

1999

Development of the Iowa Communications Network and Current Patterns of Use

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Development of the Iowa Communications Network and
Current Patterns of Use

A Graduate Research Project

Submitted to the

Department of Curriculum and Instruction

Division of School Library Media Studies

in Partial Fulfillment

of the Requirements for the Degree

Master of Art

UNIVERSITY OF NORTHERN IOWA

by

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August 1999

This research paper by: Stacey Lang

Titled: Development of the Iowa Communications Network and
Patterns of Current Use

has been approved as meeting the research paper requirements for the degree of Master
of Art.

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Abstract

During the middle 1980s there were several issues which faced the state. Declining enrollments, teacher shortages, funding issues, transportation issues and the poor economy were problems facing all school administrators, especially the administrator of the rural school district. Along with these issues, the state department of public instruction had also placed additional mandates on schools. There was a need to equalize the course offerings and available resources of the state's 80% rural population. Distance learning projects were becoming part of the Iowa countryside, however, legislators saw the need to focus in one direction, thus the inception of the Iowa Communications Network.

The purpose of this project was to describe the development of the Iowa Communications Network and to determine whether the Iowa Communications Network has relieved the pressures of the rural schools, and equalized the educational opportunities of the small and large school. This project describes the K-12 Educational Use Patterns of the Iowa Communications Network in the area referred to as Merged Area Eleven for the 1998-99 school year.

Chapter I

Introduction

Background

Iowa has a strong educational past. It became a state in 1846; however, ties to education go back much farther, to the Land Act of 1785 and the Northwest Ordinance of 1787. The Land Act stated that the government would set aside one square mile out of every 36 square miles to finance public education. The Northwest Ordinance provided that schools and the means of education were to be encouraged. When Iowa did become a state, the first Constitution contained Article 9 entitled, "Education and School Lands." This article stated that "the General Assembly shall encourage, by all suitable means, the promotion of intellectual, scientific, moral and agricultural improvements." Article 9 further states that the proceeds from the permanent school fund shall be "inviolably appropriated to the support of common schools throughout the state" (Iowa State Board of Public Instruction, 1986).

Iowa's Governor, James W. Grimes, had strong convictions about the importance of education as well. In a December 9, 1854, address to the General Assembly, he made these comments. "Education is the great equalizer of human conditions. It places the poor on an equality with the rich. It subjects the appetites and passions of the rich to the restraints of reason and conscience, and thus prepares each for a career of usefulness and honor" (Salter, W., 1876). Therefore, he believed that every effort should be made to sustain the schools of Iowa in the highest possible efficiency.

Early Schools

The first schools in Iowa were nonpublic schools, mostly church related. With the coming of the immigrants in the mid to late 19th century, these schools enrolled about 10 percent of Iowa's school children (Iowa State Board of Public Instruction, 1986). During Iowa's history, one-room schools dotted the states prairies. The first of these schools was built in 1830, in Lee County (McElroy, 1946). One-room schools were located on one acre of land in the middle of every four square miles. Grades 1-8 were taught and the curriculum was quite uniform. The one-room schools were easily accessible to all students, were close to the people they served and provided a good basic education (Iowa State Board of Public Instruction, 1986).

The one-room schools started to disappear when township consolidations began in the early 1900s. A law in 1913 provided for standards and inspections of consolidated schools as a requirement for receiving state aid. A large number of the consolidated districts were located in towns and villages around the state, but a larger number of two and three story brick buildings were located in the country. By the 1950s, and 1960s, most one-room schools had been closed. Reorganizations had taken the place of consolidations. Department of Public Instruction records indicate that the number of school districts in Iowa in 1955-56 was 4142. This number was reduced to 1575 in 1960-61. The number of non-high school districts were reduced from 3334 to 1013 and high school districts from 808 to 562 during the same period (Iowa State Board of Public Instruction, 1986).

Legislation passed in 1965 mandated that all land must be within a high school district by July 1, 1966, or it would be attached to one by the county boards of education.

In other words, the law made it mandatory that all districts without high schools become part of a district with a high school unit. Thus, the thinly populated rural districts, which operated one-room schools would merge with districts, which had one large, centrally located building with bus transportation (Anthan, 1966).

During the early to middle 1980s there were several educational issues which faced the state. Declining enrollments, teacher shortages, funding issues, transportation issues, and the poor economy were problems facing all school administrators, especially the administrator of the rural school district. In 1980, there were 334 school districts in Iowa with enrollment under 1000 (Smith, 1980).

The state perspective on rural education was one of assuring appropriate educational opportunity for all students. This included equal access to programming, vocational education, special education and school finance. Schools were required to offer 27 curricular units of instruction at the high school level (Iowa State Department of Public Instruction, 1986). This was sometimes difficult for the smaller school district. If the district could not comply with the state guidelines, they could face consolidation or dissolution. Some schools turned to partnerships, or shared programming to solve some of their problems.

Teacher shortages were also a problem which faced Iowa's schools. In 1971, after implications were made by the news media implied that there was a serious surplus of teacher candidates, enrollment in teacher education programs dropped sharply (Smith, 1979). Trevor Howe, and co-author, Jack Gerlovich, a DPI science consultant, began a series of teacher supply and demand studies. They found several areas which had critical shortages. The teacher shortages affected secondary science, math, vocational

agriculture, industrial arts, special education, language arts, and the foreign languages. Along with factors such as declining enrollments, tight school budgets, and government mandates, the economy appeared to be the largest factor affecting the teacher shortage.

Competition with business and industry for candidates in math, science, vocational agriculture and industrial arts took education candidates out of the teaching pool. Beginning teacher salaries were much lower than salaries offered in the private sector. Teacher pay did not keep pace with comparable business pay. The turnover in these educational areas was even greater in smaller school districts (Smith, 1979).

The 1984-85 school year was the fifteenth consecutive year that Iowa schools as a whole experienced enrollment declines. Iowa's public school budgets are determined by the number of students enrolled. Although changes have been made to the school aid formula to soften the impact of declining enrollment, the effect has been the same. Some smaller school districts have had a difficult time maintaining adequate course offerings and providing competitive staff salaries (Iowa State Department of Public Instruction, 1986).

In 1983, the report on America's schools, *A Nation at Risk*, was released (United States National Commission on Excellence in Education, 1983). It brought about controversy in America's schools with regard to teacher effectiveness, training, school finance and other areas. The awareness and concern brought about by the report caused Governor Branstad to address issues in Iowa's schools. He sought answers to how to go about improving education in Iowa by holding town meetings throughout the state. A task force reported its findings at the conclusion of the meetings. One of the recommendations for education was to build partnerships with business and industry and

that business and educational communities should become active partners in providing Iowa's young people with a bright future (DPI Dispatch, 1984). These partnerships would enhance public confidence in schools, support for education and citizen participation in the school community.

The same task force recommended that the state's school systems needed to improve the understanding and support of and confidence in the educational system at the state level. It was recommended that keeping the public informed about educational trends and actively involved with their schools and merged area schools that the confidence level would improve. The task force recommended a concerted effort in this area in order to reverse the negative trends. Examples of activities to be included were: the establishment of an annual progress report on the status of education, encouragement of broader public participation in goal setting and problem solving activities, and additional public participation in curricular activities (Iowa State Department of Public Instruction, 1986).

The conditions faced by many smaller school districts in the state of Iowa during the late 1970s and early 1980s appeared bleak to some. Faced with declining enrollments, teacher shortages, financial problems, and increasing mandates from the state department of public instruction, there was a need to equalize the course offerings and available resources for the state's 80% rural population.

A group of educators at Kirkwood Community College in Cedar Rapids offered a solution to some of the issues facing rural educators. Kirkwood had developed a network, which would allow classes to be broadcast over television. The network

allowed for one-way video and a two-way audio system that allowed students to see and hear their teacher and the teacher to hear the students (Bartusek, p.1)

The process to develop distance learning projects such as this began as several community colleges planned and installed separate educational networks using a combination of technologies. Kirkwood Community College was first to construct a network between 1979 and 1981. It used microwave and ITFS technologies. Early in 1983, Iowa Lakes Community College at Estherville received grant funding to begin putting a network into place. In addition, the University of Iowa began constructing microwave and ITFS networks in order to link some of its' facilities and service areas (Bartusek, p.1).

Technologies

Microwave and ITFS networks were selected at the time for two reasons: the Federal Communications Commission allowed educators to use these technologies, and they were the least cost prohibitive. Fiber optics was 30 years old at the time, however it was not cost effective (Appendix A, R. Hardman, personal communication, March 26, 1999).

In 1985, a group known as the Public Radio Managers Council, was active in the state. Iowa Public Television acted as a focal point for the managers to meet and discuss issues of concern. At the time, the major issue was that there were several video networks around the state being developed to carry educational programming. Questions were raised about the wisdom of allowing the various state institutions to continue placing networks where it suited the institution best, or whether there should be some coordination of efforts to allow for the sharing of education and educational resources.

These questions, according to Robert Hardman of the University of Northern Iowa, were the real genesis, which started the Iowa Network.

In 1987 Senate File 162, (SF162, 1987) was adopted to coordinate educational telecommunications in Iowa. Iowa Public Television was given the authority to oversee the activity. In August, a consultant, Larry Patten, was hired to do a needs assessment and analysis. His focus was to survey the state to see if there was enough interest in developing a statewide telecommunications network.

Patten's plan, "Iowa's Plan for Educational Telecommunications" called for the "ability to share educational capabilities among both large and small districts." The system would allow the small district to offer courses such as French, calculus, physics, and other courses they would not normally be able to afford due to shrinking enrollments. The system would also allow smaller schools to originate sessions. Perhaps this would provide the smaller school district the opportunity to attract events and personnel to the district. (Iowa's Plan for Educational Telecommunications, 1987).

Problem Statement

More than ten years have passed since the planning of the Iowa Communications Network. Since one of the major objectives of the project was to relieve the pressures on small rural schools and to equalize educational opportunity between large and small school districts, an evaluation of results to this date seem to be in order.

Research Questions

- 1) Is the state's telecommunication network, otherwise known as the Iowa Communications Network, used as it was predicted it would be in K-12 rural education?

- 2) What are the current patterns of use of the Iowa Communications Network in K-12 education?

Project Proposal

The purpose of this project was to describe the development of the Iowa Communications Network historically, as well as to look at the ICN educational usage patterns throughout K-12 schools, which were located in the region known as Merged Area Eleven. The school districts included in the Merged Area Eleven area were: Audubon, Baxter, Bondurant-Farrar, Boone, Bussey-Twin Cedars, Carroll, Carroll-Kuemper, Colfax-Mingo, Colo-Nesco, Coon Rapids-Bayard, Des Moines East, Des Moines Lincoln, Des Moines North, Des Moines Roosevelt, Saydel, Earlham, Exira, Gilbert, Guthrie Center, Indianola, Johnston, Knoxville, Liberty Center, Madrid, Manning, Martensdale-St. Mary's, Collins-Maxwell, Melcher-Dallas, Prairie City-Monroe, Nevada, Norwalk, Panorama, Pella Christian, Pella, Perry, Pleasantville, Southeast Polk, Roland-Story, Stuart-Menlo, Lynnville-Sully, Interstate 35, Urbandale, VanMeter, Waukee, West Des Moines Dowling, West Des Moines Valley, and Winterset.

Assumptions

The following assumption was made by the researcher in the course of the study: Information received from various personnel involved with the actual operation of the network was deemed reliable, and this information could be helpful to media personnel in future planning of the use of the Iowa Communications Network.

Limitations

The vast size of the current network, nearing 800 sites as of this writing, was beyond the scope of this researcher. Therefore, the study was limited to the number of sites within Merged Area Eleven. The sites of Merged Area Eleven were selected because they contained a combination of both smaller, rural districts and larger school districts.

Significance

The study was significant to the media personnel who are responsible for the dissemination of information regarding the Iowa Communications Network. They would have a greater understanding of the usage patterns involved in K-12 Education. With this understanding, it would be possible to make educators more aware of the capabilities of the system.

Definitions

Small, rural school districts- those districts whose certified K-12 enrollment for the 1998-99 school year was under 1000 students.

Large school districts- those school districts whose certified K-12 enrollment for the 1998-99 school year was over 1000 students.

Merged Area Eleven- it is one of 15 areas throughout the state's 15 Area Education Agencies (AEA)s. The AEAs function as the intermediate units among the Department of Education, school districts and local schools.

Technical Definitions

Microwave technology is two- way video technology. Microwave energy is sent between two points. A signal is aimed at each other. Each one carries video and audio so students and teachers in remote sites can see and interact with one another.

ITFS is a separate technology. It is a broadcast technology, which is more limiting than microwave. It broadcasts video and audio out to a site. The use of special radio transmitters can bring audio back from the remote site to the origination site.

Fiber Optics are light transmissions over a glass cable. Digital transmissions provide large capacities for multiple channel activity. It can be simplex, or one way, or duplex, which is two way, voice, video, and data service.

Interactive Communications are live communications with either two way audio and video, or two- way audio and one- way video. This provides for the question and answer interactivity. (Bartusek, 1989)

FOTS room is the fiber optic terminal system room. Each site has a room where the fiber enters the building. Signal regeneration equipment that recognizes and interprets the light signal into new, stronger pulses of light is often found in the FOTS room.

Hub is the centralized switching center of a network. The ICN hub is located at the STARC Armory at Camp Dodge in Johnston, IA.

Backbone of the ICN includes the HUB, the centralized switching center of the network, interconnecting the HUB with all of Part I and Part II endpoints throughout the state by digital links for two way transmission of 45 megabit video, voice, and data for state, education, and administrative purposes.

RFP is a request for proposal.

Part I sites involved the installation of a Network Control Center at the STARC Armory in Johnston and linking Iowa's three Regents's Universities, 15 community colleges, Iowa Public Television and the State Capitol complex.

Part II sites involved linking the 15 community colleges with points of presence in each of the remaining 84 counties in Iowa.

Part III sites consist of expanding the network to 474 other authorized users within the counties, such as schools, area education agencies, and libraries.

Originating Site is the place the transmission of a program or class begins.

Remote site is the location, which is receiving the transmission from another location.

A **codec** changes the video and voice signal originating in the fiber schools

Chapter II

Methodology

Literature Review

Articles have begun to appear which describe uses of the ICN in Iowa schools. Jones (1996) described a learning opportunity for eighth graders in the Mt. Ayr school who spent 90 minutes talking with space pioneer James Van Allen, now a University of Iowa professor.

A similar opportunity from the ICN for Iowa students to interact with adult experts was reported in Curriculum Administrator (1995). Five hundred students from 45 high schools across the state interviewed Iowa Senator Tom Harkin, Governor Terry Branstad and U.S. Secretary of Education, Richard Riley.

The ICN was one of the technologies discussed in Educational IRM Quarterly. Specifically addressed was a French class shared by three schools. It was observed that the three groups of students function as one group and learn from each other despite the geographical separation.

The most comprehensive review of the research about the use of distance technologies to improve rural schools in America was the mandated report from the Corporation for Public Broadcasting to the 103rd Congress (1993). The report summarized issues for rural schools, paralleling the issues facing Iowa schools in Chapter One of this project. The report points out the “paucity of research on the effectiveness of distance education in K-12 classrooms” (p.25); however, it does include a review of current research (most of it unpublished) on the effectiveness of distant technology. Significant findings are summarized below.

Barker (1988) surveyed principals and students at 30 rural schools about satellite network delivery. Almost 75% of principals rated the quality of instruction as very high, while almost 66% of students found classes taught in this manner were more difficult than in traditional classrooms.

Bradshaw and Brown's (1989) case studies of three two-way video projects in Utah found that students learned as well as students in traditional classroom settings.

Wohlert (1991) studied a high school German class taught by satellite. Results found that high school students reached the same level of achievement in one year as university students. ACT college entrance scores at one participating school improved nearly 40% above the scores of those students which did not have access to the satellite instruction.

TLC Inc. (1989) surveyed school coordinators participating in the Satellite Educational Resources Consortium. Over 98% of respondents would recommend that their school continue to participate in SERC.

MCSSP (1990) conducted an evaluation of the Midland Consortium Star Schools Program which consists of schools in Alabama, Kansas, Mississippi, Oklahoma, and Missouri. Results found no significant difference in student test scores between students in distance learning and conventional settings. In addition, results concluded that students from poor school districts, districts with high minority populations and at-risk students learned effectively using the satellite technology.

The efforts to improve rural schools with distance education technologies are not limited to Iowa and the United States. Goer (1992) reported on policies in Alberta, Canada that permit rural schools to increase curricular offerings in order to avoid

consolidating schools over a wide geographic area. Involved teachers were surveyed about the effects of a pilot program and their recommendations included restricting of distance education to secondary students and recognition of unique responsibilities for teachers providing distance learning.

Stevens and Bridgeman (1994) described two pilot programs in New Zealand which were designed to expand curriculum for rural students and to reduce costs of operating rural schools. Both CD-ROM and Internet networking was used to connect one large high school and its library collection to 24 elementary schools. Issues that emerged from an analysis of the progress of the project included the willingness of rural schools to use technology, the identification of student learning needs, student and parent attitudes in the use of technology for expanding curricular offerings and the needs to address professional development of participating teachers.

Procedures

The ICN has grown at a rapid rate. By the close of 1999, the Network will be completing 474 Phase III sites. It is by far the most extensive fiber optic network in the country, and even the world. Other states such as North Carolina, Georgia and Maryland have similar projects, but Iowa's is clearly the model for other states (Network World, 1990).

Since one of the primary goals of the network was to equalize education in K-12 districts, one must evaluate the success of the ICN in providing opportunities for classes such as French and calculus to the smaller districts; and whether smaller districts have been taking advantage of the network by offering a wider class selection. To determine

the answers to these questions, it is necessary to examine the current patterns of ICN use in K-12 education since the first transmissions in 1993.

Since the inception of the ICN, records have been kept recording the number of hours of use. Recently, more specific data have been collected showing: the date, originating sites, remote sites, audience, and subject for each session.

This researcher organized the data set in order to analyze patterns of K-12 use during the 1998-99 school year. The specific data were collected from Marilyn McFarlin, regional scheduler for the ICN in Merged Area Eleven, and made available to the researcher. Since this is a state-funded project, the data are a matter of public record. Data are displayed in tables for analysis of both use and patterns.

Chapter III

The Project

Development of the Iowa Communications Network and Current Patterns of Use

The actual development of the Iowa Communication Network began with the necessary legislation and funding (Appendix A). The physical infrastructure began in 1991 and training of school personnel began soon after. The first broadcasts began in the fall of 1993, although the physical system continues to grow.

In 1986, the General Assembly of the state of Iowa decided it was important to have some statewide direction in the development of a statewide telecommunications network. Iowa lawmakers moved to spend \$200,000 to plan the system. The planning process was begun in December 1986. Larry Patten, former chief of Iowa Public Television, headed the planning process. In Patten's report entitled, "Technologies for Learning at a Distance; Looking at the Future—changing Educational Relationships", he stated that the Iowa Plan was developed as a five stage process. It was developed first in terms of definition. A manual was prepared of definitions of all the telecommunications systems under consideration. The next stage was determining educational needs. It was determined whether there were existing educational needs which could be met with a telecommunications system. The third stage was to establish an organization, which would develop a system. The fourth stage examined the relationships between interest groups with the intention of fostering cooperation.

Definition Process

In the first stage, the definition process, a manual was prepared so that all parties involved would understand in greater detail the systems available.

Educational Need

To determine educational need, meetings were held with educators from all across the state. All levels of educators were included. The representatives discussed issues which were felt could be addressed through the telecommunications system.

Organization

It was determined that the best coordination of the system would be established through the 15 area Community College districts. In addition, it was determined that there was a need for coordination at the state level. Iowa Public Television was considered to be the most appropriate choice to perform this coordination. It was further determined that to ensure proper linkage between the state, IPTV, and other users of the system, that a broad base committee be established. The Narrowcast Advisory Committee was therefore established, with the function of advising IPTV on educational telecommunications.

This organizational model considered the establishment of a not for profit corporation that would have the benefits of a state agency, but actually exist outside the constraints that typically impact a state agency. On June 5, 1987, Senate File 162 established the Iowa Corporation for Telecommunications. It established IPTV as the executive director of the network. As the executive director, IPTV was to establish direction and procedures and set the stage for cooperation.

Relationships

With the basic structure established, attention was focused on relationships between organizations. The groups considered to be important were: the Governor's Office, State Legislative Leaders, IPTV Board, Community College Administration and

Boards, university administrations, the Board of Regents, K-12 school administrators and boards, instructors of all levels, community leaders, Area Education Agencies, the Department of Education, the State Department of Economic Development, business leaders, and telecommunication company leaders. It was critical that while each of these groups had their own interest in the system, they remained focused on the needs of the state from a global educational perspective.

Through the development of the actual Iowa Communications Network, there were certain design principles which were included. Dick Stuffelbehn, engineer from Iowa Public Television stated that simplicity of the system was the key. He stated that the network needed to be transparent as possible to both the student and the user. The design was to be kept as simple as possible, so that “anyone off the street could come into the classroom and use it” (Appendix C, D. Stuffelbehn, personal communications, April 27, 1999).

Design Principles

The design was to meet educational, economic development, and community needs. It also needed to be flexible enough to allow for additions over the years. It needed to be statewide in scope. It needed to use multiple technologies for greatest number of tools for users. The network should be capable of local, (within 20-30 mile radius), regional, statewide, national and international transmissions. It should be transparent. It should be established with a cooperative spirit with the private sector, rather than compete with the private sector.

Design

The original design called for two way video, two way audio-microwave or fiber transmission. Backbone connecting the regional sites and one way video, two way audio ITFS broadcasts from backbone sites to secondary sites (Connection, 1990). When the first Request for Information was sent to vendors, however, it did not specify the technology to be used. All vendors submitted plans for fiber optic networks (R. Hardman, personal communication, March 26, 1999).

In April 1988, the first RFP was prepared by General Services on behalf of the educational community. This was to determine specific pricing and technologies for the Iowa Network. The process used bids of lease, lease purchase, or purchase. In September of 1988, the first RFP was released to vendors. Three vendors bid. The bids were all for fiber optics. The bid was awarded to Teleconnect of Cedar Rapids. In early 1989, the bid was challenged and rejected. Later in 1989, a second RFP was released for bid. It specified fiber optics. This proposal called for 356 sites, however all proposals were rejected as being too costly (Haigh, Iowa Communications Network Update, 1990).

In the fall of 1990, a third RFP was submitted. This time the number of sites was narrowed to 104. There would be a “point of presence” in each of the state’s 99 counties, as well as the state universities (3), IPTV, and the Capitol (Haigh, 1990).

In December of 1990, Kiewit Network Technology was notified of the intent to award the contract. Before the contract was signed, the Iowa Telephone Association presented their opposition to the proposed contract to the General Assembly. They were opposed to the use of fiber optics. They claimed that their alternative, compressed video, utilizing existing copper lines would be sufficient and more cost effective

(Iowa Telephone Association, December 1990). In March 1991, at the request of the Legislative Council, Ernst and Young completed an analysis of the Kiewit/MFS bid. They determined the bid to be reasonable and that it would satisfy the needs of the network. In addition, the Ernst and Young report found that the compressed video of the Telephone Association would not meet the educational purposes of the network (Ernst & Young, 1991).

In April of 1991, a group of House Republicans filed suit claiming there were inadequate funds to proceed with the network. They also claimed conditions for signing the contract with Kiewit had not been met. On April 12, 1991, the court denied a petition for temporary injunction against Kiewit Network Technology. On April 15, the contract between Iowa Department of General Services and Kiewit was signed. The package was worth 97.5 million dollars (Haigh, 1990).

A June 1990 article in Educational Technology described the preliminary design. “The network has three parts. First a backbone of fiber optic links will tie across the state, like a communication highway. Then regional telelinks will run outward from those hubs, allowing two-way TV/video between 100 schools statewide” (Davis, p.48).

A case study which appeared in PC Week, September 12, 1994, describes how Kiewit, later also known as MFS Technologies, designed the network (Schurr, p.N43). “Kiewit designed a fiber network which emanates from Camp Dodge near Des Moines. The first part of construction created a backbone from Camp Dodge to 15 regional community colleges, IPTV and the three state universities.” The backbone also includes five stand-alone sites and has a capacity of 2.4 G bps (Appendix D, Map of the Network).

The second construction phase used fiber links to join the rest of the sites to the ICN. Known as Part II sites, the additional high schools and community college branches were connected to the 15 Regional Switching Centers. This project required over 15 million feet of fiber optic cable and more than 16,000 parts. Kiewit /MFS began laying the fiber in October 1991. 240 miles were laid in 1991 and 1900 miles in 1992. The last 800 miles were installed in 1993. The first phases of the network were completed in November 1993 (Schurr, p. N3).

Classrooms

As the fiber was laid, sites readied classrooms for electronic installation. Each site provided a FOTS (fiber optic terminal system) room and adjoining classroom. Classroom equipment ranged in price from \$31-43,000, this did not include the cost of a codec—or coder-decoder. A codec change the video and voice signal originating in the fiber schools classroom into the digital light signal, which travels through the fiber (Schurr, p.N3).

Each classroom contained a podium, and three cameras—one that faced the class, one on the teacher, and one overhead for use with demonstrations. The Grass Valley Group Inc. master node controller and touch screen monitor allowed the teacher to easily run a session. Dick Stuffelbehn stated in an interview, “ the equipment in the operation of a session is transparent. It is transparent to both the learner and the operator/teacher.” In his words, “anyone can operate the system” (Appendix E, figure 1-3).

The television monitors at the front allowed the students to view themselves, the teacher, or remote site students. The monitor at the back of the room allowed the teacher to view the remote sites. (Appendix E, figure 4-5) According to Stuffelbehn, the monitors

in the back do not go black for a reason. “The mindset at the end of a session says that if a TV monitor goes black, it is broken. Therefore, the last broadcast is frozen on the back monitor to remind the operators that the monitor is still working.” All of the classroom equipment was networked to the nearby FOT room (D. Stuffelbehn, personal communication, April 27, 1999).

An article, which appeared in the Curriculum Administrator in April 1995, stated that “a unique feature of the classrooms is that all of them have may receive, as well as originate programs. ICN designers wanted to be sure that there would be no difference between urban and rural installation” (p.18)

Cost

What did all of this cost? In October 1992 through September 1994, Star Schools Federal Grant awarded 8 million dollars for training, equipment, and regional coordination. The state government has subsidized the cost of communications with 15 million dollars per year in appropriations. For the ICN infrastructure, the state issued 114 million dollars in certificates of participation, or bonds which must be paid back over 14 years. Annual operational costs run about \$600,000 (Network World, 1994, p.66).

In August of 1993, the first 49 classrooms were activated. In the fall and winter of 1993, the remaining 54 sites were activated. (Iowa Communications Network, brochure)

Users of the Network

Chapter 8D of the Code of Iowa defined the authorized users of the ICN to include the following: all accredited K-12 public school districts and private, all accredited public and private colleges and technical educational institutions, all state

agencies, all federal agencies, US Post Office, hospitals and physician's clinics—video and data services only, and public libraries. (Appendix F, Chapter 8D of the Code of Iowa)

Part III of the ICN

During the 1994 legislative session, a bill, Senate File 2089, creating a governing structure and parameters for Part III of the network was enacted. On May 31, 1995, the General Assembly approved a plan for the completion of the Network. Part III of the Network consisted of a four year plan to add over 474 educational (K-12, AEA's, libraries) sites over a four year hook up schedule. The bill provided for a seven-year lease for 474 sites and state ownership of 35 of the connections (Iowa Communications Network, brochure, 1996).

All remaining Area Education Agencies and 92 schools were completed in fiscal year 1996. Four public library pilot sites and 128 K-12 educational sites were completed during the 1997 fiscal year. Two additional public libraries and 117 K-12 schools were completed in the 1998 fiscal year. During the 1999 fiscal year, there were 118 sites completed. This includes 24 K-12 schools, 83 public libraries and 11 school administration buildings (Iowa Communications Network, brochure, 1999).

According to data received by the ICN, Iowans are using the network at an increasing rate. During 1996, 100,945 video hours were used. In 1997, that number increased to 182,386 hours. In 1998, usage rose to 249,781 hours. It is projected that at the close of 1999, there would be 400,000 hours used. (Iowa Communications Network, brochure, 1999).

Patterns of Current K-12 Educational ICN Use in Merged Area Eleven

Larry Patten originally proposed that the ICN would be used to equalize educational opportunities of the rural areas in the state. His plan called for the ability to share educational capabilities among both large and small districts. The ICN would allow the small district to offer such courses as French, calculus, physics and other courses which it would not be able to afford due to shrinking enrollments. By analyzing the data located in Appendix G, the following conclusions have been made about the current usage patterns of the Iowa Communications Network in Merged Area Eleven during the 1998-99 school year.

Courses

The ICN was used during the 1998-99 school year by Merged Area Eleven K-12 schools to offer 27 courses. Table 1 in Appendix G shows that the courses included French, calculus, Chinese, German, Russian, Spanish, introduction to computers, introduction to psychology, life science, math, and world civilization. The courses were originated in both schools with enrollments above 1000 students, as well as those schools with student enrollments below 1000 students. Patten had believed that the smaller school would be on the receiving end of the class. However, in the case of the Merged Area Eleven data, the converse was true. Calculus was broadcast from Manning, which had an enrollment of 545 students, to Roland-Story, which had an enrollment of 1127 students. Both the large and small school districts appeared to receive the benefits of sharing classes over the Iowa Communications Network (Iowa State Department of Education Directory, 1998).

Patten believed that the network would be used to offer courses which appeared to have teacher shortages. Some of those areas were: foreign language, science and vocational agriculture. The data from Merged Area Eleven indicated that foreign language courses appeared to be the most common type of course broadcast. Additionally, calculus courses and a life science course were also broadcast. In Merged Area Eleven, it appeared that the ICN is assisting schools in meeting the needs for foreign language and calculus courses.

Audience Patterns

During the 1998-99 school year, there were 276 sessions scheduled. Some events met on more than one occasion for the continuation of discussion. Of those events which were scheduled, the majority were held for the audience identified as the K-12 Educators and Administrators. This group used the Network for 116 events. The meeting or training type of event appeared to be the most frequent for this group. There were training sessions for various topics. Table 3 (Appendix G) lists them; they included software programs (*Web Painter, Boardmaker, Encyclopedia Britannica Online, UMI* and *Ebsco* databases). Specialized training, such as, individualized educational program (IEP) training for special education instructors, or child abuse mandatory reporting training sessions for state licensing requirements. Curricular meetings were also held for art, music, science and Spanish teachers. Planning and in-service sessions were also used by this group. The state ITEC board met to plan their conference. The Iowa Council for International Understanding met to confer on the World Food Prize, general educators met to discuss items, Reading Recovery instructors met to plan meetings, US West grant members met to discuss procedures, and media specialists met to confer over

the new national information literacy standards. There were in-services provided for the ICN, the Africa Quest project, the Telejustice project, academy of reading products, and State 504 information. In addition, there were linking series programs on social sciences, science, and math. These training and meeting sessions generally had large numbers of participating sites. For example, *Web Painter* had 63 sites, IEP training had 43 sites, and the *Linking Series for Science* had 31 sites. These sessions allowed educators and administrators to continue education courses, collaborate with other professionals, and prepare for upcoming events, all of which were original goals of the telecommunications network.

The group identified as 9-12 students participated in 107 events during the 1998-99 school year. Table 4 (Appendix G) shows that Some of the events were one-time special events such as “Live from Galapagos”, “C. Everett Koop Discussion”, “ISPAC with the Governor”, or the “Japanese/North Discussion” held at Des Moines North High. Other events were on-going such as the “Advanced Speech Sharing” sessions, “Vo-Ag Sharing”, “TAG projects/deathlons”, “ICEA Meetings”, or “Spanish Pen Pals” sessions. Additionally, the 9-12 students had the opportunity to share classes such as French, Spanish, calculus, and Chinese, which were already discussed in this project. In general, the 9-12 student group used the Network in situations with less than six participating sites involved. Exceptions to this number include the one time events of “C. Everett Koop”(49 sites), “ISPAC with the Governor”(10 sites), and the “Live from Galapagos”(10 sites). The more interactive the program appeared to be, the fewer the number of participating sites. For example, the ICEA group meetings typically had four or fewer sites participating; and the TAG projects had three or fewer sites participating.

The audience group referred to as the K-8 students used the ICN for 53 events in the 1998-99 school year. Table 4 (Appendix G) shows that most of these events were either one-time special events or field trips. Examples of one-time events included the “Meet the Authors” program, where Beth Tubbs and Pam Smacher shared the process involved in creating their children’s books, “Toys in Space”, “Talk to North Polk”, “An Alphabet of Workers”, and a “Family Math Night”. Field trip events included “Inside the White House”, “ Step Back in Time”, “Downlink from Africa” “Mars Base Project” and “A Walk on the Wild Side”. Most K-8 student programs were limited in number of participating sites to ten or fewer. There were exceptions in this category, as well. The exceptions included the downlink program from Africa, which allowed 19 sites, and the assistive technology program which provided 14 sites. In general, in Merged Area Eleven schools, the younger the audience, the fewer the number of participating sites for a program.

Origination Sites

Table 4 (Appendix G) shows that the majority of ICN programs which were broadcast in the Merged Area Eleven schools were originated from a government institution. This may have been the Area Education Agency in Johnston, Iowa Public Television, the Parole Board, the Department of Education, or the Department of Health.

Large School vs. Small School Usage

For the purposes of this project, the term, large school was defined as a school district with a student enrollment over 1000 students for the 1998-99 school year. The term, small school, was defined as a school district with an enrollment under 1000 students for the 1998-99 school year.

Large School Districts

Nevada	Ames	Saydel	Prairie City-Monroe
Ankeny	Knoxville	Waukee	Pella
Carroll	Indianola	Norwalk	West Des Moines
Perry	Urbandale	Des Moines	Carroll Kuemper
Boone	Adel-DeSoto-Minburn	Johnston	West Des Moines Dowling
Roland-Story	Winterset	Southeast Polk	

Small School Districts

Pella Christian	Liberty Center	Interstate 35	VanMeter
Stuart-Menlo	Manning	Bondurant-Farrar	Collins-Maxwell
Audubon	Gilbert	Pleasantville	Colo-Nesco
Guthrie Center	Baxter	Adair-Casey	Bussey Twin Cedars
Colfax Mingo	Exira	Panorama	Martensdale-St. Mary's
Melcher Dallas	Lynnvile-Sully	North Polk	
Earlham	Coon Rapids-Bayard	Madrid	

The four school districts which used the ICN the most during the 1998-99 school year were: Nevada, Ankeny, Carroll, and Perry. They used the Network 59, 49, 45, 39 times respectively. There was a tie between Ames and Knoxville for the fifth position. Each of these schools used the Network for 37 events. All of the six districts are large districts, contrary to the belief of Patten who thought the Network would be used by smaller districts to equalize their educational offerings.

Once below these top five positions, the usage results for Merged Area Eleven became mixed between the large school and the small school uses. The average number of uses by Merged Area Eleven schools was 22. Earlham, Melcher-Dallas, Southeast Polk and Des Moines East all used the Network exactly 22 times. These schools represented a combination of both the smaller schools and the larger schools of the area. Earlham's enrollment was 520 students for the 1998-99 school year, Melcher-Dallas' enrollment was 500 students, and Southeast Polk had an enrollment of 4268 students.

The same can be said for those schools which used the Network 21 times. Roland-Story and Winterset represented the larger schools with 1127 and 1719 students, respectively. Manning and Gilbert, with enrollments of 545 and 875 respectively, were smaller schools who used the network for 21 events.

Chapter IV

Summary, Conclusions and Recommendations

Summary

During the middle 1980s, there were several educational issues which faced the state of Iowa. Among them were declining enrollments, teacher shortages, and a poor economy. School districts were facing more requirements and fewer means to provide solutions. The Iowa Communications Network, according to the plan creator, Larry Patten, was supposed to be an answer to some of the rural district's woes. It was to have equalized educational opportunities for all students.

This research project described the development of the Iowa Communications Network historically, as well as the current patterns of K-12 educational use of the Network in Merged Area Eleven during the 1998-99 school year.

The results of the project found that it does not matter whether a school has an enrollment over 1000 students, or under 1000 students, schools seldom use the ICN for the sharing of classes. In fact, there were only 27 classes broadcast for the entire 1998-99 school year in Merged Area Eleven. However, of those 27 classes, some fell under the category of classes which were recommended for broadcast. These were pre-calculus, calculus, German, Russian, Spanish, and French classes. These course instructors were in short supply in the early 1980s.

In addition, the project found that the greatest user of the system was the K-12 Educator/Administrator group. They used the system for special meetings or training sessions on most occasions. This use of the Network was mentioned by Patten, as well. He felt that the amount of travel time could be greatly reduced with a system such as this.

With an ICN room currently within 15-20 minutes of each town in Iowa, this appears to be true.

The K-8 audience was the smallest user group of the ICN. They used the system primarily for special events such as “Meet the Authors”, the “Mars Base project”, “Live from Galapagos”, or the “Africa Downlink” programs. These events were enrichment activities, which extended the curriculum rather than implemented it.

The 9-12 audience appeared to be the user group with the greatest variety of uses. They used the Network for classes, one-time events such as C. Everett Koop, multimedia sharing or collaboration projects such as Advanced Speech sharing, as well as repeated meetings such as the ICEA groups.

Conclusions

The overall use of the Iowa Communications Network in Merged Area Eleven by K-12 Education was surprisingly low to the researcher. Perhaps one reason the Network is not used for more course broadcasts, is the lack of additional training or compensation given to the instructor who teaches the ICN course. Without additional incentive, it is difficult for the already burgeoned educator to accept the added responsibility of an ICN course. Over the course of this project, I spoke to a few veteran teachers on this topic. When asked if they would convert their traditional course to an ICN course, the response was negative. Reasons given include: a lack of additional time available for the preparation necessary for a successful ICN course, and lack of additional compensation for teaching additional students in remote locations.

Recommendations

This project was not a comprehensive analysis of the 1998-99 K-12 Educational usage patterns of the Iowa Communications Network. It is recommended that such a comprehensive study be done. This would compare and validate the usage patterns of the Merged Area Eleven school districts to the other regions of the Iowa Communications Network. In addition, it would be beneficial for the Scheduling Data to be maintained online for longer periods of time. With such data available, a longitudinal study would be feasible.

This research project opened doors to additional questions regarding the Iowa Communications Network. Some of them include: Does the amount of use by K-12 education justify the amount of money spent to maintain state ownership? Can the ICN prevent rural Iowa schools from facing continuing consolidation issues? Out of all of the potential users of the Network, which group benefits the most from the state ownership of such a telecommunications network? Will the state continue to subsidize the cost of the network use for schools? Is the Iowa Communications Network as valuable a resource as was predicted when it first came on line in 1993? These questions could be answered with follow up studies to this project.

In the future, this researcher would like to see Media Personnel continue to encourage their staff and students to use the Iowa Communications Network classrooms and events. It would be beneficial to both students and staff to continue to expand the various ways to utilize the resource known as the Iowa Communications Network.

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Notes from Meeting with Dr. Robert Hardman

Researcher: Tell me what you can about the early development of the ICN?

Dr. Hardman: 25 years ago, there was a group of educators who believed that distance learning could take place over a telecommunications network. The early purposes of the ICN were to provide equal opportunity to schools for advanced courses and to provide enrichment.

Researcher: Who was involved with the early development?

Dr. Hardman: Governor Robert Ray was in favor of developing a single statewide network because of the individual networks going up at the time by the community colleges.

Linda Schatz was an important player as well. She was instrumental in getting the ball rolling. Other people included, Richard Varne, Pam Johnson, Larry Patten and Tony Crandall at Camp Dodge.

Researcher: What general process took place to get the ICN into place?

Dr. Hardman: The group of educators had looked at various networks and determined that full motion video would be the best technology for students. With the plans for a backbone and regional centers of operation, parts I and II would place a “point of presence” in each of Iowa’s 99 counties. Bids were taken. There were three types of bids available. Purchase—the network would be owned by the state, lease to purchase—the network would be leased at first and then purchased by the state, and leased—the network would be owned by another party and the state would lease the use of it. All the bids received were to purchase the network, but they were too high. The second time

bids went out for fiber optic technology and a contract was awarded to Kiewit Technologies.

Researcher: How does the ICN compare to other telecommunications systems?

Dr. Hardman: It is the largest in the world. We are nearing 800 sites with the National Guard sites. Most other state networks are leased and none compare to the number of sites. Georgia has nearly 200, but they have compressed video, where the images are compressed. Iowa is unique with it's full motion video.

Researcher: How is the ICN financed?

Dr. Hardman: The major means of finance are revenue bonds which are issued by the state. The Star Schools Grant assisted with equipment.

GENERAL ASSEMBLY OF IOWA

Appendix B

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ICN Legislative History

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DRAFT
 January 16, 1999
FOR DISCUSSION PURPOSES ONLY
MEMORANDUM

TO: MEMBERS OF THE OVERSIGHT AND COMMUNICATIONS SUBCOMMITTEE

FROM: Mark W. Johnson

RE: ICN Legislative History and Key Dates

The statutory basis and authorization for the Iowa Communications Network (ICN) is currently contained in chapter 8D of the Iowa Code. The following key dates in the development of the ICN:

July 9, 1985. Governor signs Executive Order Number 18 establishing the Telecommunications and Information Management Council (TIM Council). The primary purpose of the TIM Council was to "develop a coordinated, cost effective, statewide telecommunications and information management plan for the State of Iowa."

June 5, 1987. Governor signs Senate File 162 establishing the Iowa Public Broadcasting Board, and the Board's Advisory Committee on the Operation of the Narrowcast System. The Board is charged to develop and adopt a state educational telecommunications design plan. The design plan was to be developed by no later than January 1, 1989, and updated at least every two years.

June 5, 1987. Governor signs Senate File 333 relating to the adoption of policies and procedures for the use of telecommunications systems and services for educational instructional purposes.

August 5, 1987. Iowa Educational Telecommunications Plan presented to the Education Uplink Study Committee created by the Legislative Council.

September 14, 1988. Iowa Public Television issues a Request For Proposal (RFP) for construction on an Iowa Educational Telecommunications Network. A Notice of Intent to

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Award is issued and subsequently challenged. No contract is entered into as a result of this RFP.

June 5, 1989. Governor signs House File 774 (Conference Committee Report passed by the Legislature on May 6, 1989). The Conference Committee Report contains a provision authorizing the construction of the Iowa Communications Network. (See Iowa Code section 8D.13 as originally enacted as section 18.136) According to the November 30, 1993, Special Report on the Iowa Communications Network from the Auditor of State, the “[p]rovisions establishing the Network were included as a result of negotiations between legislative leadership and the Governor, and had not been previously debated by the Legislature.” House File 774 establishes a standing appropriation for \$10 million for five years beginning on July 1, 1989.

House File 774 provides that prior to awarding a contract, the Department of Management and the Legislative Council must “. . . determine if the anticipated financial resources of the state are adequate to fund the expenditure during the fiscal years covered by the contract . . .” (See January 10, 1991)

December 22, 1989. First RFP (#9350) issued by the Department of General Services related to construction. Two bids are received and rejected on August 6, 1990. RFP is to be revised.

May 7, 1990. Governor signs Senate File 2280 which reduces the standing appropriation from \$10 million to \$5 million for the fiscal year beginning July 1, 1989. The Act provides for a standing appropriation of \$5 million for each fiscal year of the fiscal period beginning July 1, 1991, and ending June 30, 1996. The appropriation for the fiscal year beginning July 1, 1990, is reduced to \$31,000 which is to be used for the state’s share of the cost for the design of a disaster recovery facility to be built in conjunction with the Iowa Communications Network facility and emergency operation center (STARC Armory).

October 3, 1990. Second RFP (#51045S) issued by the Department of General Services for construction of combined educational and administrative network with reduced number of endpoints (as compared to first RFP #9350).

December 19, 1990. The Department of General Services issues a notice of Intent to Award to Kiewit Network Technologies.

January 10, 1991. Legislative Council certifies that funds are available to pay for network construction costs, subject to the following three conditions:

1. The Department of General Services not sign a contract under (Iowa Code) section 18.136 until after April 5, 1991, but continue to negotiate the terms of the contract with the vendor selected.
2. The Legislative Council’s determination that the anticipated financial resources of the state are adequate to fund the expenditure during the fiscal years covered by the contract shall be approved, delayed, or rescinded by an affirmative vote by a constitutional majority of both houses of the 74th General Assembly on or

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before April 5, 1991. (The General Assembly never took action consistent with this request although two House Resolutions were introduced.)

3. A comprehensive financial analysis of the project be performed for the Legislative Council by an independent consulting firm with expertise in telecommunications with a final report of their findings transmitted to the Council by March 15, 1991.

January 15, 1991. Department of Management certifies that funds are available to pay for network construction costs.

April 15, 1991. Department of General Services enters into construction contract with Kiewit Network Technologies for Parts I and II of the network. (Contract amount: \$73,761,798)

May 9, 1991. Governor signs Senate File 532 which reduces \$5 million standing appropriation for 1989-1990 fiscal year to \$2,142,621.

May 27, 1993. Governor signs Senate File 233 which contains a provision eliminating the statutory requirement that community colleges pay 20 percent of the construction costs of connections to the network. The Act also provides that construction of Part III may begin prior to the completion of Parts I and II.

November 30, 1993. Auditor of State issues special report on the ICN as directed by the General Assembly.

May 18, 1994. Governor signs Senate File 2089 which establishes the Iowa Telecommunications and Technology Commission (ITTC), the Education Telecommunications Council and regional councils; expands the definition of authorized users to include a hospital or physician clinic, an institution under the control of the State Board of Regents, the Judicial Department, a judicial district department of correctional services, an agency of the federal government, and a United States post office that receives a federal grant for pilot projects; and makes other changes related to the operation of the network. The Act also directs the Iowa Utilities Board to conduct a study to determine the overall impact of the ICN on the private telecommunications industry in Iowa.

May 1, 1995. Governor signs House File 461 which directs the ITTC to complete a study concerning the possible sale of the ICN. The ITTC is also directed, in consultation with the Iowa Utilities Board, to study the possible conversion of the ICN into a public utility.

May 19, 1995. Governor signs House File 482 which, in addition to making certain appropriations, excludes the cost of construction and lease costs for Parts I, II, and III in the determination of rates for the use of the network.

October 13, 1995. ITTC submits the report of the 461 Task Force analyzing structural alternatives for the ICN.

December 19, 1995. Iowa Utilities Board issues final report regarding study of ICN's overall impact on the private telecommunications industry in Iowa.

May 30, 1996. Governor signs Senate File 2147 which expands the membership of the ITTC from three to five members.

May 30, 1996. Governor signs House File 2421 which, in addition to making certain appropriations, grants access to the network to the Department of Public Safety and the Department of Public Defense to operate a shared data-only network to provide law enforcement and emergency management information to government agencies.

May 23, 1997. Governor signs House File 730 which appropriates \$40.3 million from the Rebuild Iowa Infrastructure Fund for the fiscal years beginning July 1, 1997, and July 1, 1998, for Part III connections. The Act also requests the Legislative Council to establish an interim study committee to study the issues relating to privatizing the management of the Iowa Communications Network.

April 13, 1998. Governor signs House File 2476 which provides that the ITTC is to provide for the construction of a connection to the network for the Quad Cities Graduate Center. The graduate center is responsible for the costs of the connection and is to pay hourly rates sufficient so that there is no state subsidy.

May 21, 1998. Governor signs Senate File 2418 which appropriates \$75,000 to the Legislative Council to retain a consultant to study and review potential options related to the disposition of the ICN, and potential options related to a change in the management structure of the ICN. The Act also directs the ITTC to file a quarterly report electronically with the Legislative Fiscal Bureau including information identifying each state agency or department for which equipment is purchased, the equipment purchased, the cost of the equipment, and the amount received from the state agency or department as reimbursement for such purchase.

January 11, 1999. Ultrapro International, Inc. (consultant) submits report concerning evaluation of potential options related to the disposition of the ICN.

Notes from Meeting with Dick Stoffelbehn

Researcher: What was your role in the ICN development?

Dick Stoffelbehn: I was involved with the classroom design.

Researcher: What can you tell me about the early development of the ICN?

Dick Stoffelbehn: Linda Schatz was a primary driver of the project. Don Severaide was also an instrumental player. Linda wanted the classroom to be super simple. She wanted the user to be able to walk into the classroom and flip a switch and be ready to use the Network.

Researcher: Why did Iowa Public Television become involved?

Dick Stoffelbehn: There was interest in a statewide network. IPTV had the capabilities to broadcast to more than one channel at a time. The other community college networks could not.

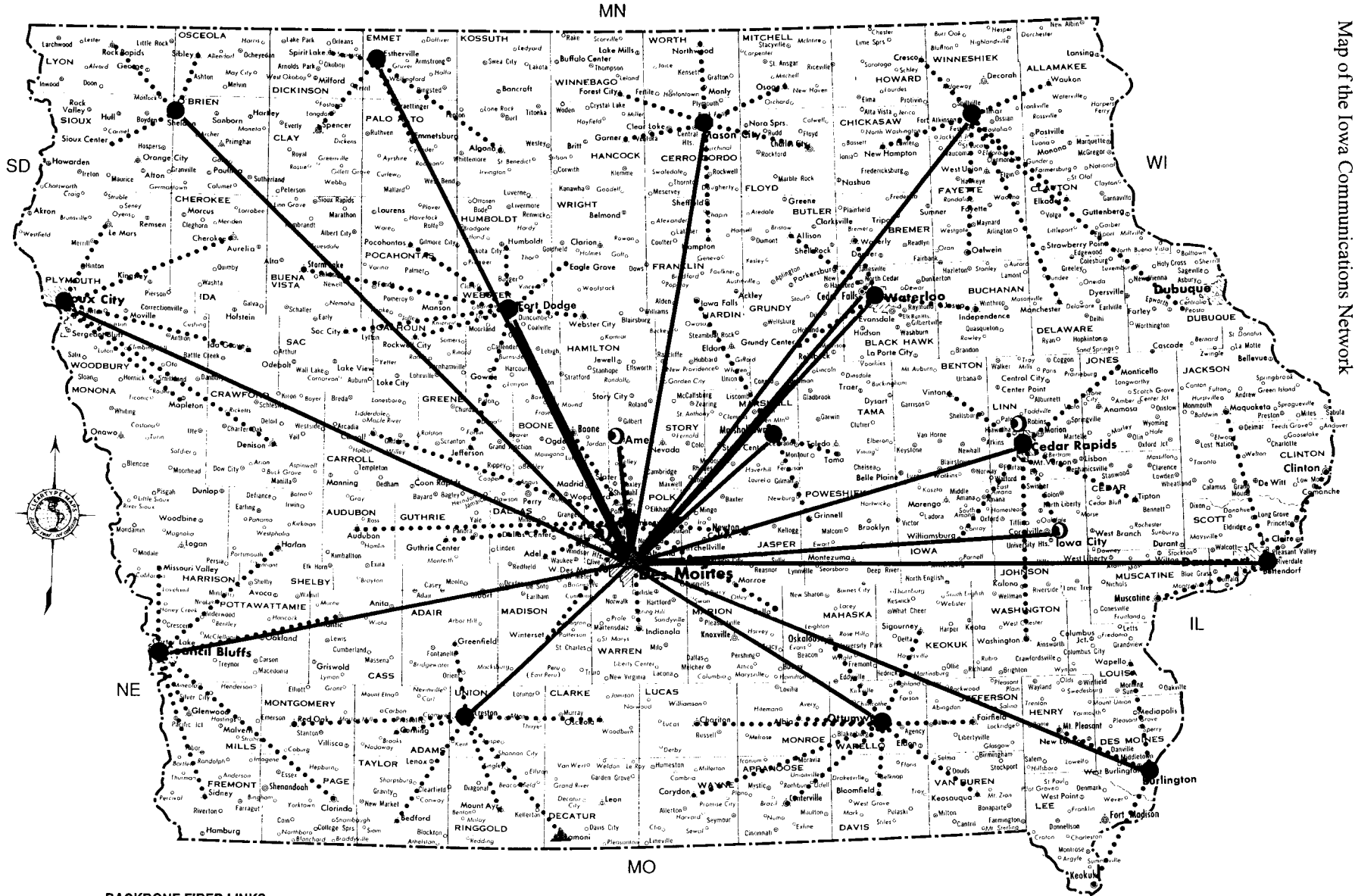
Researcher: How was the classroom developed?

Dick Stoffelbehn: A group of technicians brainstormed. We went to view what was available for technology and decided that simplicity was important. We wanted the equipment to be replaceable by the consumer. It was important for the consumer to be able to get replacements easily, without having to special order items. Sony won the bid for the equipment after we set up specifications. We did not want there to be a set up period for the user. In Oregon, it is necessary with their system to set it up one-half hour before you plan to use it. Linda, along with the rest of us, wanted anyone to be able to come in off the street and turn a switch and be ready to go.

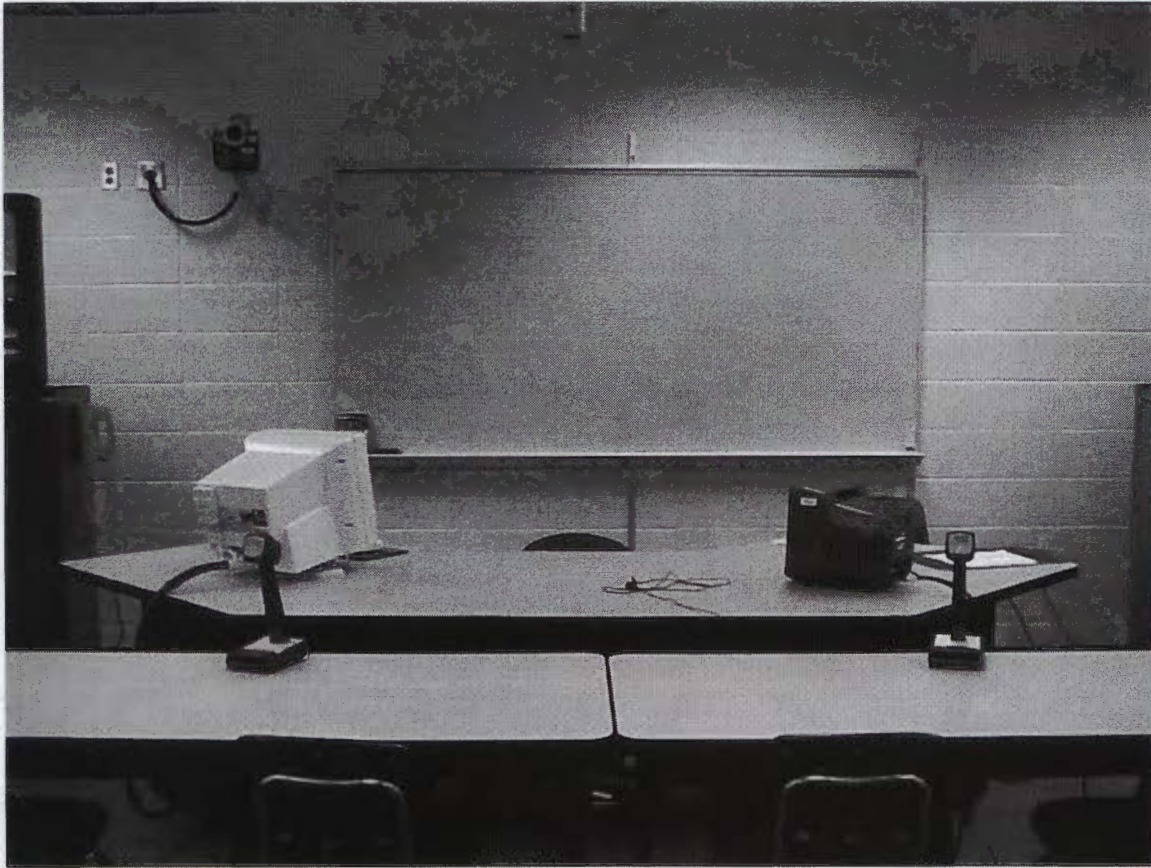
Researcher: Why does the TV at the back of the room not go black, or show the classroom, when a session is not in progress?

Dick Stufflebehn: The mindset of the consumer is that when a television is black, it is broken. We wanted the users to know that the system is working properly at all times, even when there is not a session going. Therefore, we froze the last image of the last program, to view on the back monitor. If there is no image on the back screen, then you know that the system is not working properly.

ICN Iowa Communications Network



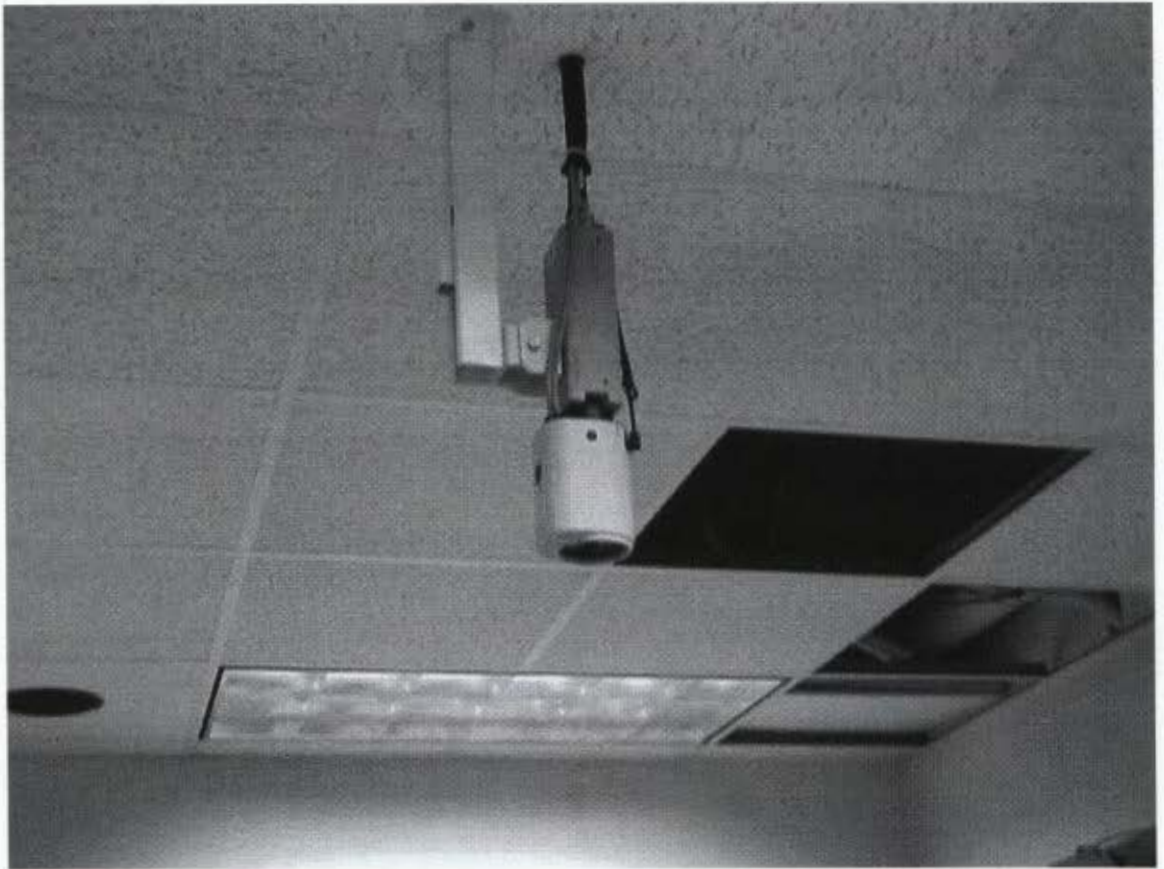
- BACKBONE FIBER LINKS
- REGIONAL FIBER LINKS
- REGIONAL SWITCHING CENTERS
- NETWORK SWITCHING CENTER
- SATELLITE UPLINKS
- ▲ INDEPENDENT COLLEGES & UNIVERSITIES



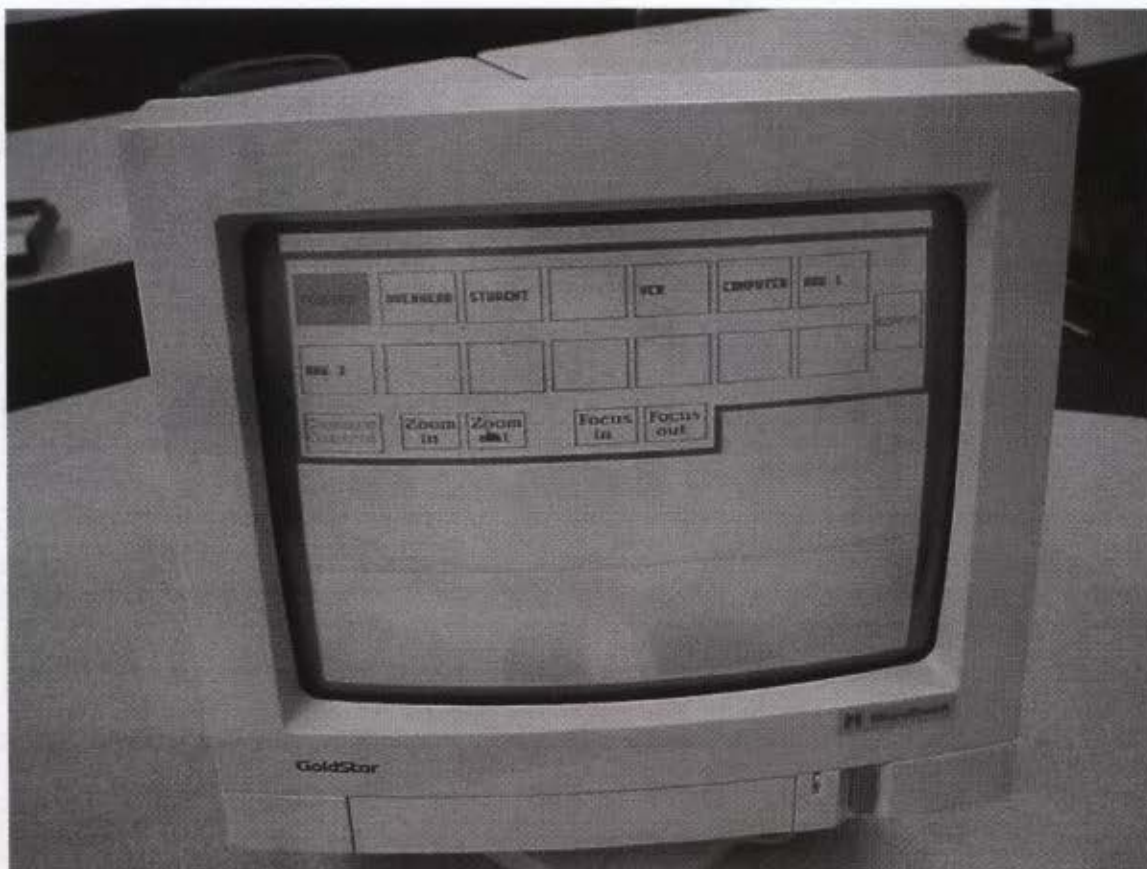
This is the view of the front podium at the Bondurant-Farrar Junior Senior High ICN room. The computer monitor on the left, is the control center of the session. This enables the instructor to change the cameras, change the view, use a computer or VCR, or zoom in and out during the session. The microphone on the desk is used by the presenter, or the sound will not be transmitted over the network. The camera on the wall, to the left, focuses on the students in the room. Another camera over the desk can be used for overhead views.



Front camera



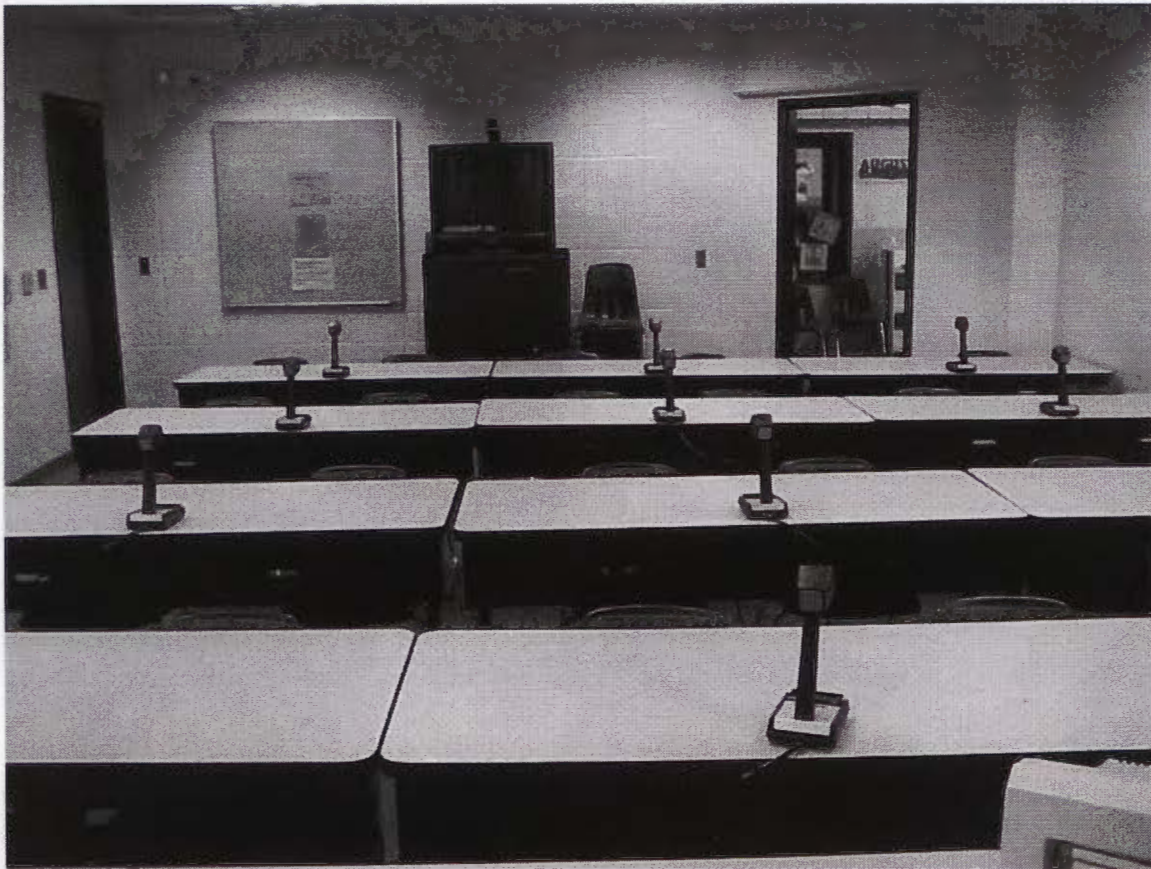
Overhead camera



This monitor is the control center for the session. This enables the teacher to change the views, and utilize other forms of technology during the course of the session.



This is a front television monitor. This allows the students at the originating site to view the same material which the remote students are viewing. Attached to the unit, is the "fiber phone". This phone enables the user to contact an engineer for assistance if there is a problem.



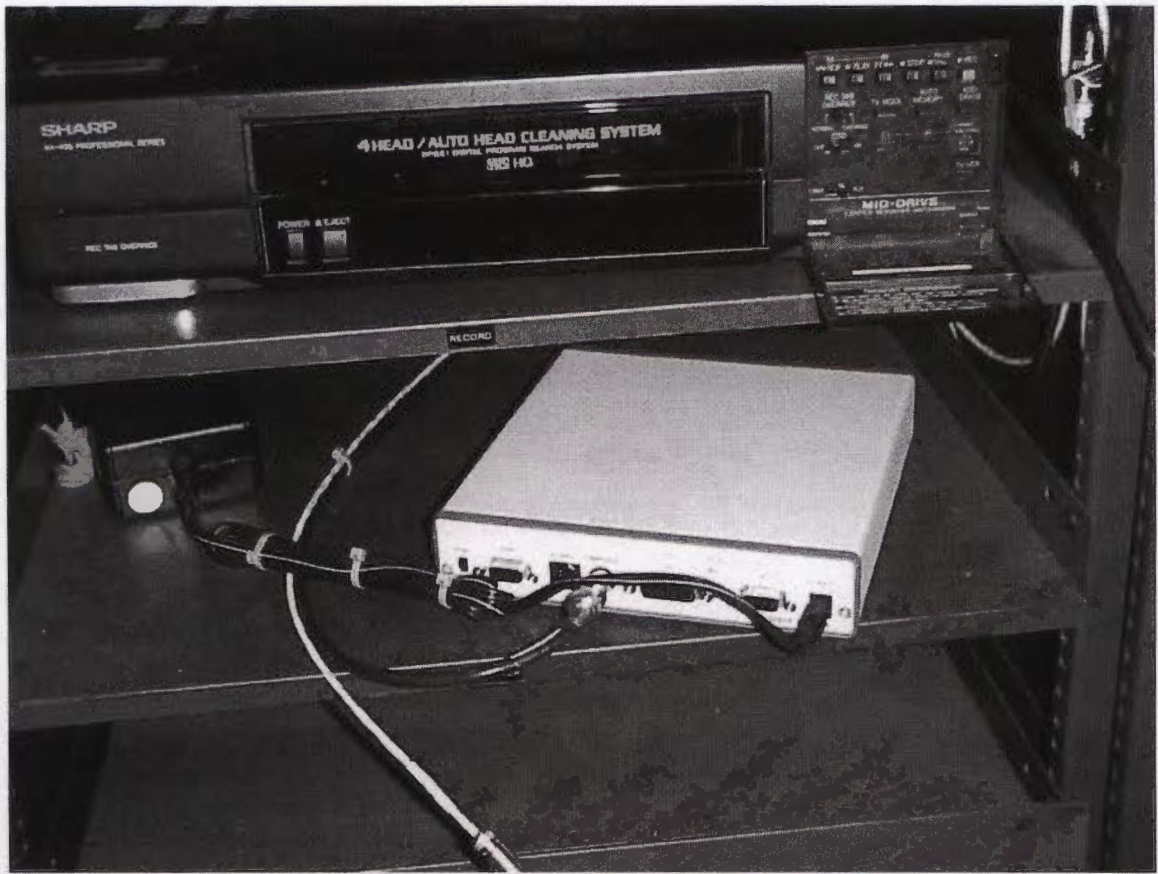
This is a photo of the ICN room located at Bondurant-Farrar Junior Senior High School. Note the rear television monitor. This monitor enables the instructor to view the students or participants at the remote sites. The rear camera also enables the students to view the teacher.



The students sit at these tables in the ICN room. In order to interact with other participants, they must use the microphones, which are on the desks. Without using the microphones, there will be no sound transmitted over the network to the other participants.



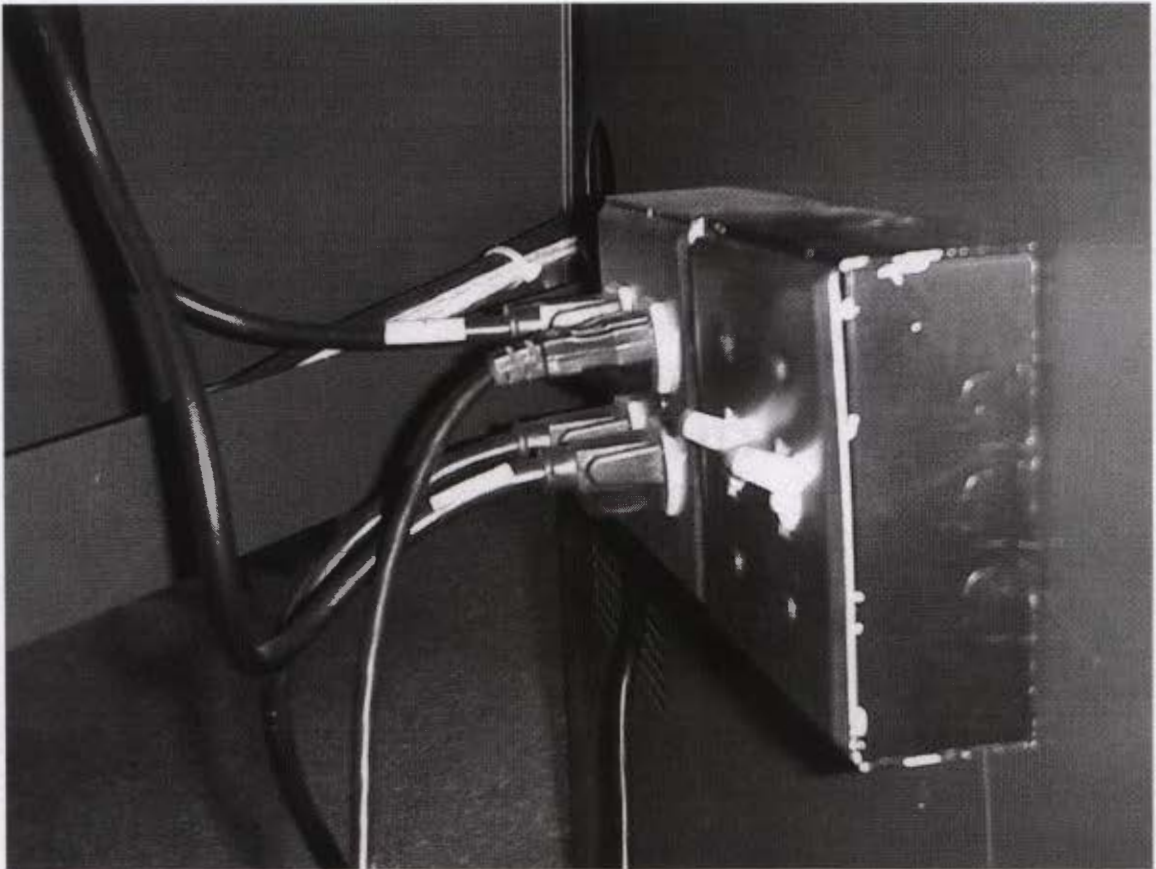
Fiber Phone



The “scando” box allows the instructor to use a computer during the session. The user must select “computer” on the control monitor, and connect the computer to the device.



These are two VCRs at the Bondurant-Farrar site. The player located on the top, is for playback only. The Sharp VCR is capable of taping a session. It will tape anything that appears on the two front monitors.



These two switches make the entire system active for the site.

CHAPTER 8B

MIDWEST NUCLEAR COMPACT

Transferred to chapter 15D in Code 1993

CHAPTER 8C

MIDWEST INTERSTATE LOW-LEVEL RADIOACTIVE WASTE COMPACT

Transferred to chapter 457B in Code 1993

CHAPTER 8D

IOWA COMMUNICATIONS NETWORK

Appropriations for connection of Part III users;
legislative intent regarding plan for additional connections;
construction and state ownership of identified sites;
metro connections: 95 Acts, ch 217; 96 Acts, ch 1209

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| 8D.1 | Purpose. | 8D.8 | Scheduling for authorized users. |
| 8D.2 | Definitions. | 8D.9 | Certification of use — network use by certain authorized users. |
| 8D.3 | Iowa telecommunications and technology commission — members — duties. | 8D.10 | Report of savings by state agencies. |
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| 8D.7 | Telecommunications advisory committee. | 8D.14 | Iowa communications network fund. |

8D.1 Purpose.

It is the intent of the general assembly that communications of state government be co-ordinated to effect maximum practical consolidation and joint use of communications services.

[C71, 73, §8A.1; C75, 77, 79, 81, §18.132]
83 Acts, ch 126, §3; 94 Acts, ch 1184, §29
C95, §8D.1

8D.2 Definitions.

When used in this chapter, unless the context otherwise requires:

1. "Commission" means the Iowa telecommunications and technology commission established in section 8D.3.

2. "Director" means the executive director appointed pursuant to section 8D.4.

3. "Network" means the Iowa or state communications network.

4. "Private agency" means an accredited non-public school, a nonprofit institution of higher education eligible for tuition grants, or a hospital licensed pursuant to chapter 135B or a physician clinic to the extent provided in section 8D.13, subsection 16.

5. "Public agency" means a state agency, an institution under the control of the board of regents, the judicial department as provided in section 8D.13, subsection 17, a school corporation, a city library, a regional library as provided in chapter 256, a county library as provided in chapter 336, or a judicial district department of correctional services established in section 905.2, to the extent provided in section 8D.13, subsection 15, an agency of the federal government, or a United States post office which receives a federal grant for pilot and demonstration projects.

6. "State communications" refers to the transmission of voice, data, video, the written word or other visual signals by electronic means but does not include radio and television facilities and other educational telecommunications systems and services including narrowcast and broadcast systems under the public broadcasting division of the department of education, department of transportation distributed data processing and mobile radio network, or law enforcement communications systems.

[C71, 73, §8A.2; C75, 77, 79, 81, §18.133]

83 Acts, ch 126, §4, 5; 86 Acts, ch 1245, §308,

2049; 87 Acts, ch 211, §1; 89 Acts, ch 319, §31; 93 Acts, ch 48, §8; 94 Acts, ch 1184, §3, 4, 29
C95, §8D.2

8D.3 Iowa telecommunications and technology commission — members — duties.

1. *Commission established.* A telecommunications and technology commission is established with the sole authority to supervise the management, development, and operation of the network and ensure that all components of the network are technically compatible. The commission shall ensure that the network operates in an efficient and responsible manner consistent with the provisions of this chapter for the purpose of providing the best economic service attainable to the network users consistent with the state's financial capacity. The commission shall ensure that educational users and the use, design, and implementation for educational applications be given the highest priority concerning use of the network. The commission shall provide for the centralized, coordinated use and control of the network.

2. *Members.* The commission is composed of five members appointed by the governor and subject to confirmation by the senate. Members of the commission shall not serve in any manner or be employed by an authorized user of the network or by an entity seeking to do or doing business with the network. The governor shall appoint a member as the chairperson of the commission from the five members appointed by the governor, subject to confirmation by the senate. Members of the commission shall serve six-year staggered terms as designated by the governor and appointments to the commission are subject to the requirements of sections 69.16, 69.16A, and 69.19. Vacancies shall be filled by the governor for the duration of the unexpired term. The salary of the members of the commission shall be twelve thousand dollars per year, except that the salary of the chairperson shall be seventeen thousand dollars per year. Members of the commission shall also be reimbursed for all actual and necessary expenses incurred in the performance of duties as members. Meetings of the commission shall be held at the call of the chairperson of the commission. In addition to the members appointed by the governor, the auditor of state or the auditor's designee shall serve as a nonvoting, ex officio member of the commission.

The benefits and salary paid to the members of the commission shall be adjusted annually equal to the average of the annual pay adjustments, expense reimbursements, and related benefits provided under collective bargaining agreements negotiated pursuant to chapter 20.

3. *Duties.* The commission shall do all of the following:

a. Enter into agreements pursuant to chapter 28E as necessary and appropriate for the purposes of the commission. However, the commission shall

not enter into an agreement with an unauthorized user or any other person pursuant to chapter 28E for the purpose of providing such user or person access to the network.

b. Adopt rules pursuant to chapter 17A as deemed appropriate and necessary, and directly related to the implementation and administration of the duties of the commission. The commission, in consultation with the department of general services, shall also adopt and provide for standard communications procedures and policies relating to the use of the network which recognize, at a minimum, the need for reliable communications services.

c. Establish an appeal process for review by the commission of a scheduling conflict decision, including a scheduling conflict involving an educational user, or the establishment of a fee associated with the network upon the request of a person affected by such decision or fee. A determination made by the commission pursuant to this paragraph shall be final.

d. Review and approve for adoption, rules as proposed and submitted by an authorized user group necessary for the authorized user group's access and use of the network. The commission may refuse to approve and adopt a proposed rule, and upon such refusal, shall return the proposed rule to the respective authorized user group proposing the rule with a statement indicating the commission's reason for refusing to approve and adopt the rule.

e. (1) Develop and issue for response all requests for proposals for any construction, installation, repair, maintenance, or equipment and parts necessary for the network. In preparing the request for proposals, the commission shall do all of the following:

(a) Review existing requests for proposals related to the network.

(b) Consider and evaluate all competing technologies which could be used in any construction, installation, repair, or maintenance project.

(c) Allow flexibility for proposals to be submitted in response to a request for proposals issued by the commission such that any qualified provider may submit a bid on a site-by-site basis, or on a merged area or defined geographic area basis, or both, and by permitting proposals to be submitted for use of competing or alternative technologies in each defined area.

(d) Ensure that rural communities have access to comparable services to the services provided in urban areas resulting from any plans to construct, install, repair, or maintain any part of the network.

(2) In determining which proposal to recommend to the general assembly to accept, consider what is in the long-term best interests of the citizens of the state and the network, and utilize, if possible, the provision of services with existing service providers consistent with those best inter-

ests. In determining what is in the long-term best interests of the citizens of the state and the network, the commission, at a minimum, shall consider the cost to taxpayers of the state.

(3) Deliver a written report and all proposals submitted in response to the request for proposals for Part III to the general assembly no later than January 1, 1995. The commission shall not enter into any agreement related to such proposals without prior authorization by a constitutional majority of each house of the general assembly and approval by the governor.

f. Annually prepare a written five-year financial plan for the network which shall be provided to the general assembly and the governor no later than January 15 of each year. The plan shall include estimates for income and expenses for the network for the five-year period and the actual income and expenses for the preceding fiscal year. The plan shall include the amount of general fund appropriations to be requested for the payment of operating expenses and debt service. The plan shall also include any recommendations of the commission related to changes in the system and other items as deemed appropriate by the commission. The recommendations of the commission contained in the plan shall include a detailed plan for the connection of all public schools to the network, including a discussion and evaluation of all potential financing options, an estimate of all costs incurred in providing such connections, and a schedule for completing such connections, including the anticipated final completion date for such connections.

g. Review existing maintenance contracts and past contracts to determine vendor capability to perform the obligations under such contracts. The commission shall report to the general assembly prior to January 1 of each year as to the performance of all vendors under each contract and shall make recommendations concerning continued funding for the contracts.

h. Pursue available opportunities to cooperate and coordinate with the federal government for the use and potential expansion of the network and for the financing of any such expansion.

i. Evaluate existing and projected rates for use of the system and ensure that rates are sufficient to pay for the operation of the system excluding the cost of construction and lease costs for Parts I, II, and III. The commission shall establish all hourly rates to be charged to all authorized users for the use of the network. A fee established by the commission to be charged to a hospital licensed pursuant to chapter 135B, a physician clinic, or the federal government shall be at an appropriate rate so that, at a minimum, there is no state subsidy related to the costs of the connection or use of the network related to such user.

j. Make recommendations to the general as-

sembly, as deemed appropriate by the commission, concerning the operation of the network.

94 Acts, ch 1184, §5; 95 Acts, ch 210, §1; 96 Acts, ch 1200, §1

Confirmation, see §2.32

Continuation of rules in effect on May 18, 1994; 94 Acts, ch 1184, §30

Initial appointments of members added in 1996; 96 Acts, ch 1200, §3
Subsection 2 amended

8D.4 Executive director appointed.

The commission shall appoint an executive director of the commission, subject to confirmation by the senate. Such individual shall not serve as a member of the commission. The executive director shall serve at the pleasure of the commission. The executive director shall be selected primarily for administrative ability and knowledge in the field, without regard to political affiliation. The governor shall establish the salary of the executive director within range nine as established by the general assembly. The salary and support of the executive director shall be paid from funds deposited in the Iowa communications network fund.

94 Acts, ch 1184, §6

8D.5 Education telecommunications council established — regional councils established.

1. An education telecommunications council is established. The council consists of eighteen members and shall include the following: two persons appointed by the state board of regents; two persons appointed by the Iowa association of community college trustees; two persons appointed by the area education agency boards; two persons appointed by the Iowa association of school boards; two persons appointed by the school administrators of Iowa; two persons appointed by the Iowa association of independent colleges and universities; two persons appointed by the Iowa state education association; three persons appointed by the director of the department of education including one person representing libraries and one person representing the Iowa association of nonpublic school administrators; and one person appointed by the administrator of the public broadcasting division of the department of education. The council shall establish scheduling and site usage policies for educational users of the network, coordinate the activities of the regional telecommunications councils, and develop proposed rules and changes to rules for recommendation to the commission. The council shall also recommend long-range plans for enhancements needed for educational applications. Administrative support and staffing for the council shall be provided by the department of education.

2. A regional telecommunications council is established in each of the merged areas established pursuant to chapter 260C consisting of nine members, including one member each to be appointed

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by each of the appointing authorities under subsection 1. Additional ex officio, nonvoting members may also be appointed to the regional telecommunications councils. The regional telecommunications councils shall advise the education telecommunications council on the assessment of local educational needs, and the coordination of program activities including scheduling. The community college located in the merged area of a regional telecommunications council shall staff and facilitate the activities of the council. The community college and the council may enter into a chapter 28E agreement for such arrangement.

3. The community college in each of the merged areas shall be responsible for switching of Parts II and III of the network and for facilitating the organization and meetings of the regional telecommunications council.

94 Acts, ch 1184, §7

8D.6 Advisory groups established.

1. The commission shall establish an advisory group to examine the use of the network for telemedicine applications. The advisory group shall consist of representatives of hospitals and other health care facilities as determined by the commission.

2. The commission may establish other advisory committees as necessary representing authorized users of the network.

94 Acts, ch 1184, §8

8D.7 Telecommunications advisory committee.

A telecommunications advisory committee is established to advise the commission on telecommunications matters. The commission shall appoint five members to the advisory committee who shall represent specific telecommunications industries or persons with technical expertise related to the network.

94 Acts, ch 1184, §9

8D.8 Scheduling for authorized users.

Except as provided in section 8D.5, an authorized user is responsible for all scheduling of the use of the authorized user's facility. A person who disputes a scheduling decision of such user may petition the commission for a review of such decision pursuant to section 8D.3, subsection 3, paragraph "c".

94 Acts, ch 1184, §10

8D.9 Certification of use — network use by certain authorized users.

1. A private or public agency, other than a state agency, local school district or nonpublic school, city library, regional library, county library, judicial department, judicial district department of correctional services, agency of the federal government, a hospital or physician clinic, or a post office

authorized to be offered access pursuant to this chapter as of May 18, 1994, shall certify to the commission no later than July 1, 1994, that the agency is a part of or intends to become a part of the network. Upon receiving such certification from an agency not a part of the network on May 18, 1994, the commission shall provide for the connection of such agency as soon as practical. An agency which does not certify to the commission that the agency is a part of or intends to become a part of the network as required by this subsection shall be prohibited from using the network.

2. a. A private or public agency which certifies to the commission pursuant to subsection 1 that the agency is a part of or intends to become a part of the network shall use the network for all video, data, and voice requirements of the agency unless the private or public agency petitions the commission for a waiver and one of the following applies:

(1) The costs to the authorized user for services provided on the network are not competitive with the same services provided by another provider.

(2) The authorized user is under contract with another provider for such services, provided the contract was entered into prior to April 1, 1994. The agency shall use the network for video, data, and voice requirements which are not provided pursuant to such contract.

(3) The authorized user has entered into an agreement with the commission to become part of the network prior to June 1, 1994, which does not provide for use of the network for all video, data, and voice requirements of the agency. The commission may enter into an agreement described in this subparagraph upon a determination that the use of the network for all video, data, and voice requirements of the agency would not be in the best interests of the agency.

b. A private or public agency shall petition the commission for a waiver of the requirement to use the network as provided in paragraph "a", if the agency determines that paragraph "a", subparagraph (1) or (2) applies. The commission shall establish by rule a review process for determining, upon application of an authorized user, whether paragraph "a", subparagraph (1) or (2) applies. An authorized user found by the commission to be under contract for such services as provided in paragraph "a", subparagraph (2), shall not enter into another contract upon the expiration of such contract, but shall utilize the network for such services as provided in this section unless paragraph "a", subparagraph (1), applies.

94 Acts, ch 1184, §11

8D.10 Report of savings by state agencies.

A state agency which is a part of the network shall annually provide a written report to the general assembly certifying the identified savings associated with the state agency's use of the network. The report shall be delivered on or before January 15 for the previous fiscal year of the state agency.

94 Acts, ch 1184, §12

Appendix F
8D.11 Powers — facilities — leases.
Code of Iowa

1. The commission may purchase, lease, and improve property, equipment, and services for telecommunications for public and private agencies and may dispose of property and equipment when not necessary for its purposes. However, the commission shall not enter into a contract for the purchase, lease, or improvement of property, equipment, or services for telecommunications pursuant to this subsection in an amount greater than one million dollars without prior authorization by a constitutional majority of each house of the general assembly, or approval by the legislative council if the general assembly is not in session. The commission shall not issue any bonding or other long-term financing arrangements as defined in section 12.30, subsection 1, paragraph "b". Real or personal property to be purchased by the commission through the use of a financing agreement shall be done in accordance with the provisions of section 12.28, provided, however, that the commission shall not purchase property, equipment, or services for telecommunications pursuant to this subsection in an amount greater than one million dollars without prior authorization by a constitutional majority of each house of the general assembly, or approval by the legislative council if the general assembly is not in session.

2. The commission also shall not provide or resell communications services to entities other than public and private agencies. The public or private agency shall not provide communication services of the network to another entity unless otherwise authorized pursuant to this chapter. The commission may arrange for joint use of available services and facilities, and may enter into leases and agreements with private and public agencies with respect to the Iowa communications network, and public agencies are authorized to enter into leases and agreements with respect to the network for their use and operation. Rentals and other amounts due under the agreements or leases entered into pursuant to this section by a state agency are payable from funds annually appropriated by the general assembly or from other funds legally available. Other public agencies may pay the rental costs and other amounts due under an agreement or lease from their annual budgeted funds or other funds legally available or to become available.

3. This section comprises a complete and independent authorization and procedure for a public agency, with the approval of the commission, to enter into a lease or agreement and this section is not a qualification of any other powers which a public agency may possess and the authorizations and powers granted under this section are not subject to the terms, requirements, or limitations of any other provisions of law, except that the commission must comply with the provisions of section 12.28 when entering into financing agreements for the purchase of real or personal property. All mon-

neys received by the commission from agreements and leases entered into pursuant to this section with private and public agencies shall be deposited in the Iowa communications network fund.

4. A political subdivision receiving communications services from the state as of April 1, 1986, may continue to do so but communications services shall not be provided or resold to additional political subdivisions other than a school corporation, a city library, a regional library as provided in chapter 256, and a county library as provided in chapter 336. The rates charged to the political subdivision shall be the same as the rates charged to state agencies.

86 Acts, ch 1245, §309

C87, §18.134

87 Acts, ch 233, §131; 89 Acts, ch 319, §32; 93 Acts, ch 48, §9; 94 Acts, ch 1184, §13, 29

C95, §8D.11

96 Acts, ch 1177, §1

Subsection 1 amended and divided into subsections 1-3
 Former subsection 2 renumbered as 4

8D.12 Disposition of network — approval of general assembly and governor.

Notwithstanding any provision to the contrary, the commission or the department of general services shall not sell, lease, or otherwise dispose of the network without prior authorization by a constitutional majority of each house of the general assembly and approval by the governor.

94 Acts, ch 1184, §14

8D.13 Iowa communications network.

1. Moneys in the Iowa communications network fund are appropriated to the Iowa telecommunications and technology commission for purposes of providing financing for the procurement, operation, and maintenance of the Iowa communications network with sufficient capacity to serve the video, data, and voice requirements of the educational telecommunications system consisting of Part I, Part II, and Part III, and other public and private agencies.

2. For purposes of this section, unless the context otherwise requires:

a. "Part I" means the communications connections between central switching and institutions under the control of the board of regents, nonprofit institutions of higher education eligible for tuition grants, and the regional switching centers for the remainder of the network.

b. "Part II" means the communications connections between the regional switching centers and the secondary switching centers.

c. "Part III" means the communications connection between the secondary switching centers and the agencies defined in section 8D.2, subsections 4 and 5, excluding state agencies, institutions under the control of the board of regents, nonprofit institutions of higher education eligible for tuition grants, and the judicial department, judicial district departments of correctional services, hospi-

tals and physician clinics, agencies of the federal government, and post offices.

3. The financing for the procurement costs for the entirety of Part I except for the communications connections between central switching and institutions under the control of the board of regents, and nonprofit institutions of higher education eligible for tuition grants, and for the video, data, and voice capacity for state agencies and for Part II and Part III, shall be provided by the state. The financing for the procurement and maintenance costs for Part III shall be provided by the state. A local school board, governing authority of a nonpublic school, or an area education agency board may elect to provide one hundred percent of the financing for the procurement and maintenance costs for Part III to become part of the network. The basis for the amount of state financing is one hundred percent of a single interactive audio and interactive video connection for Part III, and such data and voice capacity as is necessary. If a school board, governing authority of a nonpublic school, or area education agency board elects to provide one hundred percent of the financing for the leasing costs for Part III, the school district or area education agency may become part of the network as soon as the network can reasonably connect the district or agency. A local school board, governing authority of a nonpublic school, or an area education agency board may also elect not to become part of the network. Construction of Part III, related to a school board, governing authority of a nonpublic school, or area education agency board which provides one hundred percent of the financing for the leasing costs for Part III, may proceed as determined by the commission and consistent with the purpose of this chapter.

4. The commission shall develop the requests for proposals that are needed for the Iowa communications network with sufficient capacity to serve the video, data, and voice requirements of state agencies and for educational telecommunications applications. The commission shall develop a request for proposals for each of the systems that will make up the network. The commission may develop a request for proposals for each definitive component of the network or the commission may provide in the request for proposals for each such system that separate contracts may be entered into for each definitive component covered by the request for proposals. The requests for proposals may be for the purchase, lease-purchase, or lease of the component parts of the network consistent with the provisions of this chapter, may require maintenance costs to be identified, and the resulting contract may provide for maintenance for parts of the network. The master contract may provide for electronic classrooms, satellite equipment, receiving equipment, studio and production equipment, and other associated equipment as required.

5. The state shall lease all fiberoptic cable facilities or facilities with DS-3 capacity for Part III

connections for which state funding is provided. The state shall lease all fiberoptic cable facilities or facilities with DS-3 or DS-1 capacity for the judicial department, judicial district department of correctional services, and state agency connections for which state funding is provided. Such facilities shall be leased from qualified providers. The state shall not own such facilities, except for those facilities owned by the state as of January 1, 1994.

The lease provisions of this subsection do not apply to a school district which elects to provide one hundred percent of the financing for the district's connection.

6. It is the intent of the general assembly that during the implementation of Parts I and II of the system, the department of general services shall employ a consultant to report to it on the impact of changing technology on the potential cost and capabilities of the system. It is also the intent of the general assembly that the department of education shall study new techniques in distant teaching. These reports shall be made available to the general assembly.

7. The commission shall be responsible for the network design and shall be responsible for the implementation of each component of the network as it is incorporated into the network. The final design selected shall optimize the routing for all users in order to assure maximum utilization by all agencies of the state. Efficiencies achieved in the implementation of the network shall be used to fund further implementation and enhancement of the network, and shall be considered part of the operational cost of the network. The commission shall be responsible for all management, operations, control switching, diagnostics, and maintenance functions of network operations as provided in this chapter. The performance of these duties is intended to provide optimal utilization of the facilities, and the assurance that future growth requirements will be provided for, and that sufficient network capacity will be available to meet the needs of all users.

8. The education telecommunications council shall review all requests for grants for educational telecommunications applications, if they are a part of the Iowa communications network, to ensure that the educational telecommunications application is consistent with the telecommunications plan. All other grant requests shall be reviewed as determined by the commission. If the education telecommunications council finds that a grant request is inconsistent with the telecommunications plan, the grant request shall not be allowed.

9. The procurement and maintenance of electronic equipment including, but not limited to, master receiver antenna systems, studio and production equipment, and broadcast system components shall be provided for under the commission's contracts. The Iowa public broadcasting board and other educational entities within the state have the option to use their existing or replacement re-

sources and agreements in the operation and maintenance of these systems.

10. In addition to the other evaluation criteria specified in the request for proposals issued pursuant to this section, the commission, in evaluating proposals, shall base up to two percent of the total possible points on the public benefit that can be derived from a given proposal due to the increased private telecommunications capacity available to Iowa citizens located in rural Iowa. For purposes of this subsection, an area of the state is considered rural if it is not part of a federally designated standard metropolitan statistical area.

11. The fees charged for use of the network shall be based on the ongoing operational costs of the network only.

12. The commission, on its own or as recommended by an advisory committee of the commission and approved by the commission, shall permit a fee to be charged by a receiving site to the originator of the communication provided on the network. The fee charged shall be for the purpose of recovering the operating costs of a receiving site. The fee charged shall be reduced by an amount received by the receiving site pursuant to a state appropriation for such costs, or federal assistance received for such costs. Fees established under this subsection shall be paid by the originator of the communication directly to the receiving site. For purposes of this section, "operating costs" include the costs associated with the management or coordination, operations, utilities, classroom, equipment, maintenance, and other costs directly related to providing the receiving site.

13. The auditor of state shall, no less than annually, examine the financial condition and transactions of the commission as provided in chapter 11. A copy of the auditor's report concerning such examination shall be provided to the general assembly.

14. Access to the network shall be offered on an equal basis to public and private agencies under subsection 8 if the private agency contributes an amount toward the match requirement comparable to its share of use for the part of the system in which it participates.

15. Access to the network shall be offered to the judicial district departments of correctional services established in section 905.2, provided that such departments contribute an amount consistent with their share of use for the part of the system in which the departments participate, as determined by the commission.

16. Access shall be offered to hospitals licensed pursuant to chapter 135B and physician clinics for diagnostic, clinical, consultative, data, and educational services for the purpose of developing a comprehensive, statewide telemedicine network, to an agency of the federal government, and to a post of-

fice defined as a public agency pursuant to section 8D.2, subsection 5. A hospital, physician clinic, an agency of the federal government, or a post office defined as a public agency pursuant to section 8D.2, subsection 5, shall be responsible for all costs associated with becoming a part of the network.

17. Access shall be offered to the judicial department provided that the department contributes an amount consistent with the department's share of use for the part of the network in which the department participates, as determined by the commission.

18. Notwithstanding chapter 476, the provisions of chapter 476 shall not apply to a public utility in furnishing a telecommunications service or facility to the commission for the Iowa communications network or to any authorized user of the Iowa communications network for such authorized user's connection to the network.

19. Access to the network shall be offered to the department of public safety and the department of public defense for the purpose of establishing and operating a shared data-only network providing law enforcement, emergency management, disaster service, emergency warning, and other emergency information dissemination services to federal, state, and local law enforcement agencies as provided in section 80.9, and local emergency management offices established under the authority of sections 29C.9 and 29C.10.

89 Acts, ch 319, §33

CS89, §18.136

90 Acts, ch 1266, §35; 90 Acts, ch 1272, §34; 92 Acts, ch 1246, §24; 93 Acts, ch 179, §16; 94 Acts, ch 1184, §15-20, 29

C95, §8D.13

95 Acts, ch 20, §1; 96 Acts, ch 1034, §1; 96 Acts, ch 1218, §27

Appropriations for connection of Part III users; legislative intent regarding plan for additional connections; construction and state ownership of identified sites; metro connections; 95 Acts, ch 217; 96 Acts, ch 1209

Subsection 12 amended
NEW subsection 19

8D.14 Iowa communications network fund.

There is created in the office of the treasurer of state a fund to be known as the Iowa communications network fund under the control of the Iowa telecommunications and technology commission. There shall be deposited into the Iowa communications network fund proceeds from bonds issued for purposes of projects authorized pursuant to section 8D.13, funds received from leases pursuant to section 8D.11, and other moneys by law credited to or designated by a person for deposit into the fund.

89 Acts, ch 319, §34

CS89, §18.137

90 Acts, ch 1266, §36; 91 Acts, ch 264, §610; 94 Acts, ch 1184, §21, 29

C95, §8D.14

95 Acts, ch 210, §7

Table 1. Classes Scheduled over the ICN in Merged Area Eleven

Class Name	Origination Site/Enrollment	Remote Sites/Enrollment	Semester
AP French	Johnston/3657 students	WDM Dowling/	Fall 98
Calculus	Manning/ 545 students	Roland-Story/1127	Fall 98
Chinese I	WDSM Dowling/	Ames/4896	Fall 98
Chinese I	WDSM Dowling/	Johnston/3657	Fall 98
Chinese II	WDSM Dowling/	Ames/4896	Fall 98
Chinese II	WDSM Dowling/	Johnston/3657	Fall 98
French I	George-Little Rock	Audubon/815	Fall 98
French I	George-Little Rock	Saydel/1528	Fall 98
French II	Melcher-Dallas/500	Manning/545	Fall 98
French II	Melcher-Dallas/500	Pleasantville/703	Fall 98
Life Science	Victor-HLV	Adair-Casey/440	Fall 98
Intro to Computing	Sioux City CC	Manning/545	Fall 98
Math	Ames ISU	North Polk/897	Fall 98
Russian I	Marshalltown	Ames/4896	Fall 98
Spanish I	Pleasantville/703	Murray	Fall 98
Spanish III	Greenfield	Martensdale-St Mary/540	Fall 98
Spanish IV	Greenfield	Martensdale-St Mary/540	Fall 98
World Civilization	Oskaloosa	Pella Christian	Fall 98
Calculus	Manning/ 545 students	Roland-Story/1127	Spring 99
Calculus	Greenfield	Martensdale-St Mary/540	Spring 99
French I	George-Little Rock	Audubon/815	Spring 99
French I	George-Little Rock	Saydel/1528	Spring 99
French II	Melcher-Dallas/500	Manning/545	Spring 99
French II	Melcher-Dallas/500	Pleasantville/703	Spring 99
German	Mt Vernon	Roland-Story/1127	Spring 99
Intro to Computing	Sioux City CC	Manning/545	Spring 99
Intro to Psychology	Oskaloosa	Pella Christian	Spring 99
Intro to Psychology	Oskaloosa	Perry/1769	Spring 99
Life Science	Victor-HLV	Adair-Casey/440	Spring 99
Russian I	Marshalltown	Ames/4896	Spring 99
Spanish I	Pleasantville/703	Murray	Spring 99
World Civilization	Oskaloosa	Pella Christian	Spring 99

Appendix G
Table 2

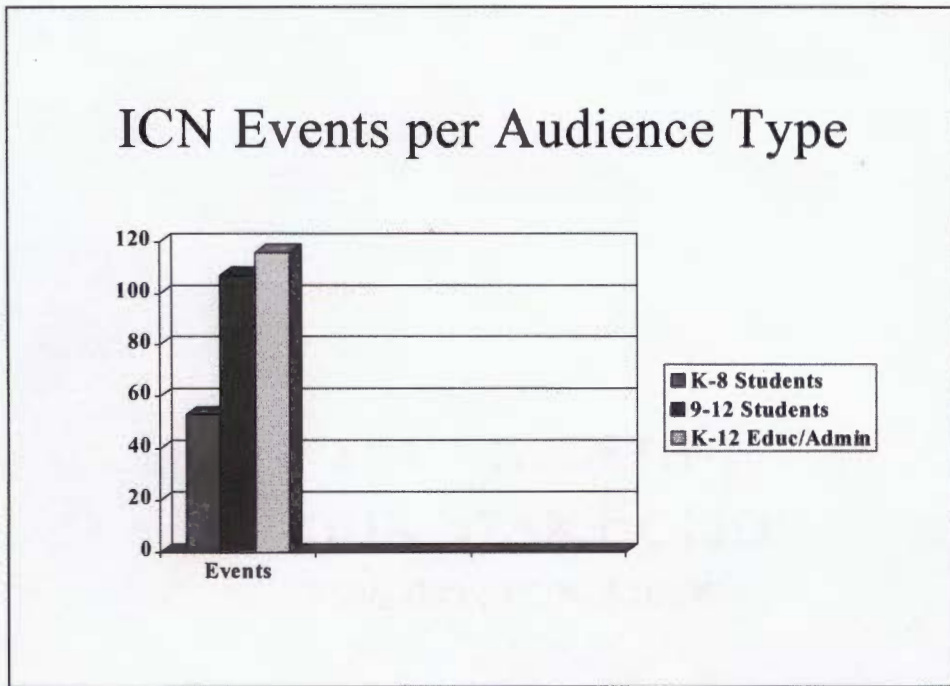


Table 3. Number of ICN Sessions Scheduled per School District in Merged Area Eleven

School Name	Number of Students	ICN Reservations
Nevada	1626 students	59
Ankeny	5568 students	49
Carroll	1903 students	45
Perry	1769 students	39
Boone	2385 students	37
Ames	4896 students	37
Knoxville	2176 students	35
Stuart-Menlo	616 students	35
Audubon	815 students	33
Indianola	3276 students	32
Urbandale	3317 students	32
Adel-Desoto-Minburn	1470 students	29
Saydel	1528 students	28
Waukee	1876 students	28
Norwalk	1999 students	27
Guthrie Center	540 students	27
Colfax Mingo	953 students	27
Des Moines Central Campus	32063--all of Des Moines	26
Johnston	3657 students	26
Des Moines East	32063--all of Des Moines	22
Southeast Polk	4268 students	22
Melcher-Dallas	500 students	22
Earlham	520 students	22
Roland-Story	1127 students	21
Winterset	1719 students	21
Manning	545 students	21
Gilbert	875 students	21
Baxter	340 students	20
Exira	369 students	20
Lynnville-Sully	527 students	20

Table 3. Number of ICN Sessions Scheduled per School District in Merged Area Eleven

Des Moines Roosevelt	32063--all of Des Moines	19
Pella	2071 students	18
Coon Rapids-Bayard	621 students	18
Bondurant-Farrar	863 students	18
West Des Moines Valley	8693--all of W Des Moines	18
West Des Moines Southwoods	8693--all of W Des Moines	18
Carroll-Kuemper		18
Des Moines Hoover	32063--all of Des Moines	17
Pleasantville	703 students	17
Adair-Casey	440 students	16
Panorama	769 students	16
North Polk	897 students	16
Madrid	590 students	15
Des Moines Lincoln	32063--all of Des Moines	13
Collins-Maxwell	573 students	12
Colo-Nesco	666 students	12
West Des Moines Dowling		12
Des Moines North	32063--all of Des Moines	11
Bussey-Twin Cedars	477 students	11
Martensdale-St Mary's	540 students	11
Des Moines SCAVO	32063--all of Des Moines	10
VanMeter	520 students	5
Interstate 35	797 students	4
Pella Christian		4
Prairie City Monroe	1059 students	3
Liberty Center		0

Table 4. Audience/Program Type with Largest Number of Participating Sites

Title	Audience	date	Description	orig site	# of sites
World Civil to 1715	Post sec Students	8/24/98	education courses	99 Oskaloosa	3 sites
Heartland Planning Meeting	Post Sec	5/20/99	Heartland Planning	187-Johnston AEA	5 sites
Student Multimedia Presentations	K-8 students	4/22/99	HS students Demo	338-Nevada	9 sites
Inside the White House	K-8 students	4/15/99	Hoover Library Field Tr	210-U of I 14	8 sites
Iowa Council for International Understanding	K-8 students	4/21/99	1999 World Food Prize	43-IPTV Jnston	8 sites
Iowa Council For Intern	K-8 students	4/20/99	World Food Prize Inst	187-AEA Jston	7 sites
Assessment Workshop	K-8 students	5/10/99	Dev of New Standards	160-Johnston	7 sites
Live from Galapagos	K-8 students	3/12/99	downlink	49-IPTV 2	7 sites
Live from Galapagos	K-8 students	3/19/99	downlink	49-IPTV 2	7 sites
Intellitools	K-8 students	10/13/98	test session	341-ColfaxMing	7 sites
Meet the Authors	K-8 students	10/12/98	Book writing	43/IPTV	6 sites
Meet the Authors	K-8 students	10/26/98	Book writing	43/IPTV	6 sites
Meet the Authors	K-8 students	11/11/98	Bookwriting	43/IPTV	6 sites
Meet the Authors	K-8 students	12/2/98	Bookwriting	43/IPTV	6 sites
Meet the Authors	K-8 students	11/18/98	Bookwriting	43/IPTV	6 sites
Step Back in Time	K-8 students	4/9/99	Hoover Field Trip	210-Uof I 14	6 sites
Live from Galapagos	K-8 students	3/19/99	Downlink	49-Iptv 2	6 sites
Inside the White House	K-8 students	3/15/99	Hoover Field trip	210-IA City	6 sites
Multimedia Presentations	K-8 students	1/5/99	student technology	187-Johnston	5 sites
Hoover Presidential Library	K-8 students	3/8/99	Elec fieldtrip	210-IA City	5 sites
Downlink from Africa	K-8 students	11/13/98	satellite from Africa	43-IPTV 1	5 sites
Conversation w/ poets	K-8 students	4/13/99	English	327 SE Polk	5 sites
Interactive Jeopardy	K-8 students	4/15/99	Hoover Field Trip	210- U of I 14	4 sites
Downlink from Africa	K-8 students	10/23/98	satellite from Africa	43-IPTV !	4 sites
Downlink from Africa	K-8 students	11/6/98	satellite from Africa	43-IPTV 1	4 sites
Spanish Pen Pals	K-8 Students	9/10/98	interactive comm	67 Newton	4 sites
Live from Galapagos	K-8 students	3/5/99	downlink	49-IPTV 2	34 sites
A Walk on the Wild Side	K-8 students	4/6/99	Hoover Natl Park	210-UIA	3 sites
Empower	K-8 students	2/11/99	health sciences for st	497-Pella	3 sites
Downlink from Africa	K-8 students	10/9/98	satellite from Africa	43-IPTV 1	3 sites
Downlink from Africa	K-8 students	10/16/98	satellite from Africa	43-IPTV 1	3 sites

Table 4. Audience/Program Type with Largest Number of Participating Sites

Downlink from Africa	K-8 students	10/30/98	satellite from Africa	43-IPTV 1	3 sites
Hypermedia Consortium	K-8 Students	10/8/98	test session	579-Southwoods	3 sites
Empower	K-8 students	3/25/99	health	497 Pella	3 sites
Toys in Space	K-8 Students	1/11/99	science	66 Guthrie Cente	3 sites
Mars Base	K-8 Students	4/30/99	science	296 Saydel	3 sites
Urban Rural Partnership	K-8 students	4/16/99	Elem Collaborations	142-D of Ed	2 sites
Urban Rural Partnership	K-8 students	4/22/99	Elem Collaborations	142-D of Ed	2 sites
Urban Rural Partnership	K-8 students	4/26/99	Elem Collaborations	142-D of Ed	2 sites
Eisenhower Workshop	K-8 Students	5/12/99	committee	505-Collins Max	2 sites
Urban Rural Partnerships	K-8 students	3/16/99	Elem student exchange	142-D of Ed	2 sites
emate parent orientation	K-8 students	9/1/98	parent info training	187-Johnston	2 sites
Metro team	K-8 students	10/19/98	team meeting	187-Johnston	2 sites
Talk to North Polk	K-8 Students	11/18/98	Health Sciences	115 Dept P Hlth	2 sites
An Alphabet of Workers	K-8 Students	9/18/98	vocational educat	329 Gilbert	2 sites
Robotic Project	K-8 Students	9/15/98	science/teach robot	67 Newton	2 sites
An Alphabet of workers	K-8 Students	9/11/98	vocational educa	329- Gilbert	2 sites
Family Math Night	K-8 Students	4/9/99	Math	329 Gilbert	2 sites
2nd grade parent demo	K-8 students	4/8/99	Ed Courses	338 Nevada	2 sites
Math Night	K-8 Students	3/25/99	math	329 Gilbert	2 sites
Downlink from Africa	K-8 students	10/9/98	satellite from Africa	49-IPTV 2	19 sites
Boardmaker software	K-8 students	9/29/98	techniques for using	187-Johnston	15 sites
Assistive technology	K-8 students	9/28/98	Assistive technology	187-Johnston Aea	14 sites
Live from Galapagos	K-8 students	3/5/99	downlink	43-IPTV 1	10 sites
Success 4 Continuation Application	K-12Educators/Admin	4/26/99	Review of Success4 Ap	187-Johnston	15 sites
Exploring Telecommunications	K-12/Educators/Admin	5/18/99	ICN training	662-Norwalk PL	2 sites
ITEC Board	K-12 Educators/Admin	5/3/99	Conference Planning	176-Clear Lake	9 sites
Sign Language	K-12 Educators/Admin	3/22/99	Intermediate sign SE	187-Johnston Aea	9 sites
ICN in focus	K-12 Educators/Admin	10/15/98	ICN users session	187-Johnston	9 sites
State 504 Meeting	K-12 Educators/Admin	11/17/98	Meeting	313-Perry	9 sites
World Food Prize	K-12 Educators/Admin	4/8/99	test session	43-IPTV	8 sites
Beginning Sign Language	K-12 Educators/Admin	4/5/99	Begin Sign Language	187-Johnston	8 sites
Educators Meeting	K-12 Educators/Admin	1/28/99	Meeting	153-Boone	8 sites

Table 4. Audience/Program Type with Largest Number of Participating Sites

ITEC board	K-12 Educators/Admin	3/4/99	meeting	579-Southwoods	7 sites
Africa Quest Intro Session	K-12 Educators/Admin	9/22/98	intro for teachers	160-Johnston	7 sites
Telejustice Teachers training	K-12 Educators/Admin	11/16/98	prepare participants	140-DSM PBd	7 sites
Web Painter	K-12 Educators/Admin	4/27/99	training	421-Creston	63 sites
ICN focus Session	K-12 Educators/Admin	1/26/99	Models in dis learning	187-Johnston Aea	6 sites
ICN focus session	K-12 Educators/Admin	2/11/99	Models in dis learning	187-Johnston Aea	6 sites
Apple Seminar	K-12 Educators/Admin	2/2/99	choosing digital content	187-Johnston	6 sites
Conference Art teachers meeting	K-12 Educators/Admin	11/11/98	art teachers meeting	65-Adel	6 sites
ICEA yellow group	K-12 Educators/Admin	4/27/99	science	161 Dowling	6 sites
ICEA yellow group	K-12 Educators/Admin	4/20/99	science	160 Johnston	6 sites
IA Council for Inter'l Understanding	K-12 Educators/Admin	4/7/99	1999 World Food Prize	43-IPTV	59 sites
Reading Recovery	K-12 Educators/Admin	4/2/99	Planning meeting	187- JohnstonAEA	5 sites
Web TV training	K-12 Educators/Admin	3/30/99	training for web tv	187-Johnston	5 sites
Grant Members	K-12 Educators/Admin	2/16/99	test	187-Johnston	5 sites
Web TV training	K-12 Educators/Admin	3/8/99	training	187-Johnston	5 sites
What Can I do with the ICN	K-12 Educators/Admin	3/10/99	Classroom integration	187-Johnston	5 sites
ICN in focus	K-12 Educators/Admin	10/29/98	ICN users session	187- Johnston	5 sites
IEP training	K-12 Educators/Admin	5/6/99	IEP training	187- JohnstonAEA	44 sites
IEP training	K-12 Educators/Admin	4/8/99	Special Education	187 Johnston AEA	43 sites
IEP training	K-12 Educators/Admin	1/14/99	IEP training	187-Johnston	43 sites
IEP training	K-12 Educators/Admin	2/18/99	IEP training	187-Johnston	42 sites
IEP training	K-12 Educators/Admin	3/11/99	IEP training	187-Johnston	42 sites
IEP training	K-12 Educators/Admin	12/10/98	IEP training	160-Johnston	42 sites
Literacy Learning	K-12 Educators/Admin	2/23/99	Informational	573-Boone	41 sites
IEP training	K-12 Educators/Admin	10/22/98	K-12 Ed special ed	187-Johnston	40 sites
Iowa Software Assoc Training	K-12 Educators/Admin	7/12/99	training	161-WDSM-Dowl	4 sites
Grant Members	K-12 Educators/Admin	2/10/99	test	187-Johnston	4 sites
Conference Planning	K-12 Educators/Admin	2/18/99	conference planning	187-Johnston	4 sites
UMI training	K-12 Educators/Admin	9/11/98	online database training	198-CR aea	4 sites

Table 4. Audience/Program Type with Largest Number of Participating Sites

Star Schools Author training	K-12 Educators/Admin	9/23/98	prep for Author visit	327-SE Polk	4 sites
Reading recovery inservice	K-12 Educators/Admin	10/22/98	interaction w/rr teach	160-Johnston	4 sites
Conference Planning	K-12 Educators/Admin	11/9/98	planning session	187-Johnston	4 sites
US West grant	K-12 Educators/Admin	11/18/98	Meeting Grant part	165-DSM Hoover	4 sites
Online classes as integration tools	K-12 Educators/Admin	12/4/98	tech class for W Cons	187-Johnston A	4 sites
ICEA tan teachers mtg	K-12 Educators/Admin	2/16/99	science	166 DSM Linc	4 sites
ICEA orange group	K-12 Educators/Admin	2/8/99	Science	71 Ames	4 sites
ICEA orange group	K-12 Educators/Admin	1/28/99	science	71 Ames	4 sites
ICEA tan teachers meet	K-12 Educators/Admin	1/26/99	science	65 Adel	4 sites
ICEA tan teachers meet	K-12 Educators/Admin	4/27/99	science	419 Valley	4 sites
ICEA Orange Group	K-12 Educators/Admin	4/26/99	Science	71 Ames	4 sites
Linking Series: Science	K-12 Educators/Admin	3/29/99	Exploring Science Re	187-Johnston	31 sites
Academy of Reading	K-12 Educators/Admin	9/21/98	demo of acad of reading	160-Johnston	31 sites
Ip/Nets Overview	K-12 Educators/Admin	1/8/99	standards overview	38-Waterloo	3 sites
Hypermedia Consortium	K-12 Educators/Admin	1/13/99	hypermedia	396-Ankeny	3 sites
Hypermedia Consortium	K-12 Educators/Admin	1/25/99	test	538-Waukee	3 sites
Hypermedia Consortium	K-12 Educators/Admin	2/1/99	test	396-Ankeny	3 sites
Hypermedia Consortium	K-12 Educators/Admin	2/3/99	test	338-Nevada	3 sites
ICN in focus	K-12 Educators/Admin	11/12/98	ICN users session	187-Johnston	3 sites
ICN in focus	K-12 Educators/Admin	11/19/98	ICN users session	327-SE Polk	3 sites
Conference Planning	K-12 Educators/Admin	12/14/98	meeting	160-Johnston	3 sites
ICEA yellow group	K-12 Educators/Admin	4/16/99	Science	295 Dav Central	3 sites
ICN & Curriculum	K-12 Educators/Admin	3/18/99	training	296 Saydel	3 sites
ICEA yellow group	K-12 Educators/Admin	2/8/99	science	161 WDSM Dow	3 sites
ICEA green group	K-12 Educators/Admin	4/26/99	science	334 Norwalk	3 sites
Music Educators Workshop	K-12 Educators/Admin	4/7/99	Fine Arts	396-Ankeny HS	28 sites
Home schooling	K-12 Educators/Admin	5/25/99	home schooling update	187-Johnston Aea	27 sites
EBE training	K-12 Educators/Admin	1/14/99	Ency Brit training	160-Johnston	25 sites
Child Abuse training	K-12 Educators/Admin	9/9/98	Mandatory reporter tr	187-Johnston	21 sites
Child Abuse Training	K-12 Educators/Admin	10/7/98	training	187-Johnston	21 sites
Linking series Reading recovery	K-12 Educators/Admin	2/4/99	instructional materials	187-Johnston	20 sites
IEP training	K-12 Educators/Admin	11/5/98	IEP training	187-Johnston	20 sites
Conference Planning	K-12 Educators/Admin	5/7/99	Meeting to Plan O Conf	187-Johnston	2 sites

Table 4. Audience/Program Type with Largest Number of Participating Sites

				AEA	
W Consortium	K-12 Educators/Admin	5/11/99	Planning for 99-00	340-CRB	2 sites
Exploring Telecommunications	K-12 Educators/Admin	5/19/99	ICN training	662-Norwalk PL	2 sites
Urban Rural Partnership	K-12 Educators/Admin	1/19/99	Community Sharing	142-DOE	2 sites
ESL	K-12 Educators/Admin	2/18/99	training	43-IPTV 1	2 sites
AEA planning	K-12 Educators/Admin	9/14/98	joint planning	187-AEA Johnst	2 sites
ICN leadership planning	K-12 Educators/Admin	10/6/98	planning projects	187-Johnston	2 sites
Intro to the ICN	K-12 Educators/Admin	11/3/98	utilize the ICN	187-Johnston	2 sites
ITEC Board Meeting	K-12 Educators/Admin	11/4/98	ITEC conference	350-Carroll	2 sites
Spanish teachers	K-12 Educators/Admin	11/7/98	Immersion program	187-Johnston	2 sites
Web based ICN Collaborations	K-12 Educators/Admin	11/16/98	using Internet Projects	43-IPTV	2 sites
Telejustice Youthful Offender	K-12 Educators/Admin	12/3/98	Prep for telejustice	142-D of Ed	2 sites
STW distance learning	K-12 Educators/Admin	12/8/98	ed class	187-Johnston	2 sites
ICEA tan forensics	K-12 Educators/Admin	4/29/99	science	419 Valley	2 sites
Linking Series: Social Science	K-12 Educators/Admin	5/13/99	explore instruct mat	187-JohnstonAea	19 sites
Standards Info Power	K-12 Educators/Admin	4/14/99	National Standards	529-Waterloo E	18 sites
Ebsco Database Overview	K-12 Educators/Admin	10/29/98	Database overview	160-Johnston	18 sites
Info Power and NETS Standards	K-12 Educators/Admin	4/28/99	Class Tech Standards	529-Waterloo E	17 sites
IP/Nets	K-12 Educators/Admin	5/5/99	Ed Course	529-Waterloo E	17 sites
Information Power / NETS	K-12 Educators/Admin	5/12/99	info power/NETS	529-Wloo East	17 sites
Standards Info Power	K-12 Educators/Admin	12/9/99	National Standards	104-W Burlington	17 sites
transition	K-12 Educators/Admin	9/29/98	transition for st w/dis	187-JohnstonAea	17 sites
Info Power NETS standards	K-12 Educators/Admin	12/9/98	Standards	266 Burlington	17 sites
Beginning Sign Language	K-12 Educators/Admin	3/29/99	Begin Sign Language	187-Johnston	16 sites
Child Abuse Prevention	K-12 Educators/Admin	2/23/99	Training	187-Johnston	16 sites
Linking Series Mathematics	K-12 Educators/Admin	4/15/99	Instructional Materials	187-AEA Jston	15 sites
Information Power Nets Standards	K-12 Educators/Admin	1/14/99	National Standards	529-Waterloo E	15 sites
Ebsco Database Overview	K-12 Educators/Admin	10/30/98	Database overview	160-Johnston	15 sites
Home Schooling	K-12 Educators/Admin	12/9/98	Meeting	187-Johnston	15 sites
AEA ed services Directors State Mtg	K-12 Educators/Admin	12/10/98	Meeting	43-IPTV 1	15 sites
AEA admin meeting	K-12 Educators/Admin	12/18/98	meeting	49-IPTV 2	15 sites
Success 4	K-12 Educators/Admin	5/10/99	Success4 update	160-Johnston	14 sites
Standards Info Power	K-12 Educators/Admin	2/18/99	national standards	453-Bettendorf A	14 sites

Table 4. Audience/Program Type with Largest Number of Participating Sites

Learning Co Software Overview	K-12 Educators/Admin	9/29/98	demonstration	160-Johnston	14 sites
Assistive Technology	K-12 Educators/Admin	3/8/99	demonstration	187-Johnston	13 sites
Apple Seminar	K-12 Educators/Admin	3/25/99	Downlink from Apple	187-Johnston Aea	11 sites
Apple Seminar	K-12 Educators/Admin	5/18/99	Downlink from Apple	187- Johnston	11 sites
Sign Language	K-12 Educators/Admin	1/11/99	sign language	187-Johnston	11 sites
DE Assessment Wshop	K-12 Educators/Admin	2/11/99	review of DE	43-IPTV 1	11 sites
Standards Info Power	K-12 Educators/Admin	2/22/99	national standards	529-Wloo East	11 sites
DE Assessment Wkshop	K-12 Educators/Admin	3/3/99	meeting	187-Johnston	11 sites
ITBS and ITED school improvement	K-12 Educators/Admin	3/4/99	learning to use ITBS	127-U of I Hosp	11 sites
Project Teach	K-12 Educators/Admin	1/7/99	ESL teachers	187-Johnston	10 sites
Standards Info Power	K-12 Educators/Admin	3/8/99	National Standards	203-Mtown Aea	10 sites
Information Power teleconference	K-12 Educators/Admin	11/2/98	teleconference	187-Johnston	1 site
ICN leaders in Learning	K-12 Educators/Admin	11/6/98	ICN training	187-Johnston	1 site
Telejustice inservice	9-12 Students	2/22/99	criminal justice prep	187-Johnston	9 sites
Live from Galapagos	9-12 Students	3/5/99	downlink	49-IPTV 2	9 sites
ICEA yellow group	9-12 students	4/7/99	science	313 Perry	9 sites
Live from Galapagos	9-12 Students	3/12/99	downlink	49-IPTV 2	7 sites
ICEA tan experts in Forens	9-12 students	4/8/99	Science	166 DSM Lincoln	7 sites
Live from Galapagos	9-12 students	3/12/99	downlink	43-Johnston	6 sites
Live from Galapagos	9-12 Students	3/19/99	view only downlink	49-IPTV 2	6 sites
ICEA yellow group	9-12 students	4/15/99	science	161 WDSM Dowl	6 sites
ICEA yellow group	9-12 students	2/2/99	science	550 Hamburg	6 sites
Bombs Troops or Aid	9-12 Students	4/30/99	Discussion w/M Smith	187- JohnstonAEA	5 sites
Youthful Offender Panel	9-12 Students	2/24/99	telejustice	187-Johnston	5 sites
Peace Corps	9-12 Students	3/2/99	Cultures	187-Johnston	5 sites
Live from Galapagos	9-12 Students	3/19/99	downlink	43-IPTV 1	5 sites
Telejustice youthful Offender	9-12 Students	12/8/98	law	43-IPTV 1	5 sites
Spanish Pen Pals	9-12 students	3/5/99	interactive comm	67 Newton	5 sites
ICEA yellow group	9-12 students	5/3/99	science	161 Dowling	5 sites
C Everett Koop	9-12 students	3/12/99	health	49 Johnston	49 sites
Spanish Pen Pals	9-12 Students	12/8/98	Interactive Comm	67 Newton	4 sites

Table 4. Audience/Program Type with Largest Number of Participating Sites

Spanish Pen Pals	9-12 Students	10/27/98	Interactive Comm	67 Newton	4 sites
Spanish Pen Pals	9-12 Students	10/20/98	Interactive Comm	67- Newton	4 sites
ICEA green group	9-12 students	4/15/99	science	334 Norwalk	4 sites
ICEA green group	9-12 students	3/15/99	science	334 Norwalk	4 sites
ICEA green group	9-12 students	3/4/99	science	334 Norwalk	4 sites
ICEA Orange Group	9-12 students	2/23/99	science	165 DSM Hoov	4 sites
ICEA orange group	9-12 students	2/22/99	science	71 Ames	4 sites
ICEA tan instrum lab	9-12 students	2/19/99	science	419 WDSM Val	4 sites
ICEA yellow group	9-12 students	2/9/99	science	161 WDSM Dow	4 sites
ICEA orange group	9-12 students	4/30/99	science	71 Ames	4 sites
ICEA orange group	9-12 students	4/29/99	science	71 Ames	4 sites
ICEA tan forensics	9-12 students	4/29/99	science	166 DSM Linc	4 sites
ICEA green group	9-12 students	4/26/99	science	334 Norwalk	4 sites
French II class	9-12 students	8/31/98	Foreign Language	326 Melcher Dal	3 sites
French I class	9-12 students	8/24/98	foreign language	426 George LR	3 sites
Chinese II	9-12 Students	8/26/98	foreign language	161 WDSM Dowl	3 sites
Chinese I	9-12 Students	8/26/98	foreign language	161 WDSM Dow	3 sites
ICEA orange group	9-12 Students	4/15/99	Science	71 Ames	3 sites
ICEA yellow group	9-12 Students	4/15/99	Science	550 Hamburg	3 sites
ICEA yellow group	9-12 Students	4/15/99	science	475 Farragut	3 sites
ICEA orange group	9-12 Students	4/15/99	science	71 Ames	3 sites
Tag Project	9-12 students	3/24/99	Tag	338 Nevada	3 sites
ICEA green group	9-12 students	3/15/99	science	271 CR Prairie	3 sites
ICEA yellow group	9-12 students	2/9/99	science	161 WDSM DOW	3 sites
ICEA yellow group	9-12 students	2/9/99	science	550 Hamburg	3 sites
ICEA yellow group	9-12 students	2/9/99	science	295 Dav Cent	3 sites
Tag Project	9-12 students	1/18/99	Interactive game	338 Nevada	3 sites
Tag Project	9-12 Students	1/20/99	Interactive game	338 Nevada	3 sites
Tag Project	9-12 Students	1/22/99	Interactive game	338 Nevada	3 sites
Multimedia	9-12 students	1/15/99	planning	338 Nevada	3 sites
French II	9-12 students	1/4/99	foreign language	326 Melcher Dall	3 sites
ICEA yellow group	9-12 students	5/4/99	science	161 Dowling	3 sites
ICEA yellow group	9-12 students	5/3/99	science	161 Dowling	3 sites
ICEA yellow group	9-12 students	5/3/99	science	550 Hamburg	3 sites
test	9-12 students	4/29/99	test	69 Pella	3 sites

Table 4. Audience/Program Type with Largest Number of Participating Sites

Japan North Discussion	9-12 Students	9/4/98	Discussion betwn Stu	187-Johnston	2 sites
Student and teacher planning	9-12 Students	11/25/98	ICN mini grant collab	187-Johnston	2 sites
Tag Academic Decathlon	9-12 students	12/3/98	academic decathl	168 DSM East	2 sites
Tag Academic Decathlon	9-12 Students	11/19/98	Academic Decath	170 Urbandale	2 sites
TAG Academic Decathlon	9-12 Students	11/12/98	Academic Decath	169 DSM Roos	2 sites
TAG Academic Decathlon	9-12 Students	10/29/98	Academic Decath	168 DSM East	2 sites
Tag Academic Decathlon	9-12 Students	10/15/98	academic decathlo	170 Urbandale	2 sites
Tag Academic Decathlon	9-12 students	10/8/98	academic decathlo	170 Urbandale	2 sites
Spanish I class	9-12 Students	8/27/98	Foreign Language	332-Pleasantville	2 sites
Calculus	9-12 Students	8/24/98	math	379 Manning	2 sites
AP French	9-12 Students	8/24/98	Foreign Language	160 Johnston	2 sites
Advanced Speech Sharing	9-12 students	4/12/99	English	573 Boone	2 sites
Public Speaking	9-12 students	4/9/99	English	396 Ankeny	2 sites
ICEA green group	9-12 students	3/16/99	science	384 Sheldon	2 sites
ICEA green group	9-12 students	3/15/99	science	334 Norwalk	2 sites
ICEA green group	9-12 Students	4/26/99	science	334 Norwalk	2 sites
HS tag projects	9-12 students	3/11/99	High School TAG	338 Nevada	2 sites
HS tag projects	9-12 students	3/8/99	High School TAG	338 Nevada	2 sites
Vo Ag Sharing	9-12 students	3/5/99	agriculture	573 Boone	2 sites
Vo Ag Sharing	9-12 students	2/23/99	agriculture	573 Boone	2 sites
Vo Ag Sharing	9-12 students	2/24/99	agriculture	573 Boone	2 sites
Advanced Speech	9-12 students	3/1/99	English	573 Boone	2 sites
Advanced Speech	9-12 Students	3/2/99	English	573 Boone	2 sites
Advanced Speech	9-12 Students	3/3/99	English	573 Boone	2 sites
Advanced Speech	9-12 Students	2/24/99	English	573 Boone	2 sites
Advanced Speech	9-12 Students	2/25/99	English	573 Boone	2 sites
ICEA tan instrum lab	9-12 students	2/19/99	science	419 WDSM Val	2 sites
ICEA tan instrum lab	9-12 students	2/19/99	science	65 Adel	2 sites
ICEA tan instrum lab	9-12 students	2/19/99	science	166 DSM Linc	2 sites
Basic And Beyond	9-12 students	2/17/99	science	67 Newton	2 sites
Basic And Beyond	9-12 Students	2/10/99	science	67 Newton	2 sites
Basic and Beyond	9-12 students	2/5/99	science	67 Newton	2 sites
Basic and Beyond	9-12 students	1/26/99	science	67 Newton	2 sites
Basic And Beyond	9-12 Students	1/20/99	science	67 Newton	2 sites
Career Pathway ISU	9-12 students	1/20/99	ed course	424 ISU	2 sites

Table 4. Audience/Program Type with Largest Number of Participating Sites

Spanish I	9-12 students	1/4/99	foreign language	332 Pleasantville	2 sites
Calculus	9-12 students	1/4/99	math	379 Manning	2 sites
Basics And Beyond	9-12 students	1/13/99	science	67 Newton	2 sites
French Students present	9-12 students	5/24/99	multimedia proje	338 Nevada	2 sites
Advanced speech sharing	9-12 students	5/5/99	English	573 Boone	2 sites
ICEA yellow group	9-12 students	5/3/99	science	475 Farragut	2 sites
ICEA green group	9-12 students	4/29/99	science	22 Sheldon	2 sites
ICEA tan forensics	9-12 students	4/29/99	science	65 Adel	2 sites
ICEA tan forensics	9-12 students	4/29/99	science	419 WDSM Val	2 sites
Advanced speech sharing	9-12 students	4/27/99	English	573 Boone	2 sites
ICEA green group	9-12 students	4/26/99	science	271 CR Prairie	2 sites
Advanced Speech Sharing	9-12 students	4/23/99	science	573 Boone	2 sites
Downlink live from Galapagos	9-12 Students	3/12/99	Satellite program	49-IPTV 2	14 sites
Live from Galapagos	9-12 Students	3/19/99	Downlink live from Gal	43-IPTV 1	13 sites
Live from Galapagos	9-12 Students	3/19/99	Live from Galapagos	43-Johnston IPTV	10 sites
Downlink live from Galapagos	9-12 Students	3/5/99	downlink	43-IPTV 1	10 sites
Live from Galapagos	9-12 Students	3/12/99	downlink	43-Johnston	10 sites
ISPAC with Governor	9-12 students	3/11/99	Social Sciences	296 Saydel	10 sites
Telejustice Youth view only	9-12 Students	3/3/99	Youthful offender panel	382-IPTV 4	1 site
Empower Drug Abstinence	K-8 students	10/21/98	MS drug prevention	497-Pella	2 sites