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# The integration of an ICN classroom into a rural school curriculum

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## Abstract

Even though schools are currently not using the technology that they have in their curricula, it is never too late to begin the integration process. Schools must include the Iowa Communications Network (ICN) in their technology plans. Schools must connect to use the resources that each has to complement the curricula of one another. They must consider airing college classes for high school seniors, and they must begin finding ways to bring staff development hours to their teachers via the ICN.

Another objective in the technology plan must be training all teachers to operate the equipment in the ICN classrooms and teaching them how to become "tele-teachers." If schools are to effectively prepare graduates for college and the work force, technology must be integrated into curriculums and students must be allowed to use technology to learn, reason, think critically, make decisions, and solve problems.

# THE INTEGRATION OF AN ICN CLASSROOM INTO A RURAL SCHOOL CURRICULUM

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# CHAPTER I

## Introduction

While living in rural Iowa offers the amenities of country living to its population, that same population lacks many of the benefits of metropolitan life. One of those benefits is the curricula that are offered in urban high schools and the accessibility those high school students have to community colleges, public and private colleges and universities. Somehow the needs of the rural school districts had to be met so that an equalization of course offerings and resources between urban and rural schools would become a reality.

In the early 1980's, several community colleges began to develop distance learning projects by planning and installing separate educational telecommunications networks (Iowa Communications Network, 1998). By 1986, the Legislative Council determined there was a need for a coordinated statewide communications system, and the dream which developed into the Iowa Communications Network (ICN) was born. By 1991, a schedule for Parts I and II of the fiber optics network project was adopted and construction began.

Parts I and II, the first two phases of building the network, included installing one fiber optic endpoint in each of the 99 counties, one at each of the three State universities, one at Iowa Public Television (IPTV), and one on the Capitol Complex for a total of 104 sites (Iowa Communications Network, 1998). These sites and the fiber optics it took to connect them provided the backbone of the network. Part III, a four-year implementation of the network, will add over 480 video sites including public and private school districts, area education agencies (AEA's) and public libraries in Iowa. This phase will complete

the long-range goal of providing a video connection in every school district throughout the state of Iowa.

## Research Question

How effectively has the ICN classroom been integrated into rural Iowa school district curricula?

## Definition of Terms

Rural: of or pertaining to an area with a population of 1,500 people or less, and in which the majority of people engage in agriculture as their vocation.

# CHAPTER II

## Literature Review and Survey Data

The effective integration of technology into curricula is a crucial problem facing schools today. While many schools do not have the resources to purchase the necessary equipment for integration, still others have the equipment at their fingertips and have no plan or knowledge of how to integrate the equipment they have. Technology must play a key role in the education process if students are to be prepared for the future. According to the 1992 Secretary's Commission on Achieving Necessary Skills (SCANS), the United States Department of Labor cites the following as workplace competencies and basic skills of effective workers:

- Resources: know how to allocate time, money, materials, space, and staff
- Interpersonal skills: work on teams, teach others, serve customers, lead, negotiate, and work well with people from culturally diverse backgrounds
- Information: acquire and evaluate data, organize and maintain files, interpret and communicate, and use computers to process information
- Systems: understand social, organizational, and technological systems; monitor and correct performance; design or improve systems
- Technology: select equipment and tools, apply technology to specific tasks, and maintain and troubleshoot equipment.

Competent workers in the high-performance workplace need:

- Basic skills: reading, writing, arithmetic and mathematics, speaking, and listening skills

- Thinking skills: ability to learn, reason, think creatively, make decisions, and solve problems
- Personal qualities: individual responsibility, self-esteem and self-management, sociability, and integrity (Roblyer, Edwards, and Havriluk, 1997).

Many of the above skills can be taught through the use of technology in the classroom. But integration is not an overnight process. A study conducted in 1990 by Sheingold and Hadley shows that teachers worked for up to six years to master technology-based teaching (Roblyer et al., 1997). As teachers moved toward this mastery, their teaching behaviors and attitudes shifted in several ways. Teachers became facilitators of learning, not lecturers. They also began allowing students to work independently in small groups instead of involving the entire class in one project. Students were allowed to work cooperatively to problem solve during open-ended activities and projects. Interdisciplinary projects replaced learning in the content area as students addressed real-world problems and used multiple resources to solve those problems. As a result of this kind of teaching, students are more apt to graduate with the basic skills listed in the SCANS report.

The President's Committee of Advisors on Science and Technology recently set forth strategic recommendations to aid educators in integrating technology into their curricula (Report, 1997). Their first recommendation was to focus on learning with technology, not about technology. Technology must not be a content area of its own but must be incorporated into all content areas throughout the curriculum in order to be used the most effectively. The second recommendation was to emphasize content and

pedagogy, and not just hardware. New teaching methods that involve a student-centered approach to learning and develop higher-order reasoning and problem-solving skills must be implemented. The third recommendation gives special attention to professional development. Investments in hardware, software, and infrastructure are largely wasted if teachers are not properly trained and given the support they need to implement the technology into their curriculums. Staff development, mentoring and consultative support as well as ample preparation time must be available to teachers if they are to integrate appropriate technology and activities into their lesson plans. They must have the time and opportunities to reach out to other technology users and discuss what is happening in other classrooms. The fourth recommendation, spending at least five percent of all K-12 educational expenditures on technology-related items, will encourage schools to incorporate technology into their ongoing operating budgets rather than spending large amounts once, then dropping the line item from their budgets. The fifth recommendation ensures equitable, universal access of technology to all students, regardless of socioeconomic status, race, ethnicity, gender, or geographical factors, with special attention given to students with special needs. Initiating a major program of experimental research through federally funded programs is the sixth recommendation. This research will explore how best to use technology in the education process. Pilot programs within schools will be encouraged with proper documentation of outcomes reported to an independent board of experts.

Sheingold stated "...it is not the features of the technology alone, but rather the ways in which those features are used in human environments that shape its impact (Roblyer et al., 1997, p. 32). Those "ways" or technology integration strategies are what

schools must give careful consideration as they look at current curricula and decide where technology can be placed to provide students with ample opportunities to use it in research and problem-solving during the learning process.

Many schools do not use the technology already available to them. Teachers today should look at the curriculum they are teaching and ask, "How can I use the technology that the school has to present this unit to my students, and how can I involve the students so that they own the challenge of mastering the objectives?" Teachers must be aware of the capabilities of the technology their schools own and integrate that technology in as many curriculum areas and ways as possible (Milone, 1996).

Linda Roberts (1996) stated, "Technology will fail if it is considered an add-on rather than an integral part of education" (Milone, 1996, p. 26). Therefore, it becomes necessary to explore how technology can be used within current curricula. Teachers can use technology as a class management tool to monitor, record and track student performance. They can also use available software and hardware in their presentation of materials. Technology can reinforce learned skills through drill and practice software. Students can apply what they have learned to master or create their own games. Simulations involve students in real life or imaginary scenarios that allow them to interact, using problem-solving and decision-making skills. Tutorials aid students by introducing new materials, drill and practice, monitoring, review, and assessment. Whenever students are allowed to produce a final product using technology, they use higher-order thinking and problem-solving skills while mastering the use of the hardware and software. When technology is used in this way, products that students produce can

take on new meaning and depth, and students learn what it is to apply technology to specific tasks, one of the basic skills in the SCANS Report.

While the integration process seems like it should have evolved naturally within the last five years, it has not. Even in schools where technology abounds, in many cases, technology is not being integrated as it should. Several barriers to integration have been cited (Milone, 1996). One is that many teachers have only a minimal or sometimes non-existent knowledge of the hardware and software that their schools own. These teachers often times get small amounts of training throughout the year with little or no follow-up to that training. In some cases, the equipment they are trained on is not readily accessible to them after the workshop day, so they haven't the opportunity to continue using it. In still other cases, the equipment is readily available, but teachers are not given the release time needed to practice and assimilate the technology into their daily tasks, lesson plans, or units of instruction. A third barrier to integration is that not all persons on staff are expected to use technology. It should become a common practice within the school that all personnel use technology whenever it is appropriate to do so. This will create an atmosphere where using technology is the accepted method of completing a task.

For schools that have ICN classrooms, some of the same barriers to technology integration can exist (Roblyer, et al., 1997). The teachers in these schools must also be trained to operate and integrate ICN classrooms into their current curricula. Then, they must be allowed release time to prepare to teach using the technologies that these rooms have to offer. The training must combine learning how to use the technology with how to effectively teach in this type of classroom. Being a "tele-teacher" requires additional skills that a teacher in a regular classroom need not develop. Therefore, training ICN

classroom teachers must become a budgeted item along with current technology staff development.

Results from a survey (Appendix A) sent to rural Iowa schools with operable ICN classrooms showed that 24% of these staffs received no training on how to use and teach with the technology in these classrooms (Table 1). Of the staffs in those schools that did receive training, AEA's were listed as being the main source outside the schools that facilitated the training. No respondents reported attending a one-day workshop for training and only three of the 51 total reported taking a college course for training purposes (Table 2).

Table 1

Method of Teacher ICN Training

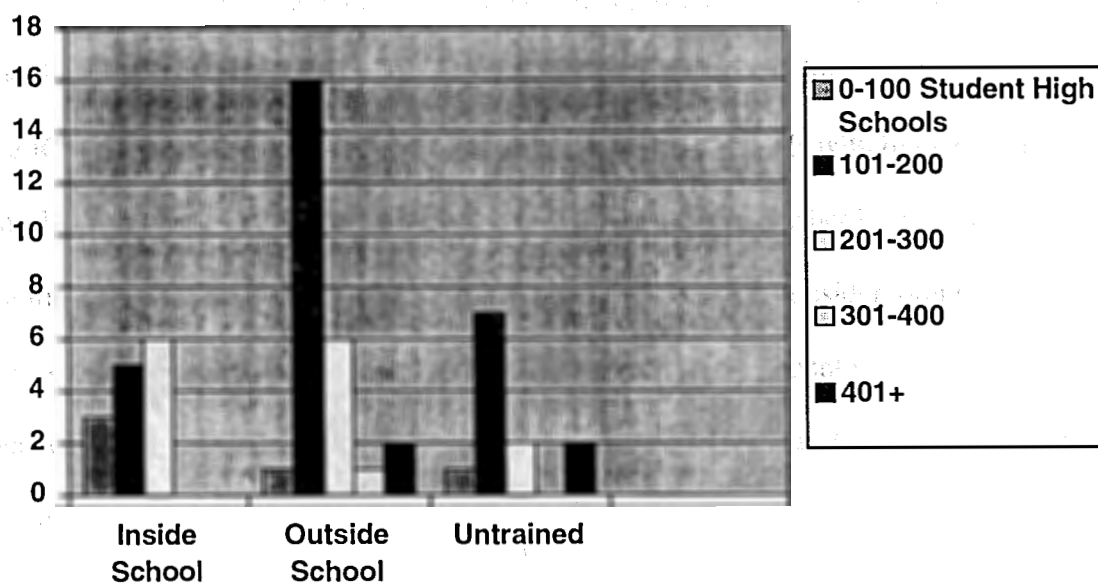
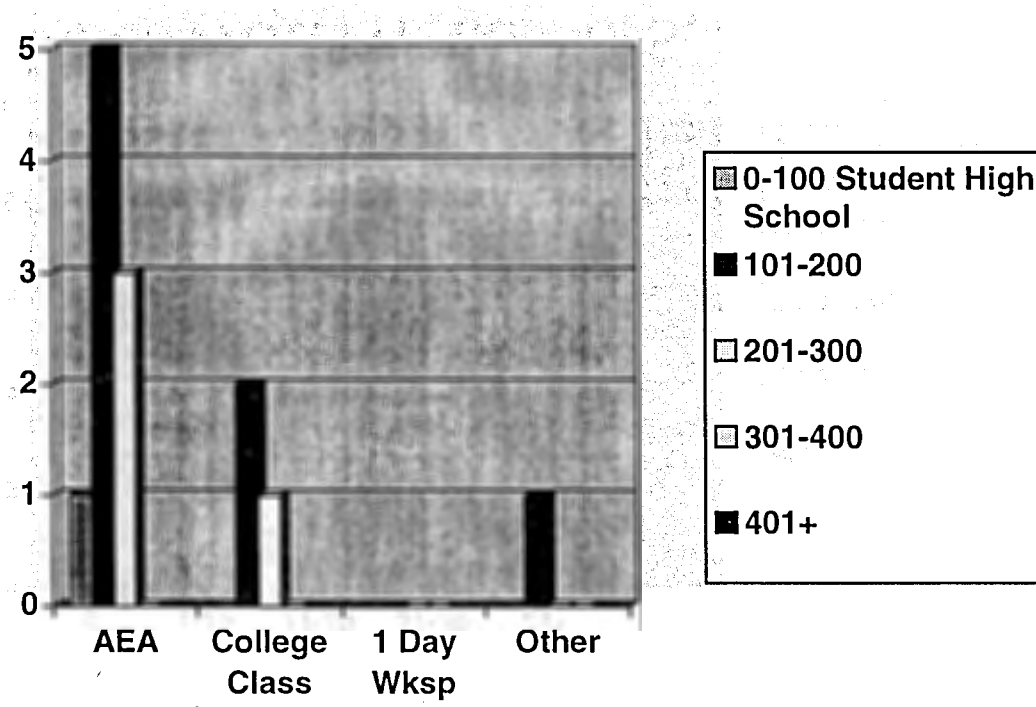


Table 2

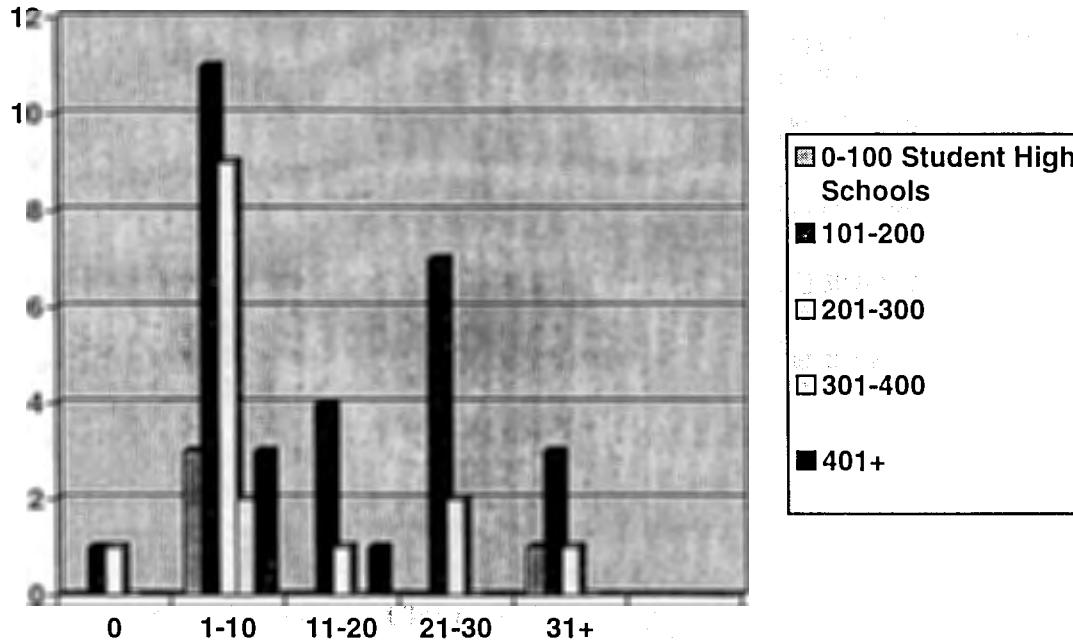
Source of Training




Of the survey respondents who reported, almost all of the schools used their ICN rooms for staff development purposes. Schools with 300 or less high school students used the ICN for staff development purposes much more than schools with higher high school enrollments (Table 3). While at first glance it might seem that schools are using their ICN rooms amply for staff development, the reader must take into consideration the number of hours that ICN rooms could possibly be used for staff development both during and outside of school hours. With that in mind, one begins to see that the rooms could be used more.

Table 3

Annual Hours of Staff Development Aired




When asked how many classes schools aired each week for K-8 students, 30 of the respondents said none were aired (Table 4). While this is somewhat understandable as most ICN rooms are located in the high school buildings, 13 of the respondents said there were no classes aired each week for 9-12 students (Table 5). That means that the ICN rooms in those 13 schools sit empty most of the time. The technology is in place, but there is no one that is using the technology as a tool to integrate it into classes the students are taking.

Table 4

K-8 Student Classes Per Week

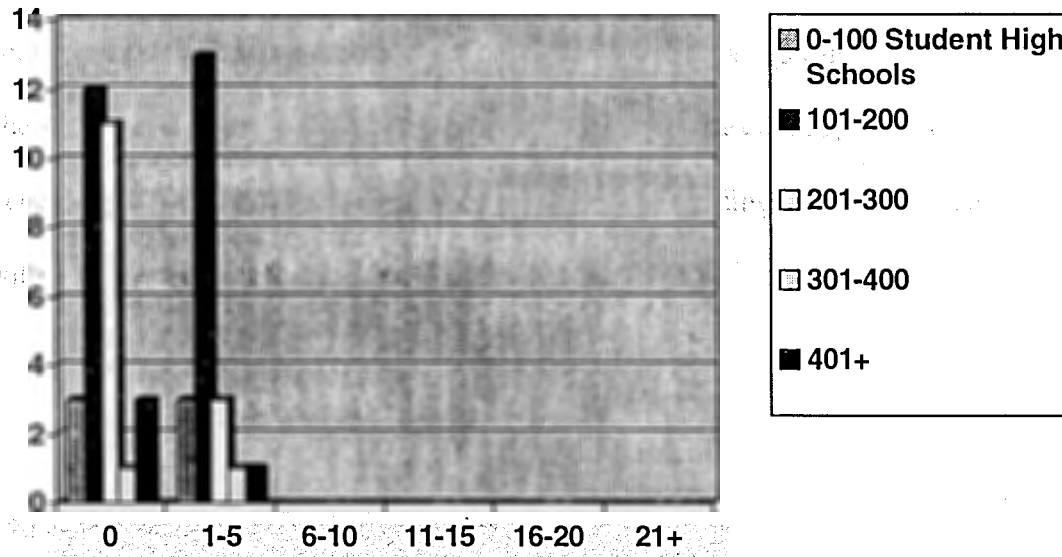
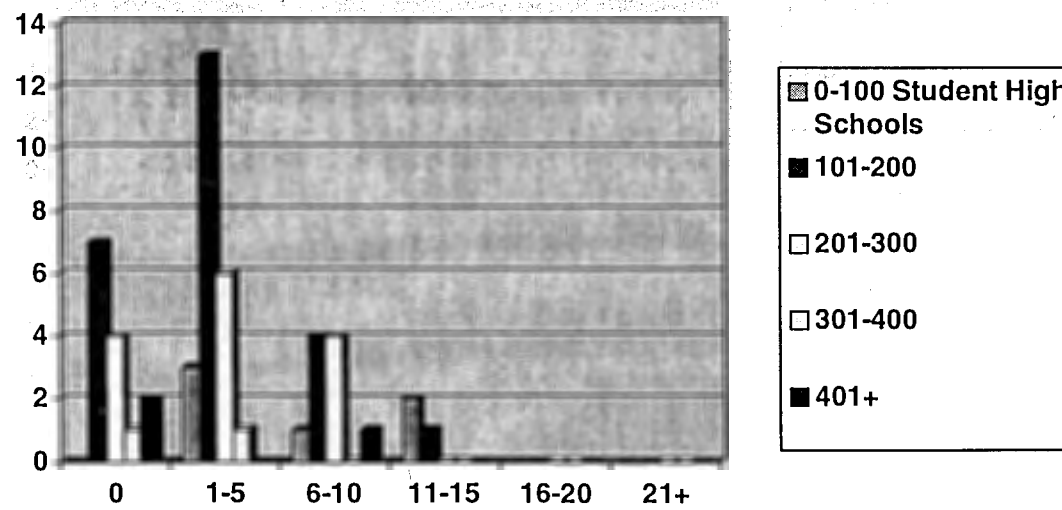



Table 5

9-12 Student ICN Classes Per Week



The numbers were no better when origination questions were asked. Forty respondents said their schools originate no classes each week for K-8 students (Table 6), and 29 said their schools originate no classes each week for 9-12 students (Table 7). These numbers appear to reflect the lack of use that ICN classrooms are getting throughout the state. Schools are not using the classrooms as resources to supplement classes they currently have in their curricula, and they are not expanding their curricula as they could with teachers outside their districts as resources.

Table 6

K-8 ICN Origination Classes Per Week

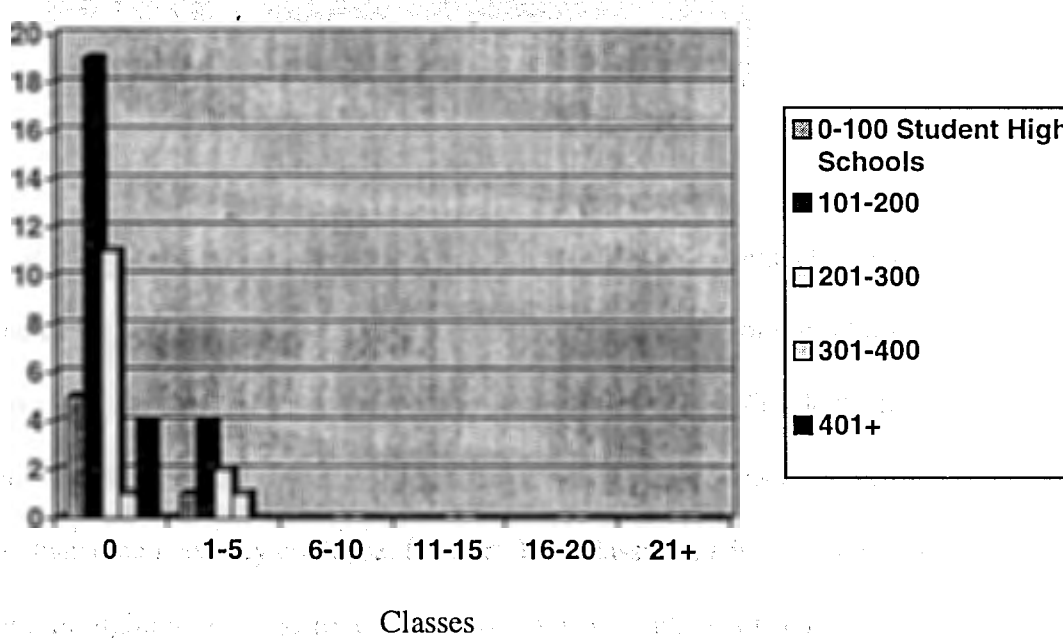
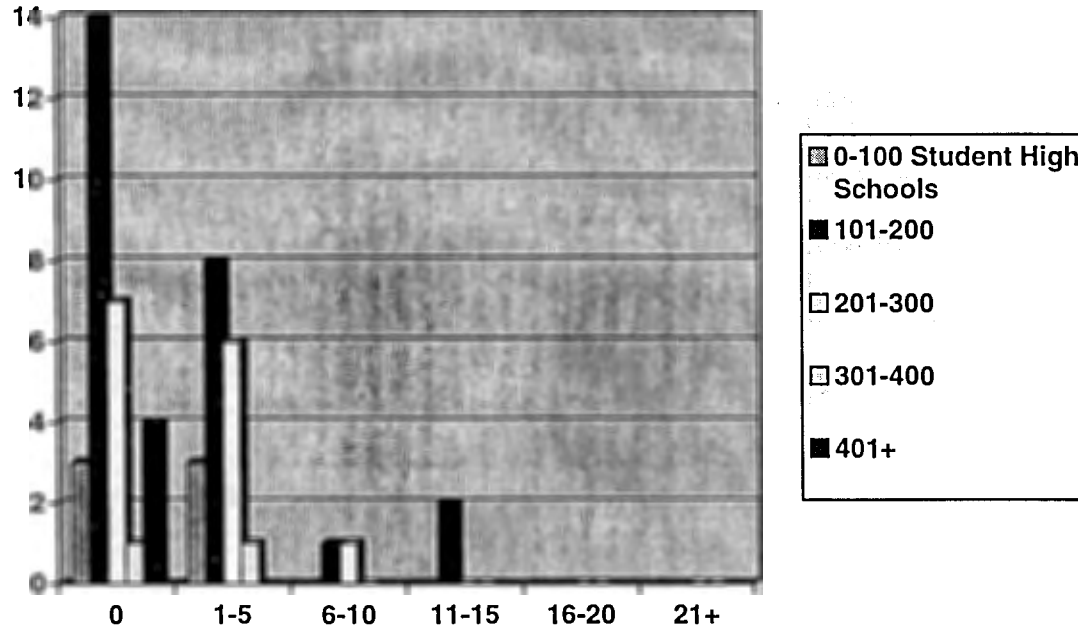


Table 7

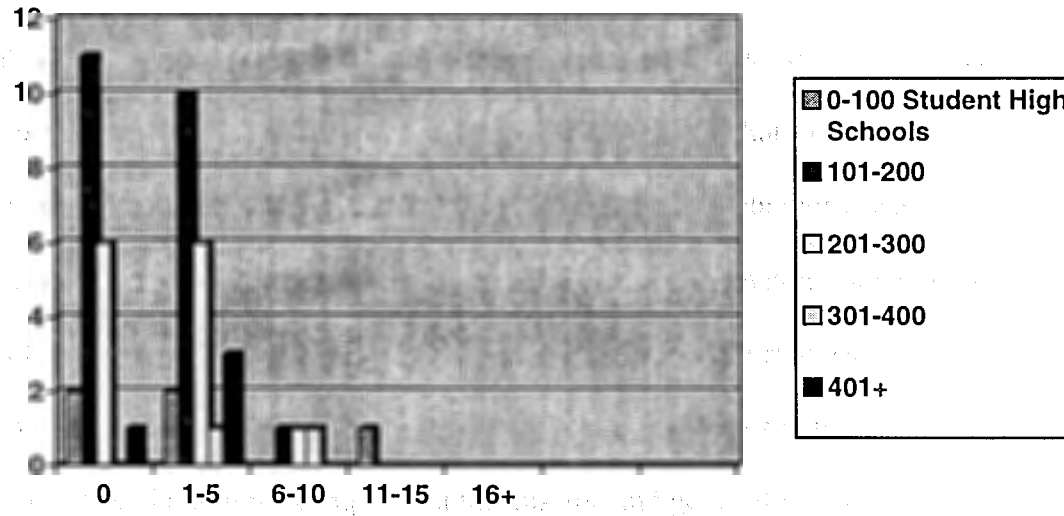
9-12 Student ICN Classes Originated Per Week




Almost 45% of the schools responding said there were no college classes being brought to their high school students via the ICN. Ninety-six percent of the schools that responded positively to that question were in the range of 1-5 classes (Table 8). It appears, then, that colleges and universities also are not being tapped as a source of curriculum enhancement as they could be. In short, ICN classrooms in most schools remain vacant throughout the majority of the school day and outside of school time. While the technology is in place, teachers in the schools are not effectively using the technology at their fingertips (Table 9).

Table 8

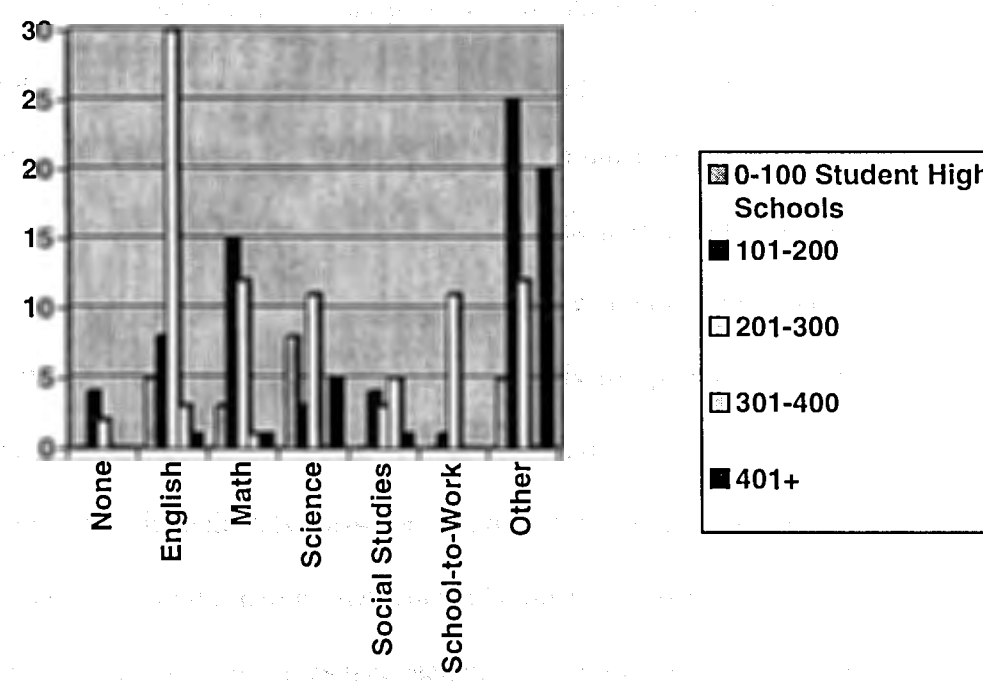
College ICN Classes for High School Students




Classes

Table 9

Full-Time K-12 Curriculum ICN Classes Per Week



# CHAPTER III

## Conclusion

Even though schools are currently not using the technology that they have in their curricula, it is never too late to begin the integration process. The best way to begin that integration is to write and implement a technology plan. Several authorities on this subject have suggested a six step process to be administered by a technology planning committee composed of educators, technology experts, and representatives of all groups in the school or district (Roblyer et al., 1997). During step one of the process, the committee should create a "merged vision," one that has the mission and the goals of the school in mind. The vision must complement the mission and goals of the district in order for it to be a shared vision. During step two, the committee must assess the current uses of technology in the district. Step three requires the committee to set goals for specific objectives to be met by the staff in the technology, instructional, and administrative areas. In step four, the committee outlines necessary purchases of hardware and software, the training needed for the staff to become users of the technology purchased, and the time frame for accomplishing the goals. During step five, the plan must be presented for approval to the administration and the school board. When the plan is approved, key persons will help with the implementation. Step six calls for evaluation and revision of the plan at least annually if not more. Objectives and the activities planned to meet the objectives must be monitored in order for the plan to be effective.

Schools must include their ICN classrooms in their technology plans. Objectives to implement the classrooms into their current curricula must be a part of that plan. Schools must connect to use the resources that each has to complement the curricula of

one another. They must consider airing college classes for high school seniors, and they must begin finding ways to bring staff development hours to their teachers via the ICN. Another objective in the technology plan must be training all teachers to operate the equipment in the ICN classrooms and teaching them how to become "tele-teachers." If schools are to effectively prepare graduates for college and the work force, technology must be integrated into curriculums and students must be allowed to use technology to learn, reason, think critically, make decisions, and solve problems.

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# APPENDIX A

405 Indian
Cherokee, Iowa 51012
(712)786-1101

Dear ICN Facilitator:

I am a graduate student at the University of Northern Iowa and am in the process of conducting research for my final project. My topic is how schools in Iowa are integrating their ICN rooms into their current curriculums. I am studying the number of hours the rooms are used per week, the types of classes aired, and how certified staffs were trained to be teachers over the Network. Please fill out the attached survey and return it to me by March 1, 1998. If you are interested in my findings, please check the appropriate space and I will be glad to forward the results to you.

If you have any questions about this survey, please contact me at (712)786-1101 or contact my advisor, Dr. Sharon Smaldino at (319)273-3250. Your participation in this survey is voluntary. You will not be identified individually in the discussion of the results. Thank you for your time.

Sincerely

Kathy Jacobs

Kathy Jacobs

# ICN USAGE SURVEY

Please fill out the following survey as accurately as possible.

What is the approximate number of students in each school in your district?

_____ elementary school _____ middle school _____ high school

What is the total number of K-8 certified staff? _____

What is the total number of 9-12 certified staff? _____

How many years has your ICN room been operable? _____

How many classes air per week for K-8 students?

_____ 1-5 _____ 6-10 _____ 11-15 _____ 16-20 _____ more

How many classes air per week for 9-12 students?

_____ 1-5 _____ 6-10 _____ 11-15 _____ 16-20 _____ more

How many classes do you originate each week for K-8 students?

_____ 1-5 _____ 6-10 _____ 11-15 _____ 16-20 _____ more

How many classes do you originate each week for 9-12 students?

_____ 1-5 _____ 6-10 _____ 11-15 _____ 16-20 _____ more

How many hours of staff development air for the staff per year?

_____ 1-10 _____11-20 _____ 21-30 _____ more

How many full time student classes per week are in the following curriculum K-12 areas:

_____ English _____ Math _____ Science _____ Social Studies

_____ School to Work _____ Other

How many full time student classes per week are college classes for high school students?

_____ 1-5 _____ 6-10 _____11-15 _____ more

How were the majority of the teachers trained to teach on the ICN?

_____ inside school source _____ outside school source _____ untrained

If the source was outside your school, please check any of the following that apply:

_____ AEA _____ college class _____ 1 day workshop _____ other

Do/Did you receive help with scheduling classes with other schools from a source outside your school?

_____ yes _____ no

If yes, what is that source? _____

You will not be identified as an individual on the data report or in the discussion/s of the results. Thank you for completing the survey.

_____ I would like to obtain a copy of your survey results.

Name _____

Address _____

_____

_____

School _____