KCnet: A Rural Area Network Model

by Judith Yoho

Visions of Technology in Our Schools

Much of the current excitement about technology focuses on how it can be used to support student achievement at school. In spite of conclusive findings that cooperative partnerships between the home and the school can dramatically raise children's academic achievement, technology-enhanced connections between home and school receive scant attention and meager resources.

What if technology were used to support classroom instruction, skill practice and learning at home, as well as communication among parent, student, and teacher? What would this learning community look like?

Keystone Central School District, KCSD, in the community of Clinton County, PA, asked these questions under the direction of a new superintendent as the process of strategic planning began early in 1993.

Strategic Planning

A strategic plan is a statement of the vision(s) which an organization has for its future. In essence strategic planning challenges each school district to revisit Horace Mann's advice to the effect that a community should find out what the best parent wants for his/her child and then provide that level of education for all children. (10)

Before real change can happen, a school community must identify and share common beliefs about teaching and learning. These beliefs should be identified through a process that encourages input from the total school community—students, parents, community/business representatives, and staff.

The KCSD Community

Keystone Central School District is unique in both its size and in the fierce territorial protection which its citizens bestow on the schools located in their neighborhood.

At 985 square miles or approximately 2/3 the size of Rhode Island, KCSD is geographically the largest school district in Pennsylvania.

When strategic planning began in 1993, there were four high schools, 12 elementary schools, and a vocational school. The distances between the four high schools ranged from a minimum of 10 to a maximum of about 60 miles. Recent consolidation has combined two high schools but the school

area locations remain the same.

Clinton County Statistics

With a population of approximately 37,500 (mostly rural) Clinton County has an unemployment rate of 7.1% and a median household income of \$22,128 in 1990. (3)

URBAN AND RURAL

Urban
Inside urbanized area0
Outside urbanized area9,230
Rural
Farm737
Nonfarm27.215

Lock Haven, the county seat, was one of 33 communities in the United States to receive Rural Designation as an Enterprise Community in 1995. The loss of several industries in Lock Haven, such as Piper Aircraft and American Color and Chemical, is indicative of the economic slump.

OCCUPATIONS

Managerial and professional specialty occupations
Executive, administrative, and managerial occupations1,093
Professional specialty occupations
Technical, sales, and administrative support occupations
Technicians and related support occupations
Sales occupations 1,406
Administrative support occupations, including clerical 1,973
Service occupations
Private household occupations
Protective service occupations

Strategic Planning Needs Assessment

In response to the needs of the schools and the community, the strategic planning committee identified communications as their #1 target area for improvement. An internal school survey was taken to analyze the current status of inter- and intra-district communications. It indicated that they were limited to:

- Inter-office mail distributed daily in Lock Haven area: Renovo and Sugar Valley receive inter-office mail twice a week
- Meetings before/after school hurried due to travel time delays

- One-way intercom from the office for broadcast messages within every school building
- Telephone and fax communication from within administrative offices at each school
- · Teachers mainly use informal verbal communication between classes
- Access to Internet in assorted locations

Internet and the KCSD Technology Plan

Internet came to the KCSD community with educator guest accounts through local Lock Haven University in December 1992. At the same time the strategic plan was being formulated, the new Technology Planning Committee was gaining momentum. With the assistance of their Intermediate Unit, they too had a needs assessment prepared to indicate the status of technology in the schools. In addition, a technology consultant, Dr. Tom Egan from West Chester University, was hired to assist in the development of a technology plan for the schools and the community of Clinton County.

It is almost impossible to emphasize enough the difference the Internet made on the joint planning processes. This rural community had access to current online information about strategic planning issues. The Technology Planning Committee downloaded a dozen or more technology plans from the "new" ftp repository at Mississippi State University (National Center for Technology Planning http://www.msstate.edu). Asynchronous e-mail was vital to the planning process.

Also vital to the Strategic Plan was the adoption of the KCSD Technology Plan by the School Board in March 1994. So visionary was the board in supporting the technology applications outlined in the plan, that it also passed a \$2 million dollar technology bond for its implementation. The Technology Planning Committee immediately prioritized the funds for: (11)

- Network Infrastructure
- Personnel—Technology Coordinator and Network Supervisor
- · Hardware and Software
- Professional Development
- Research and Development

As the Technology Department progressed, a general fund line-item budget would be developed to take over everything except the network infrastructure component. Members of the Technology Planning Committee began joining a new listserv called the National Information Infrastructure for Education, NII-Ed. They could see that the National Information Infrastructure was evolving, as was educational reform. It would be imperative that the two evolve together or there would be the danger that the educational reforms, such as national standards, curriculum frameworks, authentic assessment, teacher pre and in-service programs, would be irrelevant to the circumstances of working in a networked, information intense and communications based global society. They knew that educational reforms are driven by the changes in the society which include information systems and communications. (6)

NSF Grant-KCnet

The collaborative planning process in KCSD was inspired to a great extent by the leadership in the district. The superintendent empowered educators and community members alike to jointly plan for teaching and learning in the 21st century. From this knowledge-rich collaborative environment sprang forth a proposal for an NSF Planning Grant to prepare for networking in the school district and the community. It would be called the Keystone Community Network, KCnet, and education would be its anchor tenant.

The 1994-95 NSF Planning Grant provided for two major procedures:

- Site visitations to school and community networks
- · Local workshops involving successful network models

KCSD teachers, school board members, university faculty, and community members traveled to Pittsburgh (http://www.ckp.edu) where student access models and proven infrastructure design were viewed. In Bethlehem (http://204.170.128.4/), a tremendous professional development program in the schools and a computer-buy program for the home were modeled. And in Blacksburg, Virginia, (http://www.bev.org), we saw that high speed community access to the home and to public access sites were attracting a computer literate industry and work force to the area.

Back in Clinton County, a team from the National Center for Supercomputer Applications (NCSA) in Chicago demonstrated their "new" World Wide Web browser, Mosaic. The Internet was changing before our very eyes, and rural Pennsylvania could virtually travel the globe with its metropolitan neighbors.

The Philosophy of Technology Integration

It was evident to the members of the KCSD Technology Planning Committee that The \$2 million dollar Technology Bond would best be put to use for a robust infrastructure. Equipment and training should be phased in according to a plan of action based on teacher readiness and available budget funds.

The work of Dr. Judi Harris from the University of Texas at Austin was viewed as a model for technology integration and training. Dr. Harris' recommendations are based on the work of Everett Rogers (1986) in telecommunications innovations. (5) In summary, the work says that generally only 10 percent of the users on a computer network contribute approximately 50 percent of all of the online traffic. The other 90 percent of the users contribute the other 50 percent. If we want telecommunications innovations to be used in powerful ways in precollege learning environments, we need not attempt to convince every teacher, or even the majority of teachers, to use them. Instead, Rogers suggests, we should target the opinion leaders within the social system of the school or district.

The KCSD plan to target opinion leaders involves the use of Teacher Technology Proposals for the acquisition of classroom computer equipment. The technology proposal requires the educator(s) to:

- Outline a specific plan for the integration of the technology in their curriculum that is in line with the district goals
- Enroll in prerequisite training in basic computer applications
- Develop an assessment plan to provide feedback for the success of their technology integration plan

The KCSD Teacher Technology Proposal has been tremendously successful as a tool for emphasizing curriculum integration and readiness training for technology integration. The assessment portion of the proposal becomes the feedback and case study instrument for evaluating best practices for technology applications. Additionally the proposal process has actually created a growing demand for the technology, as it is viewed as a privilege to use computers in education, and not an added chore. Teachers help each other write the proposals twice a year, and whole-building action plans are written around technology initiatives in each school. The General Fund Technology Budget has been gradually increasing to meet the purchasing demands of the technology-ready classroom teachers. The district vision of 5-6 computers per classroom has already been realized in a few cases where innovative teachers are leading the way.

A sustainable method of technology acquisition is also being pursued through the districts Tech Prep program at the vocational school. The Keystone Central Area Vocational Technical School is currently researching an electronics/computer program that would prepare a skilled workforce capable of building and maintaining computers in the schools and in the community, much like the already existing auto repair and carpentry programs that are in operation. Funding options such as grants and leases are also part of the normal protocol for the technology infusion in KCSD.

The Rural Funding Problem

No single issue takes a larger toll on our schools than the lack of adequate funding. Rural America is dependent on federal spending for "infrastructure development," however, updated federal spending figures show that urban areas still get the lion's share of federal funds spent in Pennsylvania (see Figure #2). Data taken from the 1994 Federal Funds Report shows that rural counties receive less money per capita from federal sources than do urban areas. (2)

More than 50 percent of U.S. public schools now have access to the Internet. However, access to the Internet varies by school characteristics. Only 31 percent of schools with large proportions of students from poor families have access to the Internet, compared to 62 percent of schools with relatively few students from poor families. In Pennsylvania, rural counties are poorer than their urban counterparts. (2)

Pennsylvania ranks 37th in the number of students-to-computers with a ratio of 12:1. As reported in *USA Today* (April 4, 1995), Pennsylvania is among the top five states who have the most school districts suffering from "technology poverty". Every effort should be made to ensure that the emerging high-performance networks offering education, health, and government services reach rural areas.

KCSD—Partnerships and Grants

Keystone Central School District continues to seek grant partnerships with other schools and community agencies for project startup and upgrade technology costs. Several recent grants include:

- 1994-95 NSF Network Planning Grant (\$50,000)
- 1995-96 PDE : Distance Education (\$21,000)
- 1996-97 PDE : Distance Education/Satellite Dishes/Training (\$133,000)
- 1995-96 Goals 2,000 (\$15,000)

- 1994-95, 1995-96 E D C O R E from International Paper (\$18,000)
- 1996-97 PDE Technology Demonstration Grant (\$150,000)
- Link To Learn: Testbed (\$600,000)

KCSD Mission Statement: (10)

Keystone Central School District and the community, in partnership, will successfully challenge learners to become world-class citizens who will be responsible, contributing, and ethical members of an ever-changing global society.

Strategic Planning Beliefs:

We believe that all individuals have the right to a clean, safe, nurturing environment.

We believe that each individual will have the opportunity to achieve his/her highest potential.

We believe that all individuals can and will learn.

We believe that the entire community is responsible and accountable for the educational process.

We believe that parents are the first and most influential teachers.

We believe that learning is a life-long process.

We believe that individuals will become responsible, productive citizens.

We believe in equal opportunities for all.

We believe that all individuals will be treated with dignity and respect.

KCSD Network Design

The decision to move to full fiber connectivity throughout the school district (and therefore the county) was made by KCSD in July 1996 after a year-long study comparing several models for WAN connectivity over large geographic areas. At that time, KCSD was running IMUX 56Kbps frame relay lines to five of its schools and a T1 to the network center with Internet service provided through SSHEnet by PREPnet. With service from three telephone companies and long-distance charges between KCSD schools, there were more than 300 telephone lines (including foreign exchange lines) installed in the district. Network access in computer labs was slowing down as more and more computers came online; and the migration path to compressed video meant purchasing Codex and expensive classroom equipment at every rural site that needed to take part in distance learning courses.

Additionally, with LAN connectivity at its schools increasing, one or more network servers at each site in the nearly 1,000 square mile district

would be needed. This, in turn, meant that more staff would be required to maintain widespread servers, LAN, and compressed video equipment.

For this large rural area, the TCI Voice/Data/Video solution makes sense. With the TCI fiber network, KCSD has virtually created a 1,000 square mile LAN. Fewer servers are required because they can be centrally located at the network center. Satellite downloads can be shared with every site over the high speed fiber to each site. Full-motion, continuous-presence video is available in every classroom using affordable camera equipment that can be plugged into the existing television cable outlet. With the purchase of a PBX for the network center, voice traffic will be run over the fiber network, thereby eliminating more than half of the phone lines and accompanying long distance charges (this alone will pay for approximately half of the monthly fiber rental).

KCSD Technology in Education

Technology can transform teaching and learning. "To accomplish that job," says Dr. Linda Roberts, director of the Office of Educational Technology, U.S. Department of Education, "technology must be an integral part of your school or community's overall plan to move all children toward high academic standards (1994)." For students, the ability to use technology has come to be recognized as an indispensable skill. The Secretary's Commission on Achieving Necessary Skills (SCANS) stated this in the starkest terms, "Those unable to use [technology] face a lifetime of menial work."

Successful adoption of educational technologies focus on three primary concepts: (6)

- 1. The benefits of the use of technology will not be apparent in an educational organization until ALL students and teachers have equitable access to the technology.
- 2. Students learn by constructing their own knowledge and sharing that process with others in their classroom and across networks by instructors who have become effective facilitators of learning.
- 3. The combination of equitable and universal access, student construction of knowledge, and facilitative teaching will result in the transformation of learning and teaching.

Making the connection between technology, teachers, and parents is one of the most important steps we can take to make the most of past and continuing investments in educational technology. It is central to the ultimate

goal fostered by these investments: not just helping students become competent users of technology, but helping them become more accomplished learners overall.

Why Internet

For 500 years books were the unmatched resources for making ideas, knowledge, and culture available to students, and so long as this role was unquestioned, educators paid little attention to how the characteristics of books shaped the whole instructional enterprise. Printed textbooks meant information was stable and so too, then, was the educational environment. But with current innovations in communication and computation, books have been displaced from their privileged educational position. The electronic means of access to information now requires librarians and others to assist as information specialists...helping us to locate, manage, and discriminate relevant information for assimilation in the construction of knowledge for synthesis, analysis, and problem-solving. (8)

As educators reorganize the culture, so too they alter the pedagogy guiding its study. The project method has come into its own, and ideas about instruction give way to those about construction. Students, usually working together in groups, receive an intellectual charge, a large intellectual task that occupies them for a sustained period of time. The curriculum no longer consists merely of a series of lessons in a set of subjects. It is rather a field of information, ideas, and sets of tools, disciplines, and methods by which students bring information and ideas to bear on the charge, the task at hand. Learning will come to take place as students pursue various tasks, mobilizing fields of knowledge and intellectual tools in the process learning by doing.

With project-learning, even young students are empowered to make decisions for themselves that teachers formerly made for their pupils. The pedagogy can be individualized and student centered to an extent never before possible. (8)

Information Problem

But there is a problem with information in the information age. In today's world, information is everywhere, and schools have little ability to influence its quality, or even to preview it, before students receive it. The problem is not that schools don't have enough control of information; the problem is that, in general, they are doing little to equip students with the ability and the inclination to judge for themselves the quality and accuracy of the information they receive. (13)

Information-age schooling must go beyond access, organization, and absorption. Fundamentally, and from the beginning, schooling must also emphasize critical analysis, integration, and application. Teachers need to take an active role in teaching their students to pose intelligent questions, view information with critical eye, and consider alternative explanations.

Recent studies in the use of classroom telecommunications activities will aid educators in preparing for this new role. One such study follows:
(1)

Recent Study—The Role of Online Communications in Schools: A National Study

Online connections appear to be critically important if students are to grow up literate in the 21st century. Yet online access in itself may not be sufficient to bring about improvements in student learning. Past research on computers in schools suggests that computer installation is only the beginning; other factors, such as integration of technology into the curriculum, teacher training, and ongoing support are important components for success. We urgently need research specifically evaluating the effectiveness of online communications for learning. In addition, we need to understand what kinds of supports for curriculum integration, training, and online use are required for the success of this new medium in school.

CAST (Center for Applied Special Technology) begins to address these needs with the Scholastic Telecommunications Study (STS), an independent educational research and development organization designed and conducted to evaluate the effectiveness of online use, as distinguished from the use of other technologies and curricular reforms, to improve student learning.

STS was conducted in seven of the nation's major cities during the 1995-96 school year. The goals of the study were: (1) to measure the effects of online use on student learning, including information processing, communications, and presentation skills, and (2) to gain insights into what it takes to use online communications effectively in the classroom. A Civil Rights Unit was the instructional focus of the study and was designed to be implemented by both experimental and control classes.

The experimental group seemed to be more able to take advantage of the curriculum supports and the many resource and communication opportunities available to them. Their final projects were rated as stronger overall, and stronger in most of the specific competencies measured. The experimental group scored significantly higher than the control group on measurements of information management, communication, and the presentation of ideas. This offers evidence that using Scholastic Network and the Internet can help students become independent, critical thinkers, able to find information, organize and evaluate it, and then effectively express their new knowledge and ideas in compelling ways.

For a complete explanation of the instructional design and Civil Rights Unit materials, I point you to the web site at http://www.scholastic.com.

Linking School and Home

Robert McClintock, who directs the Institute for Learning Technologies at Columbia's Teachers College, believes community-based organizations ought to become the middlemen in the movement to bring high technology into the full-service school concept. If schools can't be linked into every home, they might be connected to other community institutions, such as the local YMCA. "Community centers that are already doing after-school programs often have computer centers in them, and as schools begin to make more use of wide-area connectivity, some kind of dial-in capability makes sense." (7)

In addition to Internet connectivity throughout the community of Clinton county, Keystone Central is currently piloting the new materials from the Lightspan Partnership, Inc. Lightspan creates a bridge of learning between schools and homes by using affordable interactive technology accessible through the family television. Teachers use Lightspan in the classroom, then send students home to continue learning with their families and with one another.

Through the use of Lightspan's reading/language arts and mathematics curriculum, the academic needs of students who learn at different rates and with different learning styles are met. Characters and stories are used to help students grasp the relevance of the skills and knowledge they are developing. The programming also encourages cooperative and constructive learning activities among students, parents, and teachers.

Distance Education

In communications, within a decade: (12)

- Distance will be irrelevant
- Location will not matter
- Different modes (sight, sound, both, etc.) will be personally selected

- Human interactions with communications systems will be natural to use and easy to use ("like the telephone")
- · Costs to communicate will be nominal
- Information of all kinds will be readily accessible via networks

The impact of distance education is twofold. First, it allows individuals to have access to the resources needed for lifelong learning. Second, the technologies that support this new generation of distance education make it possible for universities to create student-centered, resource-based teaching-learning environments best-suited to the needs of citizens of an information society. (12)

Today's distance education is forging new partnerships among universities and between educational institutions, businesses, and government. In the future, it also could foster productive partnerships with the emerging "knowledge industry."

The very same technologies used for distance education form the basis for a more informed electorate, a more involved citizenry, and an ever more efficient free market economy. By allowing every citizen to obtain the information they want and need, when and where they want it.

KCnet Today

The Keystone Community Network was incorporated on June 21, 1995, as a non-profit organization, 501 (C) (3), sharing the KCSD infrastructure.

KCnet holds as its vision: (9)

"We believe that communication helps us to build alliances, partnerships and working relationships with diverse constituencies...and that with a collaborative effort, we can use these opportunities to establish a sense of community to reach mutually determined objectives and enable Education for Everyone, Everywhere, Everyday."

For the community, access to the information highway may prove to be less a question of privilege or position than one of the basic abilities to function in a democratic society. It may determine how well people are educated, the kind of job they eventually get, how they are retrained if they lose their job, how much access they have to their government, and how they will learn about the critical issues affecting them and the country.

Information itself has become democratized. In the process, education

has lost its staying power, and lifelong learning has become a necessity in order for professionals and skilled workers to maintain their competitive edge. Two-thirds of the present workforce will still be employed at the beginning of the next century; a large percentage will need retraining. (12)

Sharing resources between school district and community, KCnet now provides more than 1,000 Internet access memberships to the residents of Clinton, Lycoming, Potter, and Centre county at an affordable, sustainable rate of \$10 per month.

Public Access and Users Groups

Computer labs in the schools are quickly becoming public access sites for students and community members alike. A recent online survey (http://oak.kcsd.k12.pa.us/~survey) was generated as an online project by a sixth grade class in KCSD to determine the potential for Community and Education collaborations on "Projects for Mutual Benefit" (Interpreted: "What are some ways we can work together to learn from each other and, in doing so, improve our community and our education?") Students are currently collating the survey results in hopes that the results of this survey will assist in the development of shared services between the school district and the community.

Four computer user groups have begun in the area in response to the need for continuous training. The user groups meet bi-weekly or monthly with a major instructional focus each time and they report the minutes of their meetings on the KCnet Home Page for others to share in the learning process.

Recent Collaboration

Another joint venture between KCnet, KCSD, and LHU is the Volunteer Community Service Information HomePage. Two students at LHU began the project as a "Leadership" class requirement and also in a response to the needs of KCSD students for Community Service Project information. Service projects will be required for KCSD graduation beginning with the 9th grade class next year. Gathering information from organizations in Clinton County and the surrounding area, the LHU students have put together a site that will evolve as more and more Community Service Projects are completed by KCSD students. The site is also becoming popular with community volunteers and service organizations who are facilitated by its ease of use and concise volunteer information.

Clinton County has made a major leap into the Information/ Communication Age, one that can bring significant educational and economic benefits. Our vision for schools and communities in the 21st century has a focus on credible solutions that share infrastrucure, education, and services with the community, and we have started to build a successful model, KCnet, in rural Central Pennsylvania.

Following the lead of the KCnet prototype in Keystone, similar "electronic communities" are being funded in a recently awarded Pennsylvania Link To Learn Testbed Grant for Clinton, Centre and Clearfield counties.

Link To Learn Testbed

Link to Learn initiative(http://www.state.pa.us/Technology_Initiatives/l2l/link2lr7.htm) is a three-year, \$121 million initiative designed to move Pennsylvania to the head of the class in educational technology. The Basic Education and Higher Education components will combine eventually to form the Pennsylvania Education Network (PEN). The PEN will integrate existing networks into a "network of networks," using fiber, cable, wireless, and other technologies. This network will be a collection of community-based networks offering opportunities for all Pennsylvanians to use the vast amount of resources available online.

The KCnet consortium was formed and funded by the Link to Learn Testbed Initiative to extend the KCnet rural area network model into Clearfield and Centre counties. Sites included in the KCnet consortium testbed grant include Bald Eagle, Bellefonte, Centre County Technical School, Keystone Central, Keystone Community Network, Lock Haven University, Penns Valley Area, Philipsburg-Osceola, and State College.

Project Goal and Objectives

KCnet Consortium Goal: KCnet: The Fiber Model for Rural Connectivity will demonstrate a full voice/data/video fiber network that promotes the shared use of resources, both human and physical, to more efficiently and effectively link rural students, staff, and communities.

Objective #1: To expand a fiber network that will physically connect educational institutions in three predominantly rural Pennsylvania Counties (Centre, Clearfield, Clinton) and impact students and communities in an additional two counties (Lycoming, Potter).

Objective #2: To expand Internet connectivity to the newly-linked schools, residences, and businesses of these rural communities via the community network model.

Objective #3: To develop organizational and governance models (policies & procedures) that bring together communities and institutions with vastly different resources and schedules so that they can be shared effec-

tively and efficiently.

Objective #4: To develop basic training modules for network usage and specific training modules for the teaching/learning process and business activities utilizing the network.

Objective #5: To implement a technology "Help Desk" in the consortia area to provide support for network- and technology-related questions.

Objective #6: To initiate various end-user programs such as continuing education, classes for credit, professional development, business applications, K-12 classroom-to-classroom, etc.

Objective #7: To work with other networks in different regions to develop benchmarks and standards for upcoming connectivity.

Objective #8: To perform formative and summative evaluations of programs, financial benefits of the network, and scalability of the network model to determine its replicability.

Value as a Model

KCnet: The Fiber Model for Rural Connectivity is a proposal for a fully integrated voice/data/video network.

To be a valuable PEN testbed, the experimental model must be scalable, replicable, and affordable with education as its anchor tenant. The KCnet model has its roots in the shared infrastructure of LHU and KCSD. In a very real sense, KCnet is a microcosm of the PEN...beginning with the KCSD educator accounts on the LHU network, moving to community accounts on the KCSD network...and now growing to potential attachments for residents, business, and medical links on the KCSD fiber backbone.

Transporting the KCnet model to seven other sites will be a test for its scalability and replicability. It will also provide the opportunity to test organizational structures that are not presently in place as the complex process of scheduling classes with institutions that have vastly different schedules is undertaken. Finally, the project will test the cost effectiveness of fiber over expansive geographic areas as financial models are developed in support of education and commerce.

Project Viability

Link To Learn testbed grant funding will substantially assist in the implementation of the high-speed fiber network over this three-county rural area. However, for educational institutions, communities and businesses to afford this network, they must understand the cost trade-offs involved.

KCSD based the affordability of the fiber network on the following:

- 1. With the high-speeds available on this fiber backbone, central location of equipment such as servers and CD ROM towers means less equipment to purchase, load, back-up and maintain.
- 2. High-quality, full-motion, continuous-presence video is available with portable camera equipment that attaches to the existing tele vision cable feed in every classroom. High-cost, compressed video equipment is not needed at each site—and a single Codex can be scheduled to serve a wide-spread area when video com pression is needed to link with other compressed sites.
- 3. Telephone services will be available over the fiber backbone to every site without inter LATA charges. In addition, the elimination of at least half of the phone lines in the district will show a realizable cost justification over the short- and long-term.
- 4. Sharing the fiber backbone with the community through attach ment of local business and health care agencies can mean a lower rate for the educational institutions that sign the initial contract. KCSD will realize a decrease in monthly fees at each site as new agencies attach to their network to share costs.
- 5. Finally, as educators begin to realize the full potential of the voice/data/video network that is being implemented at their schools (through professional development)—they will begin to utilize these tools in the place of conventional "chalk and books"—which means that their own general fund budget for curriculum items will be reorganized and directed to pay for these new instructional technologies.

Partnership Evolution

As the KCnet Consortium is strengthened by the sharing of more and more resources, this rural partnership will evolve into a transparent (virtual) classroom (community) that is empowered by its ability to readily access current information for cooperative learning and decision-making.

Local dial-up to the network by "extended" community members over the three county area will be available through the KCSD technology network center and the KCnet non-profit organization just as it is currently available to all of Clinton County and parts of Lycoming and Potter County as well. TCI will continue to maintain the fiber backbone and end equipment to ensure reliability with minimal district staff requirements.

Vision—Community of Learners Hypothesis

Keystone Central School District and the community of Clinton County began their strategic planning process with a hypothesis:

Community and school interaction improves education and community life.

Here is a recent message from a member of that community to a teacher in the district:

Mr. Hanson,

I just want you to know that Amy came home last week after art class with paint on her pants and it didn't wash out. "Back in my day," this is exactly what teachers wanted to avoid. As a result, creativity and independent thinking were not encouraged. So, this is not a note to complain, it is to thank you! I love to watch Amy at work on an art project - she seems very relaxed and confident and really enjoys herself. She takes pride in her work. I'm not concerned with how "talented" she is, I'm just very pleased she enjoys art. I'm sure you can take some of the credit for this.

Thank you

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