and to increase sharing of resources. Also similar are the design and arrangement of the classrooms: three monitors for students to view the instructor and students at other sites; three monitors for the instructor to view the students at other sites; three cameras, one for the students, one for the instructor, and one overhead for the chalkboard; and a fax and VCR. A brief description of the three networks is as follows:

A PLUS Network

The Advanced Photonics Linking Unified Schools (A PLUS) Network operated by the Southwest Educational Consortium in Southwest Kansas provides each of its nine member districts full, two-way interactive audio and video communications. The network allows the districts to share both students and staff without transportation costs and delays.

High school students are offered courses that previously were not offered because of low enrollment or lack of certified instructors. Scheduling and programming can be arranged through any of the schools that are connected to the network. Classroom offerings include advanced biology, Spanish, trig/calculus, government, English, psychology, and art. College

courses include sociology, college algebra, English composition, western civics, geology, agriculture futures and options, and tax accounting, with courses such as religious studies, library science, and EMT training to be offered in the future.

The A PLUS Network currently serves approximately 161 students in 9 high schools and is based out of Meade, Kansas. In the future, it may be anticipated that courses for younger students will be introduced. The network also provides for interaction among communities with such things as club meetings, inservice, continuing education, library meetings, and adult education.

Goals

- To enhance curriculum offerings
- To provide community service
- To increase sharing
- To provide access
- To explore technology

Greenbush

The Interactive Television Project uses fiber-optic cable to carry light signals underground, transmitting video channels from one location to another. The result is a telecommunication system that permits students and teachers in the southeast part of Kansas to see, hear, and communicate with one another simultaneously. Through the project, students are given the opportunity to benefit from classes taught throughout southeast Kansas.

The Interactive Television Project currently serves approximately sixty-two students in four high schools. The Southeast Kansas Education Service Center is coordinating the project.

One interactive television classroom is located in each of the four networked districts' high schools and one at the Southeast Kansas Education Service Center in Greenbush. Classroom offerings include advanced placement English, advanced placement history, French I, Spanish I, and calculus. A career seminar for gifted students is offered each day. Future offerings will include training seminars and meetings involving community and business concerns.

Goals

- To provide instruction and services for students with special needs
- To enhance curriculum offerings in network districts
- To provide staff inservice in a variety of educational areas
- To provide community education and service
- To investigate new technologies for school use
- To provide student, staff, and community access to technology
- To evaluate the use and success of telecommunications and technology in network schools
- To increase the sharing of resources among network districts
- To keep staff, students, and community updated and involved in the network districts uses of technology

High Plains

The High-Southwest Plains Network utilizes 160 miles of fiber-optic cable to provide 9 high schools and one special education central office located in the southwest part of Kansas access to the latest technology in distance education. The system allows students located many miles apart to attend the same classes at the same time. The instructor can see all the students and the students are in turn able to see and talk with the instructor as well as the other students.

The network currently provides classes in French, introduction to vocational agriculture, math, Spanish, world literature, computer training, horticulture, critical thinking, music theory, College Composition I, blasting off with literature, and current events. Besides the classroom instruction, the system is used for a variety of meetings, parent teacher conferences, special education applications, staff inservice, and workshops.

Goals

- To provide inservice to teachers, paraprofessionals, administrators, and all personnel involved in staffing
- To provide instruction and staffing

Chart 1 identifies the technical aspects of the three local networks.

Responsibilities for Implementation of a State Telecommunication System

Fiber-Optic Cable Providers' Responsibilities

1. Invest in United States' telecommunication, especially Kansas network modernization, before accessing global markets.
2. Change attitudes about risk and cost of U.S. telecommunication system modernization investments and new service development.

Federal Responsibilities

1. Assist states by rewording current law and appropriate pending legislation to include telecommunication among and between communities in clusters as promoting neces-

sary educational and economic development, i.e., provisions of the REA Act.

2. Set regulatory policies to be proactive regarding development of new telecommunication services and features.
3. Address cable cross ownership issues in a positive fashion, such that telephone companies may construct, own, and operate cable TV facilities in rural communities of less than 20,000 population.

State Responsibilities

1. Break down and eliminate the bureaucratic lines that prevent DISC, Kansas Inc., KCC, KTEC, Department of Commerce, and the State Board of Education from actively seeking and acquiring a fiber-optic cable telecommunication system for the state.
2. Establish guidelines for interactive video access and technology, including input and approval from DISC, Kansas Inc., KCC, KTEC, Department of Commerce, and State Board of Education.
3. Develop a plan to combine efforts of DISC, Kansas Inc., KCC, KTEC, Department of Commerce, and State Board of Education for utilizing advanced network services and features within the national and global telecommunication network to benefit the state in business and economic development.
4. Review, in cooperation with DISC, Kansas Inc., KCC, KTEC, Department of Commerce, and State Board of Education, the regulatory scheme as it pertains to interactive video services, i.e., service definition, rate structure,

costing methodologies for use in rate development, and related capital recovery and network modernization policies.

5. Provide leadership, guidance, and support for locals desiring to investigate community cluster development or expansion.

Local Responsibilities

1. Provide local vision for telecommunication plan.
2. Develop elements of community's cluster, i.e., who wants to participate, technical description, etc.
3. Develop plan for state review and assistance if needed.

Chart 1
Two-Way Interactive Video Clusters
Technical Description

	Transmission Type		Transmission Medium		Tele-communication Equipment	Switching Capabilities	Participating Telephone Companies	Network Requirements	Network Activated	Miles Covered by Network
	Analog	Digital	Fiber	Copper						
High-Southwest Plains Network	Most fiber in Pioneer already planned high speed digital terminals *√	√	√		Grass Valley DS3 CODECS, and Switch AT&T Fiber-Optic Terminals *One segment of the system is analog over fiber using a WDM (Wave Division Multiplex)	Program to control the Grass Valley Switch is running on a SUN PC and is accessed through a modem on a PC	Pioneer Telephone Co. TCI - Cable Elkhart Telephone Co. Southwestern Bell Telephone Co. Sunflower Phone Co.	Modeled after Pan Handle in Texas View all sites at same time Maximum four sites per class	Jan. 1990	Approximately 160 miles
Northwest Kansas Educational Ser. Center	√		√		Orchard Comm.	Each school has full control of access and production	S & T Telephone Co. Rural Tele. Co.	Maximum four sites	Dec. 1990	35 miles
Northcentral Kansas	√		√			Full access 24 hr.	Rural Telephone Co.	Maximum four sites	Sept. 1991	211 miles
Clafin-Bushton	√		√		Leased equipment from H & B Comm.	Full access 24 hr.	H & B Comm.	Two sites at present	Sept. 1991	7 miles
The Learning Consortium (TLC) Network	√		√		American Light System	Full access 24 hr.	Moundridge Telephone Co.	Four sites with the ability to expand	Sept. 1991	52 miles

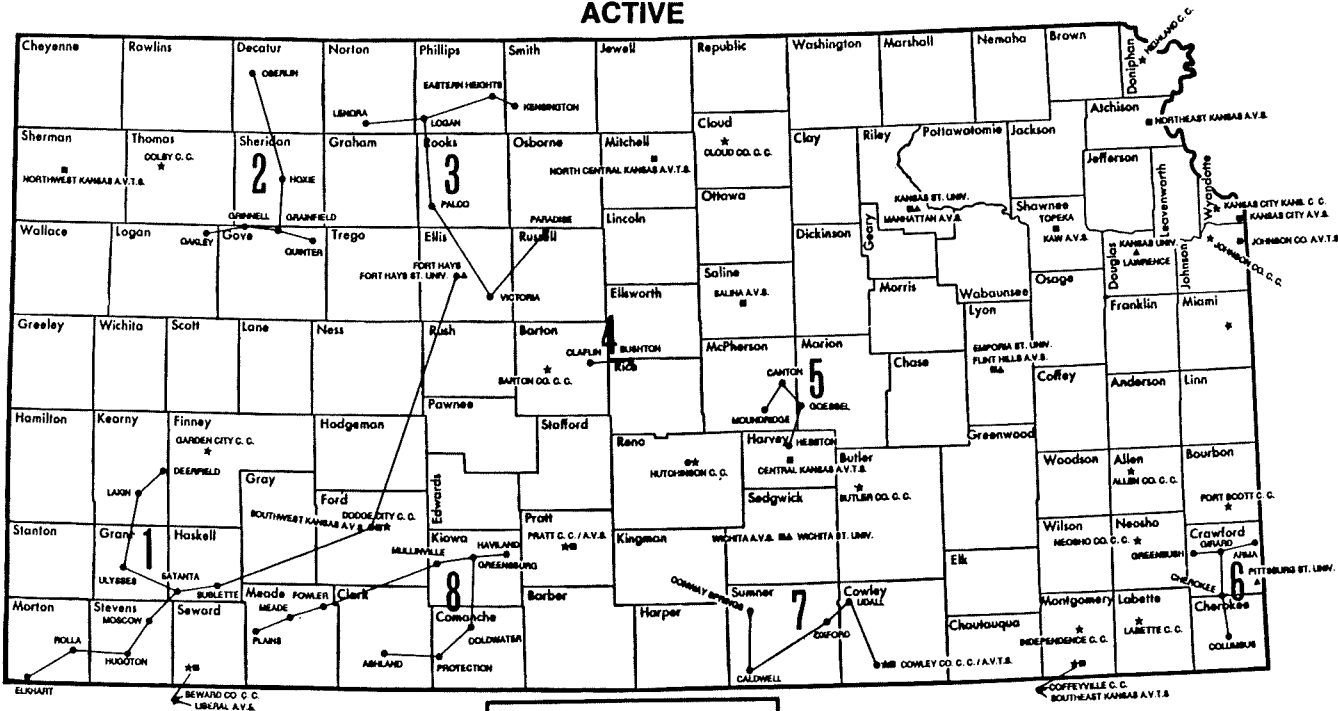
Attch # 7-28

Chart 1 (Continued)
Two-Way Interactive Video Clusters
Technical Description

	Transmission Type		Transmission Medium		Tele-communication Equipment	Switching Capabilities	Participating Telephone Companies	Network Requirements	Network Activated	Miles Covered by Network
	Analog	Digital	Fiber	Copper						
Interactive Television Project (Green-bush)	√		√		Orchard Communications All equipment is owned by the districts	Each school has full 24-hour control of the network. Just turn the monitor on	Craw-Kan Telephone Co. Columbus Telephone Co.	Modeled after Minnesota clusters View all sites at same time Maximum four sites per class	Aug. 1990	Approximately 50 miles
Southcentral Kansas Education Service Center	√		√		American Light Wave	Full access 24 hr.	Wheat State Telephone Co. Kan-Oklahoma Telephone Co. Haviland Tele. Co. Southwestern Bell Tele. Co. United Tele. Co.	Maximum four sites	Dec. 1991	65 miles
A PLUS	√		√		American Light System All equipment is owned by the phone company	Each school has full 24-hour control of the network. Just turn the monitor on	Southwestern Bell Telephone Co. Haviland Telephone Co. United Telephone Co.	Chose fiber for its quality View all sites at same time Maximum four sites per class	Sept. 1990	Approximately 180 miles

Attached #7-25

TWO-WAY INTERACTIVE VIDEO NETWORKS ACTIVE



August 1991

LEGEND

— Active within the 1991 Calendar

* Community College

■ Area Vocational-Technical School

▲ Regents' Institution

24

attached #7-25

EDUCATIONAL INTERACTIVE VIDEO TASK FORCE

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