A study of the effectiveness of the Iowa Communications Network as a distance learning system by comparing student achievement at the originating site and at remote sites

Patrick Howard Payton
Iowa State University

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A study of the effectiveness of the Iowa Communications Network as a distance learning system by comparing student achievement at the originating site and at remote sites

by

Patrick Howard Payton

A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Education (Educational Administration)

Major Professor: Richard P. Manatt

Iowa State University

Ames, Iowa

1999

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Graduate College
Iowa State University

This is to certify that the doctoral dissertation of

Patrick Howard Payton

has met the dissertation requirements of Iowa State University

Signature was redacted for privacy.

Major Professor

Signature was redacted for privacy.

For the Major Program

Signature was redacted for privacy.

For the Graduate College
DEDICATION

To the memory of Dr. Jack Beno
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ABSTRACT

This study compares student achievement between studio students and remote students in a course taught over the Iowa Communications Network. The Iowa Communications Network is a two-way full motion fiber optics telecommunications system capable of linking students and instructors anywhere in Iowa.

The students in a graduate school law course being taught over the Iowa Communications Network were selected to be the subjects of this study. The instructor was a lawyer who had previously taught the course, but had not taught a course over the Iowa Communications Network. The instructor had no special training and received no special training before teaching the course.

The purpose of this study was to investigate the effectiveness of teaching over the Iowa Communications Network as it relates to student achievement. A comparison of achievement was made between the students at the originating site and the students at the remote sites. The comparisons were made using scores on a pretest/posttest, class participation grade, unit quizzes grade, final exam grade, and course grade.

The students' scores and grades were analyzed using a t-test and a Mann-Whitney U test. No significant difference was found in achievement between the two environments.
CHAPTER I. INTRODUCTION

Iowans have been quick to recognize the possible benefits of distant learning by television. Iowans have kept pace, and at times have led the nation, at adopting educational technology. In 1947, Iowa State University became the first educational institution to receive a Federal Communication Commission permit to build an educational television station. By 1950, Iowa State University was operating WOI, a combined educational and commercial station (Krantrowitz & Biddle, 1994; Krohn, 1981).

Over the years, many Iowa institutions have used television for educational purposes. These were usually on a local level or in concert with other institutions. For example, in the 1970s a consortium of Southeastern Iowa high schools constructed an interactive microwave television system between their districts. In the 1980s several Iowa community colleges and school districts began planning and installing their own educational telecommunication networks. These community colleges and school districts were using different technologies. Governor Branstad and the Iowa legislature recognized that a statewide system was necessary (Krantrowitz & Biddle, 1994).

In response the Iowa legislature and Governor Branstad enacted Chapter 8D of the Iowa Code (1997) creating the Iowa Communications Network. The Iowa Communications Network provides live, full motion, two-way interactive video and audio television communications. The Iowa Communications Network, a fiber optic system, was built in three parts.
Part I was the initial construction. The main branches of the fiber optic cable were installed. Part II included installing more fiber optic end points and the construction of classrooms. At the conclusion of Part II, 104 sites were completed. The 104 sites consisted of one end point in each of Iowa's 99 counties, one at each of the three state universities, one at the Iowa Public Television station, and one at the Iowa Capitol Complex. These initial sites became operational in November 1993.

Part III consisted of adding additional sites including public school districts, private schools, area educational agencies, and public libraries throughout Iowa. Part III includes the goal of connecting every school district in the state. As of December 21, 1998 the Iowa Communications Network had 622 sites at a cost of approximately $209,130,000 (http://www.icn.state.ia.us/).

The State of Iowa administers the system. It is available to the following:

1. All accredited K-12 school districts and private schools in the state;
2. All accredited public and private colleges and universities;
3. All accredited technical educational institutions;
4. All state agencies;
5. All federal agencies;
6. The United State Post Office;
7. Public and private hospital and physician clinics; and
8. All public libraries.

Iowans began using the system as soon as it was operational. The demand for time on the system has continued to grow rapidly (Fujinaka, 1998; Krantrowitz & Biddle, 1994).
Higher educational usage of the Iowa Communications Network has increased from 27,746 hours in 1996 to 132,849 hours in 1998. The following usage information was obtained from Tami Fujinaka (1998), Public Affairs Officer at the Iowa Communications Network headquarters:

<table>
<thead>
<tr>
<th></th>
<th>Higher Ed Hours</th>
<th>All ICN Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 1996</td>
<td>27,246</td>
<td>100,945</td>
</tr>
<tr>
<td>FY 1997</td>
<td>89,520</td>
<td>182,386</td>
</tr>
<tr>
<td>FY 1998</td>
<td>132,849</td>
<td>249,781</td>
</tr>
</tbody>
</table>

Unfortunately, at the same time the Iowa Communications Network use has increased, the view of the public and many scholars has continued to be that distance learning is somehow inferior. Despite the fact that quantitative studies have generally shown distant learners achieving as well or better than traditional classroom students, this research has not dispelled the public’s belief that distance learning is somehow deficient, nor has it quieted academia’s criticism. The public has often been unable to extrapolate these studies to new media, such as the Iowa Communications Network, and academia has frequently condemned these studies as flawed. The public has never believed that distant learning and the traditional classroom are equivalent. Correctly or incorrectly, the public believes that the goal of distant learning is to give the distant student the same experience as offered in the traditional classroom (Schlosser & Anderson, 1993). The public has condemned distant learning solely because a distant student cannot interact with the instructor or other students.

While scholars may not share the public’s view that the experience must be identical, they have begun to question the instructional quality in distant learning courses (Blumenstyk,
1996; Grimes, Nielsen & Niss, 1988). Many scholars have voiced their apprehension about the rapid growth of distance learning. These scholars have expressed doubts about whether distant learning has enhanced or undermined their particular discipline (Blumenstyk, 1996; Guernsey 1998).

These scholars justified their doubts and apprehension by contending that the distant learning studies frequently compared traditional school-age, face-to-face students with distance learners who were older, more experienced, and more dedicated to learning. Academia has also argued that distant students had equal or higher achievement, because the courses were designed specifically for distant learning or had superior instructors.

Both the public and the scholars have mutual concerns and criticisms of distance learning and its supportive research. Both have emphasized that students and the instructors may be intimidated by the technology and fail to maximize its potential (Dillon & Walsh, 1992). Students uncomfortable with the technology may be hindered in their learning (Parrot, 1995); instructors uncomfortable with the technology may be hindered in their performance (Russell, 1994). The distant learning students may hesitate to ask a question and do not have an opportunity to stay after class to ask the instructor questions. Both the public and scholars lament the fact that distant learners cannot interact with fellow students outside the classroom. Finally, many in both groups opined that the studies comparing the traditional classroom with the distant learners are outdated, because these studies research obsolete technology.
Statement of the Problem

With the completion of the Iowa Communications Network and its counterparts in other states, the public’s skepticism and academia’s criticism are challenged anew. The public can no longer condemn distant education as inferior simply because the distant student cannot interact with fellow students and their instructor. On the Iowa Communications Network, the distant student is no longer isolated in time or by space. Distant students can interact concurrently with all other students in the course and the instructor. Unlike the public’s skepticism, the scholars’ objections cannot be answered as easily. Scholars have specific objections that are not answered by this new technology itself or by past studies of the old technology. This study attempts to answer some of the public beliefs and academia’s reservations, fears, and doubts about distant learning over the Iowa Communications Network.

More specifically, this study attempts to determine whether subject matter achievement differed significantly between the originating site students and the remote sites students in a course taught using Iowa Communications Network. This study raises the question: Did students who were with the instructor at the originating site as a group do significantly better than students at the remote site as a group in a course taught over the Iowa Communications Network? To answer the question, a school law course that was taught using the Iowa Communications Network was studied. The study also attempts to eliminate flaws and clarify past studies concerning the special training of instructors, the type of course, and the type of students (Herring, Smaldino, & Thompson, 1995).
A comparison of the distant learners' scores and the studio students' scores was made from scores earned on a pretest/posttest. A comparison was also made between the students at the remote sites (experimental group) and the students at the originating site (control group) on: (a) class participation grade; (b) unit quizzes grade; (c) final exam grade; and (d) course grade. The description of the class, teaching procedure and the design of the experiment are provided in Chapter III. The results are explained in Chapter IV.

Purpose of the Study

The purpose of the study was to determine the effectiveness of teaching a course in an originating classroom which is simultaneously being broadcast to remote classrooms using the Iowa Communications Network without changing any course content or teaching methods. The knowledge that a course can be taught effectively without changing course content or the instructor's teaching methods would be beneficial. It would also be beneficial to know if either the originating site students or the remote site students have an advantage over the other.

This knowledge may help answer some criticisms of distant learning using the Iowa Communications Network. No longer will the justification of the Iowa Communications Network courses be limited to its lower cost and convenience.

The study adds to the body of knowledge regarding distance learning and, more specifically, interactive media. Studies comparing the achievement of distant learners who are taught using different media with those who are taught in traditional classrooms span more than 70 years. This study augments television studies going back nearly 50 years.
Objectives of the Study

The following were the objectives of this study:

1. Develop a school law test to be used as a pretest and a posttest.
2. Complete a comprehensive literature search and construct tables of literature related to distance learning and the Iowa Communications Network.
3. Administer the pretest and posttest to determine gains in general school knowledge and collect the grades given by the instructor.
4. Analyze the pretest/posttest, the instructor's grades, and the course grade to determine if there is a statistical difference between the students at the originating site and the students at the remote sites.
5. Draw conclusions and make recommendations for further studies.

Hypotheses of the Study

In an attempt to compare the effectiveness of the Iowa Communications Network at remote and originating sites, the following null hypotheses were tested at the .05 \( \alpha \) level of significance.

1. No statistically significant difference exists between students' achievement at remote sites and students' achievement at the originating site as measured by a posttest.
2. No statistically significant difference exists between students' achievement at remote sites and students' achievement at the originating site as measured by their grade for class participation.
3. No statistically significant difference exists between students’ achievement at remote sites and students’ achievement at the originating site as measured by their grade for unit quizzes.

4. No statistically significant difference exists between students’ achievement at remote sites and students’ achievement at the originating site as measured by their grades on a final exam.

5. No statistically significant difference exists between students’ achievement at remote sites and students’ achievement at the originating site as measured by their course grade.

**Definition of Terms**

One problem with reviewing, examining, and reading about distant education is that each writer uses slightly different terms and uses the same term differently. This inconsistency makes comparison awkward, frequently misleading, and occasionally impossible. The term “distant learning” has no precise definition and is often used interchangeably with “distance learning” and “distance education” (Schlosser & Anderson, 1993).

For this study the following terms were interpreted to be interchangeable and had the following working meanings:

*Distant Learning, Distance Learning,* and *Distance Education* describe any situation in which the instructor is not physically with the student or students.

*Socratic Method* and *Case Book Method* are methods of teaching that employ or rely mainly on questions-and-answers (Alexander & Alexander, 1992; Mudd, 1993/94).
Traditional Classroom, Face-To-Face Classroom, Originating Site and Studio Classroom describe any teaching environment where the instructor and students are in the same room.

Assumptions of Study

This study was based on the following basic assumptions:

1. The students performed to the best of their ability on the pretest even through they knew the instructor would not grade or see the scores of the pretests.
2. Remote site students and students with the instructor were equally motivated to do well on all coursework and exams.
3. Remote and originating sites had equivalent environments conducive to learning.
4. Remote site and originating site students had roughly equivalent experience and educational background.
5. The instructor graded each student fairly and accurately.

Delimitations of the Study

This study was subjected to the following delimitations:

1. This study measured only achievement in a school law course entitled Fundamentals of School Law, an Educational Administration course for three credit hours.
2. The course was taught using the Iowa Communications Network from the originating site at 1800 Grand Avenue, Des Moines, Iowa to remote sites at Iowa State University, Albia High School, Davis County High School, Indian Hills Community College, Spirit Lake High School, and Sibley High School—all in Iowa.
3. There was a total of 26 students, 17 at remote sites and 9 at the originating site.
4. The Fundamentals of School law course met Monday through Friday, from July 10 to August 4, between 9:50 a.m. and 12:00 p.m., in the summer semester of 1995.

5. K. L. Collins, an attorney at law who works for School Administrators of Iowa as its Director of Legal Services, was the instructor.

6. The instructor had no special training for the Iowa Communications Network. The instructor had taught this course several times in a traditional classroom. The instructor did not alter the content or method of teaching for the Iowa Communications Network.

7. Only one methodology of teaching, the Socratic method commonly referred to as to the case book method, was used in this study.

8. No attempt was made to study the cost effectiveness of teaching using Iowa Communications Network.

**Human Subjects Approval**

The Iowa State University Committee on Use of Human Subjects in Research reviewed this project. The committee concluded that the rights and welfare of the human subjects were adequately protected, that the risks were outweighed by the potential benefits and expected value of the knowledge sought, that confidentiality of data was assured, and that informed consent was obtained by appropriate procedures.
CHAPTER II. REVIEW OF THE LITERATURE

The review of literature is divided into five sections. The first section describes how the review was conducted. Section two discusses the problems with defining distance learning and the origin of distance learning. Section three describes the relationship between television and distant learning. Section four explains why the study of student achievement in distant learning has been stifled for the last two decades. The last section describes the literature about the Iowa Communications Network and its forerunners.

Method of Review

The review of literature for this study began with an Educational Resources Information Center (ERIC) database search from 1966 to present. The search used the following descriptive words: distance learning, distance education, school law, and Iowa Communications Network. Each selected article was read for content, and the bibliography of the article was reviewed for further investigation and direction. Then selected articles were read and their bibliographies reviewed. This process was repeated over and over until the sources were exhausted or unavailable.

Next a search was made of Dissertation Abstracts International for the past 20 years. Selected dissertations were read and the bibliography cross-checked against previous selected articles and documents. Any articles or documents not previously reviewed were read for content and further direction.

A search was conducted of the Readers’ Guide to Periodical Literature for popular press articles. Searches were also made of the Index to Legal Periodicals for related articles.
Finally, the Iowa State University, University of Iowa, University of Northern Iowa and Drake University libraries were searched for Iowa Communications Network materials. A search was also made of the World Wide Web (WWW) for material, but information found was not cited. The WWW tends to be rather transitory. Whenever information was found on the web, it was verified by checking the source of that information. If the information was used, it was the verified source that was cited. The one exception was the Iowa Communications Network's web page. The web page was used in this one instance, because the web page contains newer information that is updated more often than the Iowa Communications Network Fiscal Year Annual Report. This exception was made because the State of Iowa maintains this web site which is, therefore, less transitory and more reliable.

Definition and Origins of Distance Education

No satisfactory definition of distance learning has been found (Keegan, 1993; Goro, 1995; Sauve, 1993; Schlosser & Anderson, 1993). There have been many esoteric attempts at forming a definition, but the definitions were either so broad that the definitions included other matters or so narrow that the definitions failed to include some forms of distance learning. Part of the difficulty of defining distant learning has been the ever-changing nature of technology and, therefore, distance learning itself (Abou-Dagga, 1995; Dede, 1990, 1991). It suffices to say that distance learning or distance education occurs when the student is not physically in the same room with the instructor.

While scholars cannot agree on a definition of distance learning, they uniformly agree that distance learning or education began with the arrival of the industrial age and its efficient postal system (Goro, 1995; Holmberg, 1989; Moore & Kearsley, 1996; Schlosser &
Anderson, 1993). An efficient postal system enabled educators to mail printed materials to teach students at remote locations. These correspondence courses were not highly regarded by either the public or academia, although they were used by the military, many large corporations, and most universities (Bruder, 1989; Meierhenry, 1946). Correspondence courses were mainly associated with commercial schools rather than nonprofit education institutions (Holmberg, 1989). In the United States correspondence programs through universities have had limited success, but worldwide correspondence courses are still the main form of distant learning (Moore & Kearsley 1996). These correspondence courses at colleges and universities are now generally referred to as independent study and form a major subdivision of distance education. When the earliest correspondence courses and the more recent studies were compared based on achievement with traditional classroom students, some revealed that the distance learners did better than the traditional students (Cheng, Lehman & Armstrong, 1991; Crump, 1927).

As technology progressed, educational institutions experimented with each new media device. Often these institutions adopted or at least adapted some aspect of the new device to their educational program (Cotton, 1995). Today there are many different technologies used in distance learning programs and courses. Now there are educational movies, audiotapes, CD-ROM, videotapes (e.g., one-way live video), television (e.g., one-way video with two-way audio), and computers (e.g., two-way online interactions). All of these devices have been used in distance education and their effectiveness studied (Cotton, 1995). By far, television has been the recipient of the most optimistic predictions and the most severe condemnation.
Television and distance learning

Although television was invented in the late 1920s, its educational use, like its commercial use, was not widespread until after World War II. The study of television’s educational use before World War II was limited. Yet, as early as 1934, the University of Iowa experimented with television educational broadcasts in such subjects as oral hygiene and astronomy (Moore & Kearsley, 1996). In 1938, the New York College of Business and Public Administration presented a 45-minute course to 250 students using 25 televisions (Clark, 1938).

The use and study of television as an educational device began to unfold after World War II. Several colleges, such as Iowa State University, the University of Houston, and Case Western Reserve University, began to offer television courses for college credit (Meaney, 1962; Stahmer, 1990). Most of these television courses were lectures. The instructor generally taught into one camera and the sponsoring educational institutions broadcasted the lectures to students at distant locations both on and off campus. During the 1950s and 1960s, many experiments were completed and published about the effectiveness of television in comparison with traditional classroom instruction.

A study by Chu and Schramm (1967) reviewed 207 published articles comparing conventional classroom teaching with television instruction. The study listed 421 separate comparisons of achievement. The majority of these comparisons (308) found no significant difference between the conventional classroom students’ achievement and the students taking television instruction. Another 63 comparisons found that the students who took television
instruction achieved at a higher level than did the students in the traditional classroom; the
remaining 50 comparisons showed the traditional classroom to be superior.

Some scholars have argued that these results are no surprise, because television
courses have all the advantages. It has been speculated that if the traditional courses were
prepared with the same effort, time, and resources as the television courses, then the result
would be different (William, 1962). It has been suggested that the students at remote sites
are generally more mature and more experienced than students in the traditional classroom
thus explaining higher achievement by the distance learners (Souder, 1993). An exploration
of the literature confirms these arguments (Grimes, Nielsen, & Niss, 1998).

Despite documentation and research showing effective achievement by students using
television, there were still many objections to television courses. The major objection to the
television courses was the lack of interaction between the instructor and students and the lack
of interaction among the students (Almstead & Graf, 1960). These lecture-type television
courses became sarcastically referred to as “talking heads” (Russell, 1994).

Some studies before 1990 tried to overcome this criticism by supplementing
television with other technology such as telephones for feedback to create interaction
(Arbelo-Atiles, 1972). Still others, like the Annenberg project, designed a course specifically
for television and evaluated it (Grimes et al., 1988). All studies of television effectiveness
before 1990 must be examined with some reservations, because they did not represent or use
technology available today.

Even more recent studies comparing remote classroom students’ achievement with
traditional or originating classroom students’ achievement do not involve the full-motion,
interactive features of the Iowa Communications Network, which provides for live two-way video and two-way audio among all the sites. For example, a study of achievement in a graduate level management course via satellite sounds comparable until the study reported that lively discussion took place between the Georgia Tech students' instructor and the NTU students who telephoned the instructor during the broadcasts (Souder, 1993). Apparently, in this study the distant learners could see and hear the instructor and students in the originating studio classroom, but could not communicate with remote students except by voice amplified telephone lines. This situation is different from the Iowa Communications Network which allows audio and video interaction between all sites and, thus, all students interact with each other and the instructor. The Iowa Communications Network provides a unique situation to be studied.

A chilling effect

No review of distance learning literature would be complete without mentioning the most widely quoted analogy in distant learning literature. This analogy had a chilling effect on research about student achievement using different media for distance learning (Clark, 1983). As stated in the article:

The best current evidence is that media are mere vehicles that deliver instruction but do not influence achievement any more than the truck that delivers our groceries causes changes in nutrition...only the content of the vehicle can influence achievement. (Clark, 1983, p. 445)

This analogy has been so influential that during the last two decades researchers have largely refrained from doing achievement studies and averted their attention to other aspects of distant learning. For example, there have been distant learning studies on students'
attitudes, course design, course development, media selection, teaching strategies, cost
development and policy (Moore & Kersley, 1996). This attitude of avoiding research
involving achievement and different distance media is now being challenged (Kozma, 1991;
Souder, 1993). This chilling effect on distant learning and achievement has hindered
knowledge about the more sophisticated media (Kozma, 1991), such as the Iowa
Communications Network. Many distance learning media have not been tested for
achievement and their effectiveness is now open to criticism and speculation.

**Iowa Communications Network Research**

One of the earlier investigations to compare face-to-face and interactive television
achievement was a study of a forerunner of the Iowa Communications Network. Kirkwood
Community College in Cedar Rapids, Iowa, began using an interactive microwave system in
1980. Three marketing classes were studied. Two groups received instruction
simultaneously. The instructors were physically present with one group at the originating
site and the other group was taught over interactive television. The same instructor taught a
third group in the traditional classroom using the same material and method in the following
semester without any television cameras. The study generally found no statistical difference
existed among the three groups, although a statistical difference was found on one unit test
(Krohn, 1981).

Another forerunner of the Iowa Communications Network, the Eastern Iowa
Community College District (EICCD), was studied. The grade point averages of the remote
students and those students at the originating site were analyzed using the final semester
grades. A t-test was performed using the semester grades as the unit of analysis at the .05 α level of significance. No significant difference was found between the grades of originating site students and the remote site students (Kabat & Friedel, 1990).

Recently, a Master's in Business Administration program taught entirely over the Iowa Communications Network was studied (Westbrook & Moon, 1997). Although it was a qualitative study, it is the only study of student achievement in a complete program taught over the Iowa Communications Network. Other studies have been limited to courses or units of a program. This qualitative study employed interviews with the administrators who organized the program, the faculty who taught in the program, and students who were enrolled in the program. Overall, the faculty reported that the distant learners did as well academically as on-campus students. However, both the faculty and students felt that the use of the Iowa Communications Network "slightly reduced the overall impact and success of the degree program." The report concluded that an educational program using the Iowa Communications Network is perceived as second-best to a traditional classroom program. This perception of inferiority is the problem.

Quantitative studies have confirmed that courses taken over the Iowa Communications Network are perceived to be inferior to courses taken in the traditional classroom (Sorensen, 1994). Students at the originating sites appeared to have a better attitude toward the course and instructor than those at the remote site. The entire body of distant learning literature suggested that the less personal contact the student has with the instructor the greater the achievement. For example, correspondence students who would have very little contact with the instructor almost always scored higher than traditional
students. While the technology becomes more sophisticated, which allows for real time interactivity with the instructor and other students, the achievement scores become more equal.

The effect of the hiatus of two decades can be seen in a review of the literature about the Iowa Communications Network. The majority of the articles and achievement studies about the Iowa Communications Network are qualitative. Table 1 lists and summarizes the qualitative and quantitative articles, and studies of Iowa Communications Network literature.

Quantitative researchers have largely avoided achievement studies. They have turned to other aspects and topics regarding the Iowa Communications Network (Abou-Dagga, 1995; Chen, 1997; Goro, 1995; Miller & Doefert, 1995; Sorensen, 1994, 1996). There have been only a few quantitative studies about student achievement using the Iowa Communications Network or one of its forerunners. Table 2 lists Iowa Communications Network literature involving quantitative research cited in this study.
Table 1. Selected Iowa Communications Network literature

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abou-Dagga</td>
<td>1995</td>
<td>Teachers' attitude regarding the use of the ICN was the primary predictor of their use of the ICN classroom.</td>
</tr>
<tr>
<td>Bozik</td>
<td>1996</td>
<td>Students responded that ICN had no difference on class effectiveness and motivation to learn; 59% perceived that there was an advantage being at the originating site; 87% would take another class on ICN.</td>
</tr>
<tr>
<td>Branstad</td>
<td>1996</td>
<td>Governor of Iowa praising the ICN. Opined that smaller school districts were strengthened.</td>
</tr>
<tr>
<td>Chen</td>
<td>1997</td>
<td>Students believed the quality of education to be less than instructors for learning on the ICN.</td>
</tr>
<tr>
<td>Elliott</td>
<td>1995</td>
<td>Describes how lesson plans, activities, and pace of learning change with this new dimension, noting that students are enthusiastic and involved.</td>
</tr>
<tr>
<td>Goro</td>
<td>1995</td>
<td>Provides a list of strategies that can be applied in distant learning environment to ensure success.</td>
</tr>
<tr>
<td>Goro</td>
<td>1997</td>
<td>Students believed the quality of education to be less than when instructors are present.</td>
</tr>
<tr>
<td>Greenbowe</td>
<td>1995</td>
<td>Describes using the ICN for college introductory chemistry courses, including laboratory experiments.</td>
</tr>
<tr>
<td>Hausafus</td>
<td>1995</td>
<td>Discusses results of a study that examined preservice and inservice teachers' use of hand-held Computer Based Observational Assessment Tools (CBOATs) using ICN.</td>
</tr>
<tr>
<td>Herring</td>
<td>1993</td>
<td>Included are vision statements by teacher education experts in the fields of foreign language, literacy, mathematics, science, and vocational education that serve as perspectives concerning the application of distance education methods to these disciplines.</td>
</tr>
<tr>
<td>Herring</td>
<td>1995</td>
<td>Research reports are provided on projects that include: the preparation of multimedia-based instruction using the ICN, science instruction for students with disabilities, and professional networking opportunities.</td>
</tr>
<tr>
<td>Ivanovic</td>
<td>1995</td>
<td>Describes the Iowa Communications Network.</td>
</tr>
<tr>
<td>Jarchow</td>
<td>1995</td>
<td>Concluded that acceptance of the system as an integral part of elementary and secondary education will take time.</td>
</tr>
<tr>
<td>Jones et al.</td>
<td>1992</td>
<td>Cost analysis of different types of distant learning including the ICN.</td>
</tr>
<tr>
<td>Maushak</td>
<td>1997</td>
<td>Contains information for developing, implementing, and administering distance education systems.</td>
</tr>
</tbody>
</table>
Table 1. (Continued)

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miller &amp; Doefert</td>
<td>1995</td>
<td>Data suggests that teachers are undecided about using ICN for teaching agriculture. Teachers generally agreed that agricultural mechanics courses were not suited to ICN delivery, but agricultural economics courses were suitable.</td>
</tr>
<tr>
<td>Nixon</td>
<td>1990</td>
<td>The learning outcomes at the remote sites tended to be higher when comparing the final grades.</td>
</tr>
<tr>
<td>Rees</td>
<td>1995</td>
<td>Presents several examples of how the network can benefit music educators in college and K-12 institutions.</td>
</tr>
<tr>
<td>Simonson</td>
<td>1993</td>
<td>This document is a resource for information on distance education research in Iowa.</td>
</tr>
<tr>
<td>Simonson</td>
<td>1994</td>
<td>Research studies must be distributed and publicized to support the professionalization of distance education.</td>
</tr>
<tr>
<td>Simonson &amp; Schlosser</td>
<td>1995</td>
<td>Describes the Iowa Distance Education Alliance and the Iowa Communications Network.</td>
</tr>
<tr>
<td>Sorensen</td>
<td>1994</td>
<td>Students appeared satisfied with their distance learning experience; remote students appeared less satisfied than their origination site counterparts.</td>
</tr>
<tr>
<td>Sorensen et al.</td>
<td>1994</td>
<td>Students and teachers who use the ICN viewed it positively as did other Iowans who have seen the system in operation. Continued success will be based on: access to the system, policy issues, operational issues, teacher inservice, preservice teacher education, information access and coordination, and collaboration.</td>
</tr>
<tr>
<td>Sorensen</td>
<td>1996a</td>
<td>Evaluated the effectiveness of ICN courses: 93% agreed instructor paid attention to remote students; 90% of students at remote sites felt they were part of the class; 88% were satisfied with course; 87% would take another course using ICN; overall students with instructor had a higher opinion of the course.</td>
</tr>
<tr>
<td>Sorensen</td>
<td>1996b</td>
<td>Preliminary evaluation report of the Iowa Distance Alliance.</td>
</tr>
<tr>
<td>Westbrook</td>
<td>1996</td>
<td>Interviews with administrators, faculty members and students about their opinions regarding graduate studies on the ICN.</td>
</tr>
<tr>
<td>Wetteland</td>
<td>1996</td>
<td>Reports on ways that Iowa libraries are using the ICN.</td>
</tr>
<tr>
<td>Yager</td>
<td>1995</td>
<td>Discusses the use of ICN to encourage science reform through distant learning.</td>
</tr>
</tbody>
</table>
Table 2. Iowa Communications Network literature involving quantitative research

<table>
<thead>
<tr>
<th>Year</th>
<th>Researcher</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Chen</td>
<td>Students rated communication quality at a lower level (statistically significant) than did instructors.</td>
</tr>
<tr>
<td>1996a</td>
<td>Sorensen</td>
<td>Evaluated the students’ satisfactions and perceptions of the ICN.</td>
</tr>
<tr>
<td>1995</td>
<td>Abou-Dagga</td>
<td>Teachers’ attitude regarding the use of the ICN was the primary predictor of their likelihood of using the ICN for classroom instruction.</td>
</tr>
<tr>
<td>1995</td>
<td>Goro</td>
<td>Provides a list of strategies that can be applied in a distant learning environment to ensure success.</td>
</tr>
<tr>
<td>1995</td>
<td>Miller &amp; Doefert</td>
<td>Data suggests that teachers are undecided about using ICN for teaching agriculture. Teachers generally agreed that agricultural mechanics courses were not suited to ICN delivery, but agricultural economics courses were suitable.</td>
</tr>
<tr>
<td>1994</td>
<td>Sorensen</td>
<td>Students appeared to be satisfied with their distance learning experience, although remote students appeared less satisfied than their origination site counterparts.</td>
</tr>
<tr>
<td>1990</td>
<td>Nixon</td>
<td>The learning outcomes at the remote sites tended to be higher when comparing the final grades.</td>
</tr>
</tbody>
</table>
CHAPTER III. MATERIALS AND METHODS

This study was designed to compare the achievement of graduate students who were in the studio classroom with the achievement of graduate students who received the same instruction over the Iowa Communications Network. The graduate students in the originating classroom with the instructor were at the Iowa Communications Network classroom, and Central Campus Building at 1800 Grand Avenue, Des Moines, Iowa. Students who received their instruction using the Iowa Communications Network were at Iowa State University, Albia High School, Davis County High School, Indian Hills Community College, Spirit Lake High School, and Sibley High School.

Materials

Iowa Communications Network

The Iowa Communications Network is a statewide fiber optic communication infrastructure providing live interactive video, voice and data services. This system reaches at least one educational endpoint in all 99 counties of the state. The system provides video, voice, and data simultaneously transmitted to each site. When a site is "lit" or "on" participants at the separate geographic locations can hear and see each other in real time.

Each of the classroom locations on the Iowa Communications Network is equipped with television cameras, television monitors, microphones, a touch screen, a control monitor and associated electronic equipment. This allows every Iowa Communications Network classroom to be the originating or a receiving site. Two-way transmission gives the instructor the opportunity to see and hear remote participants and to share all images with all
24

connected or "lit" sites. Likewise the students at all locations see and hear the instructor and fellow students at all other locations.

The Iowa Communications Network allows students at remote sites to participate in real time with the instructor and students at the originating site and the other remote sites. All of this is accomplished as follows: The instructor controls the television cameras at all sites so that all monitors show the same picture in all classrooms whether the instructor is teaching in Des Moines or a student is asking a question in Spirit Lake, Iowa. Each student has a microphone. When a student wishes to talk, the student presses a button on the microphone. Holding the button down automatically shuts down the instructor and all other student microphones. As long as the speaking student holds down the microphone button each student can hear what that student says. If the instructor wants the other students to see that student, the instructor can have all monitors simultaneously show the speaking student (Appendix A).

Course

A school law course was chosen to be the subject of this study. The course (EdAdm 575) was entitled "Fundamentals of School Law." Iowa State University offered the course in the summer of 1995. The course was scheduled by the university to be an Iowa Communications Network course even before it was selected for this research. The classes met from July 10 to August 4, 1995, on Monday through Friday, from 9:50 a.m. to noon.

In the course, the legal basis for public schools and their operation was explored. The students in the course examined the law as it affects the school district, the school boards,
administrators, teachers, and students at the elementary and secondary level (Appendix B).

The course was a mandatory course for principal certification.

Textbook

The textbook used in the course was Kern Alexander and M. David Alexander's *American public school law* (3rd ed.). This type of book is commonly called a case book and is a type of textbook used in law schools. The case book consists primarily of edited appellate cases and limited text. The case book encourages the instructor to employ the Socratic method of teaching (Alexander & Alexander, 1992). The Socratic method of pedagogy is almost synonymous with that used by law professors and law schools (Mudd, 1993/94). The instructor, a lawyer, employed this Socratic or casebook method.

Instructor

The instructor was K. L. Collins, an attorney at law, who was serving as an adjunct professor. The instructor's regular employment was for School Administrators of Iowa as the Director of Legal Services. Collins had previously taught the course at Iowa State University in a traditional classroom, but had never used the Iowa Communications Network.

Instructors often take a class in teaching over the Iowa Communications Network or are coached in teaching methods for the Iowa Communications Network. However, the only instruction about the Iowa Communications Network Collins received was how to activate the audio and visual equipment. No changes or suggestions were made to the instructor's teaching methods to accommodate the Iowa Communications Network.
Students/Subjects

Participants in this study were 26 students who registered for this course. All of the students were graduate students in education. At the time of their enrollment in the course, the students knew that the course would be taught using the Iowa Communications Network. However, the students were unaware that they would be the subjects of an experimental study. If students registered for the course at Iowa State University, they assumed they would be at the originating site. The students chose their site before the instructor did. Nine students were at the originating site and 17 were at the remote sites.

Background and demographic data were gathered from each student just before the pretest and the posttest (see Tables 3-6). These biographical and demographic questions were not reviewed by the instructor (Appendix C). The following background and demographic data were gathered before administering the pretest at both the originating and remote sites.

Gender

The composition of the class based on gender at the originating site and the remote site was nearly the same (Table 3). Females made up almost 70% of the class. They were distributed nearly equally between the remote sites and the originating site. The remote site contained almost 71% female and the originating site almost 67%. Therefore, the gender composition of the originating and remote site was homogeneous.
Table 3. Personal background and demographic data on the students enrolled in the Fundamentals of School Law course (N=26)

<table>
<thead>
<tr>
<th>Background/Demographics</th>
<th>All</th>
<th>Originating site</th>
<th>Remote sites</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>18 (69.2%)</td>
<td>6 (66.7%)</td>
<td>12 (70.6%)</td>
</tr>
<tr>
<td>Male</td>
<td>8 (30.8%)</td>
<td>3 (33.3%)</td>
<td>5 (29.4%)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 to 30</td>
<td>7 (26.9%)</td>
<td>2 (22.2%)</td>
<td>5 (29.4%)</td>
</tr>
<tr>
<td>31 to 40</td>
<td>11 (42.3%)</td>
<td>4 (44.4%)</td>
<td>7 (41.2%)</td>
</tr>
<tr>
<td>41 to 50</td>
<td>8 (30.8%)</td>
<td>3 (33.3%)</td>
<td>5 (29.4%)</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>3 (11.5%)</td>
<td>2 (22.2%)</td>
<td>1 (5.9%)</td>
</tr>
<tr>
<td>Married</td>
<td>20 (76.9%)</td>
<td>6 (66.7%)</td>
<td>14 (82.4%)</td>
</tr>
<tr>
<td>Divorced</td>
<td>3 (11.5%)</td>
<td>1 (11.1%)</td>
<td>2 (11.8%)</td>
</tr>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>21 (80.8%)</td>
<td>6 (66.7%)</td>
<td>15 (88.2%)</td>
</tr>
<tr>
<td>No</td>
<td>5 (19.2%)</td>
<td>3 (33.3%)</td>
<td>2 (11.8%)</td>
</tr>
</tbody>
</table>

Age, marital status and children

The ages of the students ranged from 24 to 47 years old. A plurality of the students were in the age group 31 to 40 (42.3%) (Table 3). The number of students between 20-30 years of age (seven students) and 41-50 (eight students) was almost identical. The majority of subjects were married (20) and 21 subjects had children.

Employment status

The majority of students in this study were principals and instructors (84.6%) (Table 4). The remaining students were in other categories (15.4%). There was only one full-time student as a subject. The majority of the subjects remained employed while taking the course (61.5%). The subjects were employed 3 to 50 hours per week. The mean was 18.6 hours.
Table 4. Employment data on the students enrolled in the Fundamentals of School Law course (N=26)

<table>
<thead>
<tr>
<th>Background/Demographics</th>
<th>All</th>
<th>Originating site</th>
<th>Remote sites</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employment status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principal</td>
<td>6 (23.1%)</td>
<td>2 (22.2%)</td>
<td>4 (23.5%)</td>
</tr>
<tr>
<td>instructors</td>
<td>16 (61.5%)</td>
<td>5 (55.6%)</td>
<td>11 (64.7%)</td>
</tr>
<tr>
<td>Full-time student</td>
<td>1 (3.8%)</td>
<td>0 (00.0%)</td>
<td>1 (5.9%)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (11.5%)</td>
<td>2 (22.2%)</td>
<td>1 (5.9%)</td>
</tr>
<tr>
<td><strong>Work during course</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Yes</td>
<td>16 (61.5%)</td>
<td>6 (66.7%)</td>
<td>11 (64.7%)</td>
</tr>
<tr>
<td>No</td>
<td>10 (38.5%)</td>
<td>3 (33.3%)</td>
<td>6 (35.3%)</td>
</tr>
<tr>
<td><em>Hours per week worked by the 16 students who worked</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 hrs</td>
<td>1 (3.8%)</td>
<td>0 (00.0%)</td>
<td>1 (9.1%)</td>
</tr>
<tr>
<td>9 hrs</td>
<td>1 (3.8%)</td>
<td>0 (00.0%)</td>
<td>1 (9.1%)</td>
</tr>
<tr>
<td>10 hrs</td>
<td>1 (3.8%)</td>
<td>0 (00.0%)</td>
<td>1 (9.1%)</td>
</tr>
<tr>
<td>15 hrs</td>
<td>6 (23.2%)</td>
<td>0 (00.0%)</td>
<td>6 (54.5%)</td>
</tr>
<tr>
<td>16 hrs</td>
<td>1 (3.8%)</td>
<td>1 (20.0%)</td>
<td>0 (00.0%)</td>
</tr>
<tr>
<td>20 hrs</td>
<td>4 (15.4%)</td>
<td>2 (40.0%)</td>
<td>2 (18.2%)</td>
</tr>
<tr>
<td>40 hrs</td>
<td>1 (3.8%)</td>
<td>1 (20.0%)</td>
<td>0 (00.0%)</td>
</tr>
<tr>
<td>50 hrs</td>
<td>1 (3.8%)</td>
<td>1 (20.0%)</td>
<td>0 (00.0%)</td>
</tr>
</tbody>
</table>

The majority of students at both the originating and remote sites worked at outside employment while taking the course. Table 4 displays the employment status of the students studied and the number of hours they worked at their employment while taking this course.

Course-related matters

Fundamentals of School Law is a required course for certification as a principal. All of the students except one were taking this course as a requirement for certification.

A majority of 21 (80.8%) students were also enrolled in other courses while taking the school law course. The average additional credit hours taken was 4.7. The largest group of students (38.5%) were taking an additional three credit hours besides the school law course. A few of the subjects (eight students) had previously taken an Iowa Communications
Network course. Of these eight, six were at the remote site for the experiment. For almost 70% of the students, this law course was the first course taken over the Iowa Communications Network.

Group study and number in study group

Seven students stated that they studied for this class with a group of fellow students. However, the size of the groups could not be determined because the responses were inconsistent. All but one of the seven students were at remote sites. This was not surprising because the Iowa State campus was a remote site and was the probable source of the group study. Table 5 shows the number of students who were required to take the Fundamentals of School Law Course, whether the students were taking any other courses and the number of semester hours of these courses, whether they were taking any other Iowa Communications Network courses, their GPA and whether they studied outside of the course with fellow students, and the number in their group.

Law-related matters

Only six (23.08%) students had previously taken a law-related course; out of these six students, five had previously taken a school law course. Slightly more than one half of the subjects identified themselves as having an interest in the law (57.7%). One half of the subjects had a personal attorney and one half did not have a personal attorney. Three students had been involved in a lawsuit. While over 57.7% of the students were interested in the law and had a personal attorney, only seven students (26.9%) watched law-related television shows regularly.
Table 5. Course data on the students enrolled in Fundamentals of School Law (N=26)

<table>
<thead>
<tr>
<th>Background/Demographics</th>
<th>All</th>
<th>Originating site</th>
<th>Remote sites</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required course</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>25 (96.2%)</td>
<td>9 (100%)</td>
<td>16 (94.1%)</td>
</tr>
<tr>
<td>No</td>
<td>1 ( 3.8%)</td>
<td>0 ( 0%)</td>
<td>1 ( 5.9%)</td>
</tr>
<tr>
<td><strong>Other courses taken and number of semester hours</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>21 (80.8%)</td>
<td>6 (75.0%)</td>
<td>15 (88.2%)</td>
</tr>
<tr>
<td>No</td>
<td>5 (19.2%)</td>
<td>2 (25.0%)</td>
<td>3 (11.8%)</td>
</tr>
<tr>
<td><strong>Semester hours taken</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 hr</td>
<td>2 ( 7.7%)</td>
<td>0 (00.0%)</td>
<td>2 (12.5%)</td>
</tr>
<tr>
<td>2 hrs</td>
<td>2 ( 7.7%)</td>
<td>1 (16.7%)</td>
<td>1 ( 6.3%)</td>
</tr>
<tr>
<td>3 hrs</td>
<td>10 (38.5%)</td>
<td>3 (50.0%)</td>
<td>7 (43.8%)</td>
</tr>
<tr>
<td>5 hrs</td>
<td>2 ( 7.7%)</td>
<td>1 (16.7%)</td>
<td>1 ( 6.3%)</td>
</tr>
<tr>
<td>6 hrs</td>
<td>1 ( 3.8%)</td>
<td>1 (16.7%)</td>
<td>0 (00.0%)</td>
</tr>
<tr>
<td>8 hrs</td>
<td>2 ( 7.7%)</td>
<td>0 (00.0%)</td>
<td>2 (12.5%)</td>
</tr>
<tr>
<td>11 hrs</td>
<td>1 ( 3.8%)</td>
<td>0 (00.0%)</td>
<td>1 ( 6.3%)</td>
</tr>
<tr>
<td>20 hrs</td>
<td>1 ( 3.8%)</td>
<td>0 (00.0%)</td>
<td>1 ( 6.3%)</td>
</tr>
<tr>
<td><strong>ICN courses taken</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8 (30.8%)</td>
<td>2 (25.0%)</td>
<td>6 (35.3%)</td>
</tr>
<tr>
<td>No</td>
<td>18 (69.2%)</td>
<td>6 (75.0%)</td>
<td>11 (64.7%)</td>
</tr>
<tr>
<td><strong>GPA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.7 to 3.2</td>
<td>14 (53.9%)</td>
<td>6 (66.7%)</td>
<td>8 (47.1%)</td>
</tr>
<tr>
<td>3.3 to 3.5</td>
<td>9 (34.6%)</td>
<td>2 (22.2%)</td>
<td>7 (41.2%)</td>
</tr>
<tr>
<td>3.6 to 4.0</td>
<td>3 (11.5%)</td>
<td>1 (11.1%)</td>
<td>2 (11.8%)</td>
</tr>
<tr>
<td><strong>Group study and number in group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8 (30.8%)</td>
<td>1 (12.5%)</td>
<td>7 (43.8%)</td>
</tr>
<tr>
<td>No</td>
<td>18 (69.2%)</td>
<td>8 (87.5%)</td>
<td>10 (56.3%)</td>
</tr>
</tbody>
</table>

Table 6 provides a summary of the 26 students and their personal relationship with the law and legal matters. The table indicates if the student had taken a previous law course, had taken a previous school law course, had an interest in the law, had a personal lawyer, was a party to a lawsuit, or regularly watched a law related television program.

As shown in the foregoing tables, the two groups appear to be homogeneous. When convenient samples are used, it is important to demonstrate that the groups are initially
Table 6. Law data on the students enrolled in the Fundamentals of School Law course (N=26)

<table>
<thead>
<tr>
<th>Background/Demographics</th>
<th>All</th>
<th>Originating site</th>
<th>Remote sites</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Previous law course</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6 (23.1%)</td>
<td>2 (22.2%)</td>
<td>4 (23.5%)</td>
</tr>
<tr>
<td>No</td>
<td>20 (76.9%)</td>
<td>7 (77.8%)</td>
<td>12 (76.5%)</td>
</tr>
<tr>
<td><strong>Previous school law class</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5 (19.2%)</td>
<td>2 (22.2%)</td>
<td>3 (17.6%)</td>
</tr>
<tr>
<td>No</td>
<td>21 (80.8%)</td>
<td>7 (77.8%)</td>
<td>13 (81.4%)</td>
</tr>
<tr>
<td><strong>Interest in the law</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>15 (57.7%)</td>
<td>6 (66.7%)</td>
<td>9 (52.9%)</td>
</tr>
<tr>
<td>No</td>
<td>11 (42.3%)</td>
<td>3 (33.3%)</td>
<td>8 (47.1%)</td>
</tr>
<tr>
<td><strong>Personal lawyer</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13 (50.0%)</td>
<td>7 (55.6%)</td>
<td>3 (47.1%)</td>
</tr>
<tr>
<td>No</td>
<td>13 (50.0%)</td>
<td>6 (44.4%)</td>
<td>10 (52.9%)</td>
</tr>
<tr>
<td><strong>Party to a lawsuit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5 (19.2%)</td>
<td>2 (22.2%)</td>
<td>3 (5.9%)</td>
</tr>
<tr>
<td>No</td>
<td>21 (80.8%)</td>
<td>7 (77.8%)</td>
<td>14 (94.1%)</td>
</tr>
<tr>
<td><strong>Regularly watch law related television programs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7 (26.9%)</td>
<td>4 (44.4%)</td>
<td>3 (17.6%)</td>
</tr>
<tr>
<td>No</td>
<td>19 (73.1%)</td>
<td>5 (55.6%)</td>
<td>14 (82.4%)</td>
</tr>
</tbody>
</table>

This background and demographic data, and the scores on a pretest are an attempt to control selection bias (Ary, Jacobs, & Razaviech, 1990). These two groups were further analyzed for homogeneity using a t-test and a Mann-Whitney U test and the results are given at the end of this chapter.

**Pretest**

Unfortunately, there was insufficient time to find a test that could be used as a pretest that would match this textbook and the instructor's emphasis. Therefore, a pretest was
developed for this experiment that would also serve as the posttest. This pretest was used to
determine the level of school law knowledge existing before the experiment began.

The pretest consisted of 40 questions: 11 multiple-choice questions and 29 true-false
questions. The answer to all of the questions could be found in the course textbook. This
pretest was given to the instructor to review. There was a disagreement on the answer to one
question. The question that was disagreed upon was left in the test but only one answer was
correct. The pretest was given to all of the students on the first day of class before any
content of the course had been discussed (Appendix D).

Class participation

The instructor graded each student on participation. Under the case book method,
each day the student would receive a certain number of assigned cases or court opinions from
the textbook to brief each day. The briefs were prepared between classes. A brief of a case
was a student's own notes about the court's opinion in a prescribed order. The prescribed
order included the important facts of the case, the procedure (who won the suit and in what
Court), issue (what the controversy was), the decision (the answer to the issue) and the
Court's reasoning, and rule of law learned.

During the next day's class, the student had the choice of volunteering or being called
to brief one or more of the assigned cases. Following their briefs, the students were subjected
to questioning by the instructor and by fellow classmates. The instructor gave a point or
credit for each brief and the student's response to any questions. The students who asked
questions would also receive credit. Nearly all of the classes consisted of this case book or
Socratic method.
Instructor's quizzes and final test

The instructor gave two-take home quizzes: one dealing with church-state issues in public education (Appendix E) and the other dealing with student rights (Appendix F). Both contained factual situations created by the instructor to be answered in essay form. The instructor combined the grades on the quizzes and recorded only one grade. The final test was distributed on August 3, 1995, and was to be mailed back to the instructor on or before August 9, 1995. The students were allowed to use their textbook and notes on the final (Appendix G). The instructor forbade the students to consult with any other person or any fellow class members while completing the test.

Posttest

At the end of the course, another demographic questionnaire was administered. The reason for the additional questionnaire was to clarify specific items and gather more information about the study habits of the students taking the course (Appendix H).

On August 4, 1995, a posttest was administered. The posttest was identical to the pretest (Appendix D), except for the addition of a final statement related to performance.

Method

The subjects of this study were a convenience sample of students enrolled in the Fundamentals of School Law course at Iowa State University. On July 10, 1995, the instructor was on the Iowa State campus. However, after the first day the instructor chose to originate from the Des Moines Community School District at Central Campus located at
1800 Grand Avenue, Des Moines, Iowa. There were nine students at this site. The Iowa State campus became a remote site.

A Human Subjects Release, Demographic Questionnaire, the Pretest, and a self-addressed stamped envelope were mailed to all students taking the school law course at the remote sites shortly before the first day of class. This mailing included the Des Moines site because it was expected to be a remote site.

The mailing consisted of a sealed inner envelope and a letter. The letter instructed the student not to open the envelope and to bring the inner sealed envelope to the first class. The inner envelopes contained a Human Subjects Release, demographic questionnaire, pretest and a self-addressed stamped envelope.

At the first meeting the instructor was at the Iowa State campus. The instructor handed out a sealed envelope containing the Human Subjects Release, demographic questionnaire and a pretest to the students. All of the students at the remote site brought the envelope they received in the mail. After an explanation of the experiment, the students were asked to remove the contents of the envelope. All the students were told to read the Human Subjects Release. After reading the Human Subjects Release, the form was explained to the students. The explanation included reason, purpose, necessity, risks and the effect of the Human Subjects Release. The students could ask any questions concerning the Human Subjects Release. All agreed to participate and signed the Human Subject Release Form.

After all the students completed the demographic questionnaire, they took the pretest. The students at the Iowa State University Campus handed the Human Subjects Release and Pretest to the instructor. The students at the Des Moines and other remote sites were
instructed to put the signed Human Subjects Release and the pretest in the self-addressed, stamped envelop and mail it. All pretests and Human Subject Releases were received.

The instructor and the students were not informed of the results of the demographic questionnaire or the pretest. Results were withheld to avoid the learning effect from the pretest. After the pretest the instructor told the students that the next class and all classes after that would be taught from the Des Moines classroom.

Research design

The research design employed in this study was a variant of the randomized subjects, pretest-posttest control group design. This design is widely used because it permits the investigator to study the difference between groups. In this classical design, subjects are usually assigned to the experimental and control groups by random methods and are given a pretest. Only the experimental subjects receive the treatment. After the treatment, both the experimental and the control group are measured or tested on the dependent variable. The average difference between the pretest and posttest for both the control and experimental group is found. These average scores are compared to learn if the experimental treatment produced a greater change than the control situation. This design is diagrammed in Table 7.

Table 7. Research design

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Independent variable</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>$Y_1$</td>
<td>$X$</td>
<td>$Y_2$</td>
</tr>
<tr>
<td>C</td>
<td>$Y_1$</td>
<td>$-$</td>
<td>$Y_2$</td>
</tr>
</tbody>
</table>

Ary, Jacobs, & Razavieh, 1990.
In this study, no attempt was made to assign the students to a site. The students chose the site they desired at the time of enrollment. While the students were aware the course would be taught using Iowa Communications Network, they were not aware at the time of enrollment that they would be the subjects of a study.

The school law course was advertised as an Iowa Communications Network class, with Lagomarcino Hall on the Iowa State University campus identified as the originating site. However, during the first class meeting the instructor decided that the Des Moines would be more convenient as the originating site. Thus, the instructor taught from the Des Moines site at 1800 Grand Avenue, Des Moines, Iowa, on the second day and each day afterward. Iowa State University became a remote site. The students in the studio classroom were designated as the control group because they were with the instructor, similar to a traditional classroom. The students not with the instructor were designated experimental subjects and received their course using the Iowa Communications Network. This study assumed that the studio group or the group with the instructor was, for all purposes, a traditional classroom.

A pretest was given to each student at both the remote and originating sites. The remote and the originating site pretest results were analyzed by using a \( t \)-test and a Mann-Whitney \( U \) test to detect significant differences, if any, between remote students' and originating site students' prior knowledge of school law. With small groups the influence of chance alone may result in a situation in which the groups are initially very different from each other. Thus, it was necessary to conduct a test for homogeneity.

The students were not given the results of the pretest nor were the questions reviewed with the students. The students were not given the correct answers or allowed to discuss the
pretest with the instructor to minimize the effect of the pretest. Often, students learn subject matter from the pretest. This phenomenon has been described as pretest sensitization (Ary, Jacobs, & Razavieh, 1990). The intentional withholding of answers and lack of discussion of the pretest was to ensure that the posttest scores were the result of treatment rather than the pretest. The class began immediately after the pretest was completed.

On the last day of class, the posttest was given to each student. The school law questions were identical on both the pretest and posttest, but the demographic questions contained some previous questions and new questions. The instructor also gave two quizzes and a final test. These quizzes and final test were essay tests. Again, a t-test and a Mann-Whitney U test were used to analyze the posttest, quizzes and final test.

The t-test was selected as the first test for analysis in this study, because the t-test is the common statistical tool in most past studies of distant learning (Grimes, Neilsen, & Niss, 1988; Krohn 1981; Martin & Rainey, 1993). This is understandable because the t-test compares the means of one variable for two groups of cases. The t-test has been described as a “powerful tool” in detecting differences between population means (Zimmerman, 1987).

The computational formula for the t is:

$$ t = \frac{(X_1 - X_2) - (\mu_1 - \mu_2)}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} $$

$X_1$ = the mean score of the experimental group

$X_2$ = the mean score of the control group compared

$\mu_1$ = the means of the experimental population

$\mu_2$ = the means of the control population

$S$ = Standard error of sample or Standard deviation of means
The problem with using only the t-test in this study is that the sample is small and may violate the basic three assumptions and cause a type I error (Ary, Jacobs, & Razavieh, 1990; Borg & Gall, 1989). The three assumptions are that: a) the scores form an interval or ratio scale or measurement; b) the scores in the population are normally distributed; and c) the score variance for the population are equal (Borg & Gall, 1989). Concern about score distribution in the data require the selection of a second test.

The Mann-Whitney U test was selected as the second test, because like the t-test it compares the central locations of two populations. Unlike the t-test, the Mann-Whitney U test protects against a Type I error even when the population is small and unequal. The Mann-Whitney U test is the nonparametric equivalent of the t-test and is recommended when there is concern about the score distribution in data (Borg & Gall, 1989; Vogt, 1998). In a Mann-Whitney U test, the two populations are pooled and the observations are ranked in the ascending order. The formula for the Mann-Whitney U test is:

\[ U = \frac{n_1(n_1 + 1)}{2} - R_1 \]

- \( U \) = Mann-Whitney result
- \( n_1 \) = population in group one
- \( n_2 \) = population in group two
- \( R_1 \) = Denotes the sum of the ranks for the first population

The raw data were analyzed with a desktop computer using the SPSS Graduate Pack Statistical program, Version 7.0 for Windows. The results of these tests are explained in Chapter 4.
Equivalency of groups

The originating and the remote groups' scores on the pretest were analyzed for homogeneity using the \( t \)-test and the Mann-Whitney \( U \) test. Both tests for significance were conducted at the .05 \( \alpha \) level. Applying the \( t \)-test to the pretest scores of both groups resulted in no significant difference. The results on the pretest scores using the \( t \)-test are shown in Table 8.

The range of scores was 18 to 33. The mean for all 26 students was 23.54 with a standard deviation of 3.18. The Mann-Whitney \( U \) test confirmed homogeneity on the pretest. The Mann-Whitney \( U \) test on the pretest score is illustrated in Table 9.

As indicated by the results of both the \( t \)-test and the Mann-Whitney \( U \) test, the students in the studio with the instructor and the students at the remote sites did not significantly differ statistically in their knowledge of school law at the beginning of the course. The data indicated that the subjects in the control group or originating group and the experimental group or the remote group were sufficiently similar in their knowledge of school law prior to the initiation of the treatment. This observation is important to a valid comparison of the gain of the two groups.

Table 8. \( t \)-test on the pretest

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>( t )-value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>With instructor</td>
<td>9</td>
<td>23.444</td>
<td>2.506</td>
<td>-0.11</td>
<td>.92</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>23.588</td>
<td>3.554</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9. Mann-Whitney $U$ test on the pretest score

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Number</th>
<th>Mean rank</th>
<th>$U$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>With instructor</td>
<td>9</td>
<td>14.06</td>
<td>62.5</td>
<td>.446</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>12.68</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER IV. FINDINGS

The purpose of the study was to determine whether a significant difference in achievement existed between two groups of students those with the instructor and those not present with the instructor after receiving instruction over the Iowa Communications Network. Five hypotheses were tested:

1. No statistically significant difference exists between students' achievement at remote sites and students' achievement at the originating site as measured by a posttest.

2. No statistically significant difference exists between students' achievement at remote sites and students' achievement at the originating site as measured by their grade for class participation.

3. No statistically significant difference exists between students' achievement at remote sites and students' achievement at the originating site as measured by their grade for unit quizzes.

4. No statistically significant difference exists between students' achievement at remote sites and students' achievement at the originating site as measured by their grades on a final exam.

5. No statistically significant difference exists between students' achievement at remote sites and students' achievement at the originating site as measured by their course grade.

This chapter attempts to answer the hypotheses by presenting the data derived from the comparison of the two groups on: a) posttest scores; b) class participation grade; c) unit quizzes grade; d) final exam grade; and e) course grade.
Each of the above scores and grades were analyzed using the $t$-test and the Mann-Whitney $U$ test at the .05 $\alpha$ level. The $t$-test was used to allow comparison to similar previous studies which generally used a $t$-test. The Mann-Whitney $U$ test was used to check the $t$-test, because the number of subjects in this study was small.

A comparison was made between the remote or treatment group with the originating group or control group on the differences in achievement on the posttest. As is evident in the data presented in Table 10, the $t$-test did not show a significant difference at the .05 $\alpha$ level for achievement between the originating site and the remote site. The Mann-Whitney $U$ test confirmed, as illustrated in Table 11, that no significant difference existed at the .05 $\alpha$ level between the originating and the remote group on the posttest score.

The posttest could introduce the problem of pretest sensitization. The pretest and the posttest were the same test. However, the same exact test was intentionally given to more accurately ascertain achievement. Class participation, unit quizzes, and the final grade are analyzed to avoid this pretest sensitization dilemma.

Table 10. $t$-test on the differences in achievement on the posttest

<table>
<thead>
<tr>
<th>Posttest</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>Sig.</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>With instructor</td>
<td>9</td>
<td>28.444</td>
<td>2.186</td>
<td>.505</td>
<td>.030</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>28.412</td>
<td>2.895</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 11. Mann-Whitney $U$ test on the posttest score

<table>
<thead>
<tr>
<th>Posttest</th>
<th>Number</th>
<th>Mean rank</th>
<th>$U$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>With the instructor</td>
<td>9</td>
<td>14.22</td>
<td>70.0</td>
<td>.72</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>13.12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As described in Chapter 3, each student was graded on their class participation in briefing cases, questioning fellow students about their briefs and discussing the students’ briefs with the instructor. As shown by the t-test in Table 12, the students who received the course over the Iowa Communications Network participated in class slightly more than students at the originating site. Those students at the originating site or with the instructor had a 3.144 mean while those without the instructor had a 3.171 mean. This mean was on a four-point Likert-type scale, with 0 being the lowest and 4.0 the highest. The Mann-Whitney U test, in Table 13, also shows that students at the remote sites participated slightly more in class than students at the originating site. The originating group, using the Mann-Whitney U test, had a mean rank of 13.33 while the remote site was 13.59.

An inspection of Table 12 shows the students at the remote sites tended to participate more evenly in class than the students at the originating site. The group at the originating

Table 12. t-test on the differences in class participation

<table>
<thead>
<tr>
<th>Student participation</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Sig.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>With instructor</td>
<td>9</td>
<td>3.144</td>
<td>.794</td>
<td>.696</td>
<td>-.088</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>3.171</td>
<td>.684</td>
<td></td>
<td>-.084</td>
</tr>
</tbody>
</table>

Table 13. Mann-Whitney U test for class participation

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Number</th>
<th>Mean rank</th>
<th>U</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>With instructor</td>
<td>9</td>
<td>13.33</td>
<td>75.0</td>
<td>.935</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>13.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
site had a larger standard deviation (.794) in class participation than did the students at the remote sites (.684).

The instructor gave two take-home essay quizzes. Each quiz was of equal value and the two were added together to determine one grade for the student. The first quiz was on church and state issues in public education (Appendix E). The second quiz was on student rights (Appendix F). Table 14 presents the t-test analysis of the quizzes' grade and Table 15 presents the Mann-Whitney $U$ test analysis of the grades. Both the t-test and Mann-Whitney $U$ test showed no statistically significant difference between the originating group and the remote group for the grades on the two unit quizzes.

However, as a group, the students at the remote sites did better than the students at the originating site. Applying the t-test, the remote students had a mean of 3.306 and the originating students had a mean of 3.107. Likewise, applying the Mann-Whitney $U$ test resulted in a mean ranking of 12.78 in the originating group and 13.88 in the remote group.

Table 14. $t$-test on the grades for two unit quizzes

<table>
<thead>
<tr>
<th>Student participation</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Sig.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>With instructor</td>
<td>9</td>
<td>3.107</td>
<td>.7526</td>
<td>.648</td>
<td>-.785</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>3.306</td>
<td>.5344</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 15. Mann-Whitney $U$ test for two unit quizzes

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Number</th>
<th>Mean rank</th>
<th>$U$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>With instructor</td>
<td>9</td>
<td>12.78</td>
<td>70.0</td>
<td>.724</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>13.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The final essay exam was also take-home (Appendix G). The students had seven days in which to mail the final exam back to the instructor. Table 16 shows a mean score of 2.967 for the originating group and 3.088 for the remote group, a mere .121 difference. The two groups were nearly equal. Similarly, the mean using the \( t \)-test was nearly equal. The mean ranking in Table 17 supports the fact that there was no difference between the remote and originating groups.

The course grade was an accumulation of the grades for posttest scores, class participation grade, unit quizzes grade, and final exam grade. Each was worth 25% of the course grade. It would be expected that the course grade would be an aggregation of the previous findings because the course grade was a composition. This statement is supported by Tables 18 and 19. As in all other data analyses, there was no significant difference between the students with the instructor and those receiving the course using the Iowa Communications Network. On the basis of these statistics, the hypothesis was retained.

### Table 16. \( t \)-test on the grade for the final exam

<table>
<thead>
<tr>
<th>Student participation</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Sig.</th>
<th>( t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>With instructor</td>
<td>9</td>
<td>2.967</td>
<td>.972</td>
<td>.463</td>
<td>-.330</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>3.088</td>
<td>.852</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 17. Mann-Whitney U test for the final exam

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Number</th>
<th>Mean rank</th>
<th>( U )</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>With instructor</td>
<td>9</td>
<td>3.00</td>
<td>72.0</td>
<td>.805</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>13.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 18. *t*-test on the course grade

<table>
<thead>
<tr>
<th>Student participation</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Sig.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>With instructor</td>
<td>9</td>
<td>3.0478</td>
<td>.7573</td>
<td>.210</td>
<td>-.516</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>3.1847</td>
<td>.5816</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 19. Mann-Whitney *U* test on the course grade

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Number</th>
<th>Mean rank</th>
<th>U</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>With instructor</td>
<td>9</td>
<td>13.11</td>
<td>73.0</td>
<td>.850</td>
</tr>
<tr>
<td>Without instructor</td>
<td>17</td>
<td>13.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter 5 consists of four sections: 1) Summary; 2) Conclusions; 3) Limitations; and 4) Discussions and Recommendations. The summary consists of the origin of the study, purpose of the study, statement of the problem, description of the research procedure and summary of the research findings. The conclusion is derived from the analysis of the data and is a statement of discoveries. The discussion and recommendations are based on the findings and conclusions. It includes implications for teaching over the Iowa Communications Network and suggestions for further research about the Iowa Communications Network.

Summary

The conceptional hypothesis for this study came from the public’s belief that students taught over the Iowa Communications Network receive an inferior education compared to students in the classroom with an instructor. The belief was also found to exist in academia. A review of the literature about the Iowa Communications Network revealed that students and professors were often apprehensive about courses given over the Iowa Communications Network. Since Iowa has made a substantial investment in the Iowa Communications Network, this research was proposed to determine the merit of the public’s contention and academia’s uneasiness.

The main question considered in the study was whether the students at the remote sites differed significantly in achievement from the students at the originating site. The hypotheses tested were:
1. No statistically significant difference exists between students’ achievement at remote sites and students’ achievement at the originating site as measured by a posttest.

2. No statistically significant difference exists between students’ achievement at remote sites and students’ achievement at the originating site as measured by their grade for class participation.

3. No statistically significant difference exists between students’ achievement at remote sites and students’ achievement at the originating site as measured by their grade for unit quizzes.

4. No statistically significant difference exists between students’ achievement at remote sites and students’ achievement at the originating site as measured by their grades on a final exam.

5. No statistically significant difference exists between students’ achievement at remote sites and students’ achievement at the originating site as measured by their course grade.

The students who registered in a school law course at Iowa State University were chosen as the subjects of this study. This school law course was taught in the summer of 1995 and consisted of two groups—students at the originating site and students at remote locations.

A pretest and demographic data were used to determine the similarities and differences between the two groups. It was concluded that the two groups were homogeneous for the study because there was no statistical difference between the two groups. There were nine students at the originating site, and there were 17 students at the remote sites throughout Iowa. The largest remote site was the Iowa State University campus.
The originating site was the Iowa Communications Network classroom in the Des Moines Community School District located at 1800 Grand Avenue, Des Moines, Iowa.

Because of the nature of the Iowa Communications Network, the students at the remote locations received the same instruction as the students at the originating site. The instruction was in real time for both groups. The only known difference was that the students in the remote locations were not physically present with the instructor. During the course both groups received and completed the same quizzes. At the completion of the course, a posttest with the exact same questions as the pretest was given. A take home final exam was also given to the students to be completed in seven days.

The posttest, quiz grades, class participation grades, final test grades and course grade were analyzed using the $t$-test and the Mann-Whitney $U$ test. The analysis of the scores and grades found no significant difference between the students at the remote sites receiving instruction over the Iowa Communications Network and those at the originating site who were physically in the classroom with the instructor.

Conclusions

Drawing from the statistical analysis in this study, it can be concluded that when this school law course is given over the Iowa Communications Network:

1. There is no statistically significant difference in achievement between the students at the originating site and those at the remote sites.

2. There is no statistically significant difference in class participation between those students at the remote site and those students at the originating site based on
instructor's perception of the students' participation in class, and the grading of that participation.

3. There is no statistically significant difference in achievement on take-home examinations between those students at the remote site and those students at the originating site using instructor's grading of the exams.

4. Although there is no statistically significant difference in achievement between those students at the remote site and the originating site, there was an indication that when the students completed the examination outside the classroom (take-home) the remote students do slightly better than the students at the originating site.

Limitations

This study has the following investigative limitations:

1. This study encompassed originating and remote site students that were unchanged and were in no way manipulated in placement, number, or any other manner.

2. Only one school law class was available for testing. The number of students in the originating group (9) and the remote group (17) was small, which hinders generalization to a larger population.

3. Only one instructor and only one method of teaching—the case book method or Socratic method—were studied which once again limits generalization possibilities. The instructor's bias may also have an effect on the experiment.

4. The class time consisted of only 36 hours which may not be sufficient time to determine a difference in the two groups.
5. The investigator developed a pretest/posttest which was subject to the usual limitations of any test used for the first time.

6. The investigator-developed test was the product of the researcher’s and the instructor’s opinion of what was important in a school law course in terms of scope and validity.

7. Class participation is limited to the instructor’s perception and not a numerical count of participation nor a timing of duration of participation.

8. The pretest/posttest was limited to conceptual comprehension and did not test for skills.

9. Pretest sensitization may have affected the results of the experimental treatment.

While these limitations are considerable, the ways to study teaching on the Iowa Communications Network are restricted. The study of an actual classroom would appear to be the most productive.

**Discussion and Recommendations**

This study was an effort to investigate student learning on the Iowa Communications Network. The study found that there were no significant achievement differences between students who are physically in the classroom with the instructor (originating site) and those students not physically present in the classroom with the instructor (remote sites). This conclusion is supported by a statistical analysis of the two groups’ achievement measures which included posttest scores, class participation grade, two quizzes grade, final exam grade, and course grade.
A review of the literature about distance learning revealed that in previous investigations distance students, those without the instructor physically present, did at least as well or better than students in traditional classrooms. This study does not contradict this body of information. Rather, the study refines this general principle. This study confirmed the literature’s indication that the more sophisticated or developed the technology used, the more statistical parity exists between the distance students and the traditional classroom students.

The public’s desire has been to give the distance student the same experience as offered in the classroom. The desire has come to fruition with the use of the Iowa Communications Network. The Iowa Communications Network has eliminated the statistical disadvantage experienced by the traditional student when being compared to distant students. The Iowa Communications Network must be viewed, based on this study, as giving the distant student and the traditional student or the student in the classroom with the instructor nearly the same experience. The statistical results showed almost complete parity between the distance students and the originating classroom students.

This parity may be explained by looking at the Iowa Communications Network and other distant learning media in another way. If the distant learning media are viewed on a scale of passive to non-passive, it can be inferred that the distant learner will do better than the student in the traditional classroom when the media are more passive. For example, correspondence courses that consist of a passive printed page and are almost strictly learner-controlled will result in the greatest disparity between the distant learners and the traditional classroom learners. On the other hand, the more interactive the system, such as the Iowa
Communications Network, the more statistically equal in achievement will be the distant and the traditional classrooms.

This study was undertaken for the purpose of providing information about the effectiveness of the Iowa Communications Network as a delivery system for educational purposes. Individuals may use the information in different ways. Administrators and instructors could use this information in helping them decide whether the Iowa Communications Network is an appropriate delivery system for certain subject matter and types of classes. The administrator should not be hesitant to allow an instructor without formal Iowa Communications Network training to teach using Iowa Communications Network, nor should a teacher without formal Iowa Communications Network training be hesitant to teach a class using Iowa Communications Network. Even if the course materials are not designed for Iowa Communications Network, this factor should not matter. The instructor should feel very comfortable knowing that formalized training and specific course development are not necessary for a successful Iowa Communications Network course. This is not to suggest that the courses available at Iowa State University and other institutions that provide instructions on teaching over the Iowa Communications Network are not useful. These courses undoubtedly provide suggestions for improving instruction and courses given over the Iowa Communications Network.

Students who anticipate taking a course over the Iowa Communications Network from a remote site can feel confident that they are on equal footing with their fellow classmates who are physically present with the instructor at the originating site. It does not matter whether the student is at the originating location or at a remote site.
The general public will find it useful to know that they have not wasted their money in providing the Iowa Communications Network to educators and students of the state. The general public has invested a large sum of money in the belief that the Iowa Communications Network will benefit all students in the state. The Iowa Communications Network has allowed institutions of higher learning to offer courses to the citizenry of the entire state without the need and expense of commuting. This study gives assurance to students at a remote site that they will receive an education equal to students at the originating site.

This assurance is useful in the debate about the sale of the Iowa Communications Network system (Yepsen, 1999; Zeleny, 1998). In recent years there have been suggestions that the State of Iowa should sell the Iowa Communications Network. The suggestion that the Iowa Communications Network is an ineffective tool for learning should not be considered a valid position for those advocating the sale of this system. State ownership of this system gives Iowa and its citizens a unique opportunity to experiment and to provide statewide access to training and education in many fields.

In summary, this study demonstrates that students taking courses over the Iowa Communications Network have parity with students taking courses in a traditional classroom.

Based on the findings and conclusions of this study, the following recommendations are suggested:

1. Because the general public has a misconception about a student’s ability to learn over the Iowa Communications Network, a promotional statement should be made that studies have shown that students learn as well when taking a distance education course as when taking the same course in a traditional classroom.
2. In the future, college orientations should have a few minutes devoted to informing the student about courses given over the Iowa Communications Network and their parity with traditional courses.

3. Administrators should not hesitate to allow instructors who have no experience or training regarding the Iowa Communications Network to teach a school law course over the system.

The following recommendations are made for future study:

1. A meta-analysis could be made of the distant learning achievement studies from 1967 to the present by recording the means and standard deviation of the experimental and control groups in experimental and quasi-experimental studies and the product moment in correlation studies.

2. The subjects of the present study could be given the posttest again to determine their retention rate or retention level of school law.

3. Further studies could be made to identify courses and teaching methods of that are suitable or unsuitable for delivery over the Iowa Communications Network.

4. A replication of this study with a larger number of students and a different instructor would be helpful in corroborating or refuting the finding of this research.

5. A study should be made to compare dropout rates between students enrolled in the Iowa Communications Network courses and students enrolled in other forms of distance learning courses. This study should be done to determine if the dropout rate for the courses affects the achievement scores of the distant learners who are used to compare with traditional classroom students. Since dropouts are not included in
achievement scores, only those with high motivation are studied giving a possible undue advantage to the distant learners.

6. A study should be made to compare dropout rates between students enrolled in Iowa Communications Network courses and traditional courses.

7. A study should be made comparing student achievement using instructors trained for the Iowa Communications Network or who have taught an Iowa Communications Network course and instructors without any training or who have never taught on the Iowa Communications Network.
APPENDIX A. DISTANCE LEARNING CLASSROOM
Distance Learning Classroom - Teaching Site
View from Rear

(Simonson & Schlosser, 1995)
APPENDIX B. FUNDAMENTALS OF SCHOOL LAW SYLLABUS

FUNDAMENTALS OF SCHOOL LAW
Ed.Ed. 575 – Summer 1995
Syllabus
Kathy Lee Collins, Instructor

(515) 224-3370 (w) (515) 255-6014 (H)

July 10 Opening Lecture and "Housekeeping"

July 11 Assignment #1 – Judicial Background; State & Fed'l Governance
Alexander Chs. 2, 3 (pp. 19-88)

July 12 Assignment #2 – State Governance of Education
Alexander Ch. 4 (pp. 71-111)
Iowa Code Chs. 17A, 21, 22, 256, 262, 290

July 13, 14 Assignment #3 – Church & State and Public Education
Alexander Ch. 5 (pp. 113-188)
Harris v. Joint Sch. Dist. No. 241, ___ F.3d ___ (9th Cir. 1994)
QUIZ

July 17 Assignment #4 – School Attendance/The Instructional Program
Alexander Ch. 6 (pp. 191-226)
Alexander Ch. 7 (pp. 229-278)
5 D.o.E. Dec. Rul. 11 (Lepley to Buchanan)

July 18, 19 Assignment #5 – Student Rights
Alexander Ch. 8 (pp. 279-354)
Bunger v. Iow. HSAA, 197 N.W.2d 555 (Iowa 1972); In re Joseph Fuhrmeister, D.o.E.
Veronia Sch. Dist. V. Acton, 23 F.3d 1514 (9th Cir. 1994)
QUIZ

July 20 Assignment #6 – Education of Children with Disabilities
Alexander Ch. 9 (pp. 359-405)
Sacramento City Unified Sch. Dist. V. Rachel H., 14 F.3d 1398 (9th Cir. 1994);
Clyde K. and Sheila K. v. Puyallup Sch. Dist. No. 3, ___ F.3d ___ (9th Cir. 1994).

July 21 Assignment #7 – Torts (including defamation) and Student Records
Alexander Ch. 11 (pp. 459-498); Ch. 12 (pp. 501-529)

July 24, 25 Assignment #8 – Terms and Conditions of Employment
Alexander Ch. 14 (pp. 557-602)
Keith v. Community SD of Wilton, 262 N.W.2d 249 (Ia. 1978); Munger v. Jesup CSD,
325 N.W.2d 377 (Ia. 1982); Board of Dirs. V. Mroz, 295 N.W.2d 447 (Ia. 1980);
Briggs v. Board of Ed., 282 N.W.2d 740 (Ia. 1979); Wedergren v. Board of Dirs.,

July 26 Assignment #9 – Public Employee Freedoms
Alexander Ch. 15, 16 (pp. 603-671)

July 27 Assignment #10 – Discrimination in Employment
Alexander Ch. 17 (pp. 673-725)
July 28  Catch-up Day

July 31  Assignment #11 — Collective Bargaining
        Alexander Ch. 18 (pp. 729-765)
        Saydel Educ. Assn. v. PERB, 333 N.W.2d 486 (Ia. 1983);
        Dubuque CSD v. PERB, 424 N.W.2d 427 (Ia. 1988);
        IASB v. PERB, 400 N.W.2d 571 (Ia. 1987);

August 1  Guest Lecturer — Collective Bargaining

August 2  “Ketchup”/Review Day

August 3  Final Exam

August 4  “Reality Check” (Q & A)
APPENDIX C. SCHOOL LAW COURSE – PRETEST PERSONAL PROFILE

SCHOOL LAW COURSE – PRETEST

PERSONAL PROFILE: Please mark only one response per question.

1. Where are you taking this course?
   1____ On Campus   2____ Off Campus

2. What is your sex?
   1____ Female   2____ Male

3. What is your age range?
   1____ 20 to 30
   2____ 31 to 40
   3____ 41 to 50
   4____ over 50

4. What is your employment status?
   1____ Superintendent
   2____ Principal
   3____ Teacher
   4____ Full-Time Student
   5____ Other

5. Is this a required course for your degree?
   1____ Yes   2____ No

6. Have you previously taken any law courses?
   1____ Yes   2____ No

   If yes, did the course deal with school law?
   1____ Yes   2____ No

7. Are you interested in Law or the study of Law?
   1____ Yes   2____ No

8. Do you have a personal lawyer?
   1____ Yes   2____ No

9. Have you ever been a party to a lawsuit or participated in any litigation?
   1____ Yes   2____ No

10. Did you or do you watch law related television at least once a week? (For example, People's Court, LA Law, Matlock, Perry Mason, O.J. Simpson Trial, etc.).
    1____ Yes   2____ No

Page 1 of 9
APPENDIX D. SCHOOL LAW PRETEST/POSTTEST

PART I

Direction: Select the best answer.

1. Public education is:
   a) a "right" granted to individuals by the United States Constitution.
   b) a creation of the Court.
   c) mandatory for all children between certain ages.
   d) a creation of state legislatures.

2. Due process:
   a) means all administrative steps have been taken to resolve a dispute before appealing to the courts.
   b) is both procedural and substantive.
   c) is a fixed and certain standard or rule which leaves little or nothing to the judgment or discretion of the subordinate.
   d) has never been determined or defined by the Supreme Court.

3. Precedents can:
   a) be found in other cases.
   b) be found only on one's own jurisdiction.
   c) be found in broad, ambiguous and vaguely worded rules of law.
   d) not completely decide a case because no two cases are the same, but may provide partial guidance.

4. Statutes providing state aid to church-related elementary and secondary schools are judged for constitutionality by the "lemon test". This test is a three-prong test that contain:
   a) local control, not favor one religion over another; and no money used for teaching the religious part of the curriculum.
   b) secular purpose, neither advance nor inhibit religion, and no excessive government entanglement with religion.
   c) local control, secular purpose but appropriate deference to religion.
   d) minimum religious connection, nothing that undermines the stated legislative purpose, teach general morals, but not a particular faith.

5. Undocumented aliens, because of their immigration status:
   a) can be denied a public education, if the state can show a substantial state interest served by denying aliens the public education.
   b) cannot be denied a public education.
   c) are not persons under the United States Constitution.
   d) can be denied a public education because they have not met residence requirements.
Petitioner John F. Tinker, 15 years old, and petitioner Christopher Eckhardt, 16 years old, attended high schools in Des Moines, Iowa. Petitioner Mary Beth Tinker, John's sister, was a 13-year-old student in junior high school.

In December 1965, a group of adults and students in Des Moines held a meeting at the Eckhardt home. The group determined to publicize their objections to the hostilities in Vietnam and, their support for a truce by wearing black armbands during the holiday season and by fasting on December 16 and New Year's Eve. Petitioners and their parents had previously engaged in similar activities, and they decided to participate in the program.

The principals of the Des Moines schools because aware of the plan to wear armbands. On December 14, 1965, they met and adopted a policy that any student wearing an armband to school would be asked to remove it, and if he refused he would be suspended until he returned without the armband. Petitioners were aware of the regulation that the school authorities adopted.

On December 16, Mary Beth and Christopher wore black armbands to their schools. John Tinker wore his armband the next day. They were all sent home and suspended from school until they would come back without their armbands. They did not return to school until after the planned period for wearing armbands had expired—that is, until after New Year's Day.

This complaint was filed in the United States District Court by petitioners, through their fathers, under § 1983 of Title 42 of the United States Code. It prayed for an injunction restraining the respondent school officials and the respondent members of the board of directors of the school district from disciplining the petitioners, and it sought nominal damages. After an evidentiary hearing the District Court dismissed the complaint. It upheld the constitutionality of the school authorities' action on the ground that it was reasonable in order to prevent disturbance of school discipline. 258 F.Supp. 971 (1966). The court referred to but expressly declined to follow the Fifth Circuit's holding.
in a similar case that the wearing of symbols like the armbands cannot be prohibited unless it "materially and substantially interfere[s] with the requirements of appropriate discipline in the operation of the school." Burnside v. Byars, 363 F.2d 744, 749 (1966).

On appeal, the Court of Appeals for the Eighth Circuit considered the case en banc. The Court was equally divided, and the District Court's decision was accordingly affirmed, without opinion. 383 F.2d 988 (1967). We granted certiorari.

The District Court recognized that the wearing of an armband for the purpose of expressing certain views is the type of symbolic act that is within the Free Speech Clause of the First Amendment. As we shall discuss, the wearing of armbands in the circumstances of this case was entirely divorced from actually or potentially disruptive conduct by those participating in it. It was closely akin to "pure speech" which, we have repeatedly held, is entitled to comprehensive protection under the First Amendment.

First Amendment rights, applied in light of the special characteristics of the school environment, are available to teachers and students. It can hardly be argued that either students or teachers shed their constitutional rights to freedom of speech or expression at the school house gate. This has been the unmistakable holding of this Court for almost 50 years. In Meyer v. Nebraska, 262 U.S. 390, 43 S.Ct. 625, 67 L.Ed. 1042 (1923), and Bartels v. Iowa, 262 U.S. 404, 43 S.Ct. 628, 67 L.Ed. 1047 (1926), this Court, in opinions by Mr. Justice McReynolds, held that the Due Process Clause of the Fourteenth Amendment prevents States from forbidding the teaching of a foreign language to young students. Statutes to this effect, the Court held, unconstitutionally interfere with the liberty of teacher, student, and parent.

In West Virginia State Board of Education v. Barnette, supra, this Court held that under the First Amendment, the student in public school may not be compelled to salute the flag. Speaking through Mr. Justice Jackson, the Court said:

"The Fourteenth Amendment, as now applied to the States, protects the citizen against the State itself and all of its creatures—Boards of Education not excepted. These have, of course, important, delicate, and highly discretionary functions, but none that they may not perform within the limits of the Bill of Rights. That they are educating the young for citizenship is reason for scrupulous protection of Constitutional freedoms of the individual, if we are not to strangle the free mind at its source and teach youth to discount important principles of our government as mere platitudes." 319 U.S., at 637, 63 S.Ct. at 1185.

On the other hand, the Court has repeatedly emphasized the need for affirming the comprehensive authority of the States and of
school officials, consistent with fundamental constitutional safeguards, to prescribe and control conduct in the schools. Our problem lies in the area where students in the exercise of First Amendment rights collide with the rules of the school authorities.

The District Court concluded that the action of the school authorities was reasonable because it was based upon their fear of a disturbance from the wearing of the armbands. But, in our system, undifferentiated fear or apprehension of disturbance is not enough to overcome the right to freedom of expression. Any departure from absolute regimentation may cause trouble. Any variation from the majority's opinion may inspire fear. Any word spoken, in class, in the lunchroom, or on the campus, that deviates from the views of another person may start an argument or cause a disturbance. But our Constitution says we must take this risk; and our history says that it is this sort of hazardous freedom—this kind of openness—that is the basis of our national strength and of the independence and vigor of Americans who grow up and live in this relatively permissive, often disputatious, society.

As we have discussed, the record does not demonstrate any facts which might reasonable have led school authorities to forecast substantial disruption of or material interference with school activities, and no disturbances or disorders on the school premises in fact occurred. These petitioners merely went about their ordained rounds in school, their deviation consisted only in wearing on their sleeve a band of black cloth, not more than two inches wide, they wore it to exhibit their disapproval of the Vietnam hostilities and their advocacy of a truce, to make their views known, and, by their example, to influence others to adopt them. In the circumstances, our Constitution does not permit officials of the State to deny their form of expression.

We express no opinion as to the form of relief which should be granted, this being a matter for the lower courts to determine. We reverse and remand for further proceedings consistent with this opinion.

Reversed and remanded.

Mr. Justice STEWART, concurring.

Although I agree with much of what is said in the Court's opinion, and with its judgment in this case, I cannot share the Court's uncritical assumption that, school discipline aside, the First Amendment rights of children are co-extensive with those of adults. Indeed, I had thought the Court decided otherwise just last Term in Ginsberg v. New York, 390 U.S. 629, 88 S.Ct. 1274, 20 L.Ed.2d 195. I continue to hold the view I expressed in that case: "[A] State may permissibly determine that, at least in some precisely delineated areas, a child—like someone in a captive audience—is not possessed of that full capacity for individual choice which is the presupposition of First Amendment guarantees."

Mr. Justice BLACK, dissenting.
while the record does not show that any of these armband students shouted, used profane language, or were violent in any manner, detailed testimony by some of them shows their armbands caused comments warnings by other students, the peling of fun at them, and a warning by an older football player that other, nonprotesting students had better let them alone. There is also evidence that a teacher of mathematics had his lesson period practically "wrecked" chiefly by disputes with Mary Beth Tinker, who wore her armband for her "demonstration." And I repeat that if the time has come when pupils of state-supported schools, kindergartens, grammar schools, or high schools, can defy and flout orders of school officials to keep their minds on their own schoolwork, it is the beginning of a new revolutionary era of permissiveness in this country fostered by the judiciary.

It is a myth to say that any person has a constitutional right to say what he pleases, where he pleases, and when he pleases. Our Court has decided precisely the opposite.

In my view, teachers in state-controlled public schools are hired to teach there.

And, as I have pointed out before, the record amply shows that public protest in the school classes against the Vietnam war "distracted from that singleness of purpose which the state [here Iowa] desired to exist in its public educational institutions." Here the Court should accord Iowa educational institutions the same right to determine for themselves to what extent free expression should be allowed in its schools as it accorded Mississippi with reference to freedom of assembly.

I wish, therefore, wholly to disclaim any purpose on my part to hold that the Federal Constitution compels the teachers, parents, and elected school officials to surrender control of the American public school system to public school students. I dissent.

Mr. Justice HARLAN, dissenting.

I certainly agree that state public school authorities in the discharge of their responsibilities are not wholly exempt from the requirements of the Fourteenth Amendment respecting the freedoms of expression and association. At the same time I am reluctant to believe that there is any disagreement between the majority and myself on the proposition that school officials should be accorded the widest authority in maintaining discipline and good order in their institutions. To translate that proposition into a workable constitutional rule, I would, in cases like this, cast upon those complaining the burden of showing that a particular school measure was motivated by other than legitimate school concerns—for example, a desire to prohibit the expression of an unpopular point of view, while permitting expression of the dominant opinion.

Finding nothing in this record which impugns the good faith of respondents in promulgating the armband regulation, I would affirm the judgment below.
6. The Plaintiffs in this case are:
   a) John F. Tinker and other public school students.
   b) the lower District Court and Court of Appeals.
   c) The Des Moines School system, school officials and school board members.
   d) the principals of the Des Moines schools.

7. The main issue in this case is:
   a) is the wearing of an armband a type of speech?
   b) does a student have a right to wear an armband in protest at school?
   c) does a student have a right to say what he pleases, where he pleases, and when he pleases, at school?
   d) is a school a "public" place?

8. The author Justice Fortas authored:
   a) majority opinion.
   b) en banc.
   c) plurality opinion.
   d) per curiam opinion.

9. The procedural order of this case is:
   a) Federal District Court, Eighth Circuit Court of Appeals, and the Supreme Court.
   b) Supreme Court, Federal District Court, Eighth Circuit Court of Appeals.
   c) Iowa District Court, the Eighth Circuit Court of Appeals and the Supreme Court.
   d) The Federal District Court, the Fifth Circuit Court of Appeals, and the Supreme Court.

10. When the Court quotes Burnside v. Byars, 363 F.2d 744, 749 (1966), it is:
    a) giving an example of Dicta.
    b) giving a rule, principle, or tenant of the law.
    c) citing to a case that is a precedent.
    d) citing to common law.

11. According to this case which of the following are true:

   I. First Amendment Rights applied in light of special characteristics of school environment, are available to students.
   II. Undifferentiated fear or apprehension of disturbance is not enough to overcome the right of freedom of speech.
   III. The student has the burden to show his right of free speech has been violated by the school official.

   a) I only
   b) II only
   c) I and II only
   d) I and III only
TRUE AND FALSE - INDICATE WHICH IS TRUE OR FALSE. FIRST BLANK SPACE IS TRUE; SECOND BLANK SPACE IS FALSE.

12. A student may recover monetary damages from a teacher for substandard teaching during the educational process.

13. A teacher may be held liable if a student is injured while running an errand for the teacher.

14. All state constitutions make provisions for a system of free public education.

15. Open meeting laws have exceptions for certain items for discussion and are closed to the public.

16. If a state statute allows for home schooling as an alternative to compulsory attendance, the burden falls on the parent to show that such home instruction is being provided.

17. Ultra vires means that the group has a qualified privilege to do something.

18. Students may be compelled to recite the Pledge of Allegiance to the Flag even though it is contrary to their religious belief.

19. A religious organization may generally use the public school facilities during non-school hours.

20. Most of the legislation regarding handicapped children is Federal Law.

21. Most school law is Federal Law.

22. Children may be expelled from school by the Superintendent without a hearing.

23. A school board may constitutionally institute a policy imposing grade reduction for non-attendance.

24. A school board may constitutionally institute a policy imposing a grade reduction for violation of school rules.

25. In loco parentis means a situation in which two or more persons hold such an interest in something that one of them representing a legal interest would amount to representation of the other or others.

26. The cruel and unusual punishment clause of the Eighth Amendment does not apply to corporal punishment in school.

27. The law prohibits the use of evidence obtained illegally by a public school official from being
used in a criminal proceeding against a student.

28. Public school teachers can be made to conform to a particular dress code.

29. Parents have the legal right to consent or not consent to their child's retention or promotion.

30. The scope of negotiation in collective bargaining is largely a question for the state legislature to decide.

31. A signed permission notice for a field trip by a parent relieves the teacher and school district of liability for an injury to a student on that trip.

32. A tort is a civil wrong done one party to another and not arising from a contract.

33. Generally the prevailing party in a court action is entitled to attorney fees.

34. Public school teachers' contracts are generally governed by state laws.

35. It is illegal for a public school to punish a student with a disability.

36. Based upon a teacher's religious beliefs, a teacher may refuse to teach the prescribed curriculum concerning patriotic matters.

37. A superintendent may, with board authorization, impose a suspension without pay as a discipline to a public employee.

38. Parents have a qualified privilege to speak publicly before a school board regarding a teacher's instructions of his or her children.

39. "Just cause" for teacher termination is evaluated on a case-by-case basis.

40. Principals may censor student newspapers.
APPENDIX E. SCHOOL LAW QUIZ #1

QUIZ #1 - CHURCH-STATE ISSUES IN PUBLIC EDUCATION
Directions: Answer each of the following three questions fully and completely, discussing what constitutional or statutory provisions are applicable, applying any appropriate legal "tests," or the judicial reasoning from cases we've studied. Dropping [case] names is permissible and encouraged but not mandatory.

A. The Iowa legislature, in its infinite wisdom, passed the following bills this session:

HF1 - Provides for state aid to all private schools for the purchase of computers exclusively for student use in secular academic areas.

HF666 - Prohibits public buildings from being leased to groups for the purpose of devil or satan worship.

HF18 - Provides tuition tax credits of $70.00 per $1,000.00 spent on tuition and books for parents of students in (pre-K to 12th grade) public and private schools.

Discuss the constitutionality of these bills. Come to a conclusion; the Governor wants your opinion on whether he should sign them.

B. LB. Smart is principal at Boats Bally Bluff Middle School. On April 20th, a group of parents, including three or four local clergy, approached Smart and asked that they be allowed to initiate a chapter of Fellowship of Christian Students (FCS) at BBBMS. Under their proposal (reflected in the National Charter for FCS they show to Smart), once a local chapter is established, the students involved would meet once a week at school for the purpose of praying, proselytizing, and studying. Membership would be limited to "students who have accepted Jesus Christ as their personal Savior." One of the parents involved also happens to be a teacher at BBBMS and offers to be the group's "sponsor or supervisor." They want your answer by tomorrow.

Discuss the applicable law (constitutional and statutory).

What information do you need in order to advise Smart?

How do you advise Smart?

C. You are the principal at Boats Bally Bluff Elementary School. Unbeknownst to you, your fifth grade teacher, Starrie DeSisis, gave her class a speech assignment. Each student was to decide on a topic, have a meeting with Ms. DeSisis for topic discussion/harrowing/approval, submit an outline of the speech one week in advance of delivering it, and deliver it live in front of the class. Fifth grader Virginia Mahre met with her teacher for the purpose of discussing her topic, which was "Why Everyone Should Be a Christian." At that time, Ms. DeSisis suggested to Virginia that she didn't think this subject was particularly appropriate given the one Buddhist and two Jewish students in the classroom (not to mention that there may be other non-Christians that she wasn't even aware of). However, Ginny said that was exactly the reason she wanted to give this speech: to save the souls of the two Bernstein children and the Ghanbi boy.

DeSisis held firm, telling Ginny she had to pick another topic, but she didn't. Come speech day, she brought in a video tape of her speech to play before the class. DeSisis flunked her for not having an approved topic, not submitting an outline, and not giving a live speech. That evening, Starrie got a call from the parents' attorney "promising" (not threatening) to sue her and the school. Analyze the situation (on paper). Are you worried?
APPENDIX F. SCHOOL LAW QUIZ #2

QUIZ #2 - STUDENT RIGHTS

DIRECTIONS: Answer each question correctly.

A. You're the new principal at Boars Belly Bluff Senior High, which has a student population of 1000 (9-12); its racial makeup is 99% Anglo (white) and 1% minority.

Percival ("Red") Knecht, a senior, came to school wearing a tee-shirt, jeans, and a jacket. On the right rear pocket of his jeans was an insignia with a pair of pursed lips and the words "my ass" underneath. His tee-shirt had the letters W-A-R in large print on the front and in very tiny but legible print on the back, "White Aryan Resistance." The back of his jacket bore the emblem "KKK."

For the few moments prior to first hour, students were gathered in the hallway pointing at Red and talking in hushed tones. Shortly thereafter, Michael and Janet Jackson, minority siblings, walked into school. A hush descended over the gathered students as they anticipated the Jacksons' reaction to Red's attire.

Mr. Akers, assigned to a.m. hall duty, came rushing into your office. "You'd better get out in the hall NOW! All hell's gonna break loose! We've never had anything like this before. That Knecht kid's really asked for it now, and I hope he gets it!"

You quickly review the Student Handbook provision: "Students may not wear clothing that advertises products or services that are illegal to minors, clothing that causes a material and substantial disruption to the school environment, or clothing that signifies gang affiliation."

As the principal, discuss your options and course of action. Include your legal analysis of the situation. Does your answer change if Janet and Michael have, on occasion, worn "Black Power" t-shirts to school without incident?

B. The journalism class at Boars Belly Bluff Middle School produces a bi-weekly student newspaper for insertion and delivery with the Bell Bluffer, the town rag. The next edition is brought to you, as principal, for approval. In it there are two items you find troublesome. One is a political cartoon that depicts the five-member school board as donkeys. The other is an editorial by the student editor stating, "Probably over half of the student body is or has been sexually active" and asking the students to complete a "sex survey" and promising to publish the results in an up-coming edition. Both items are undoubtedly related to a recent school board decision to drop a widely used, nationally acclaimed textbook covering Human Growth and Development topics because the text was not "written from a Total-Abstinence perspective," quoting from the board minutes.

As principal, you are legitimately concerned about the board members' reactions if you allow the student newspaper to be published and disseminated as is. Under your policy, which is consistent with Iowa law, is there anything you can do to prevent the publication of either the cartoon or the editorial?
APPENDIX G. SCHOOL LAW FINAL EXAM

ED. AD. 575 - FUNDAMENTALS OF SCHOOL LAW
FINAL EXAM
SUMMER SESSION, 1995

Directions: Answer all questions, identifying the question by its letter. You are limited to no more than 1 and 1/2 pages per response, double spaced or handwritten. Choose your words wisely. This is an open-book, open-note test, but you may not use any human resources (or lawyers, either, for that matter). Please mail your test sheet and responses, postmarked by August 9, 1995, to

Kathy Lee Collins
2312 40th Place
Des Moines, IA 50310-3934

If you want your tests back, please enclose a self-addressed stamped envelope with sufficient postage. [I do not plan to make suggestions or otherwise "correct" the final exams. Thus, the only advantage to getting your test back will be to see how many points you received for each question. The second quizzes can be mailed back if you want them, too.] I've enjoyed having each of you in class! Take it easy for the rest of your summer, stay in touch (i.e., join SAI when you become an administrator), and please stay out of [legal] trouble!

A. Your board is contemplating a couple of "controversial" policies. The first would limit the number of hours a 10th through 12th grade student may work during the school week. (The board is thinking of 10 hours unless the student is active in extra-curricular activities, in which case the number would be 5.) Its rationale is that student grades and learning will improve and absenteeism will be reduced. Can it pass such a policy? What guidance can you offer your board?

The second policy would address the problem administration has faced with respect to forged absence notes and phony phone calls from students pretending to be their parent and purporting to excuse the student's absence. The principals at all three high schools believe the number of illegitimate excuses per year is about 30 at each school, or approximately 17% of the total student population. The board is eager, you might even say enthusiastic, about the prospect of cracking down on these situations, so they look at a neighboring district's policy for possible adoption. It requires that all excuses for absences be made in person by parents. If a parent is not able to come in to provide the excuse, a doctor's note (on his/her letterhead) will be acceptable. What are your thoughts on this policy?

B. George ("Popeye") T. Saylorman and Blake ("Bluto") Bouley have a history of animosity toward one another. They "got into it" in study hall one afternoon. Fortunately, the study hall supervisor was able to separate them before things got physical; she sent them to the office one at a time to see the Associate Principal who let them cool off and decided against any discipline because nothing had really happened beyond exchanging words.

After school, Popeye stopped off at the Quik Stop about three blocks from school for some spinach and Bluto walked in. Immediately the boys got into it again, this time physically. The store manager called the police and both boys were taken into temporary custody at a juvenile detention facility. By about 9:00 that evening, Popeye had developed a whale of a headache, so the officials took him to the hospital where it was determined he had experienced a concussion and possible brain damage.

Popeye's parents are all over the school officials for not protecting their boy from Bluto.
C. Your school has a “Good Conduct” policy adopted by the board and implemented by administrative rules stated in the handbook. It is distributed to all students who take part in extra-curricular activities, and a meeting is held with parents (who show up) to explain the policy and rules. In essence, it says that students will lose eligibility for the next six performances, games, or events after they admit to or are found to have violated the policy by being at a function where beer, alcohol, or controlled substances are being used or consumed by minors illegally; the policy is in effect 365 days per year, 24 hours a day.

Cherry Leeter and Bubba Bulcus were reportedly at a kegger in the woods last Friday night, November 13. Cherry is a sophomore out for cheerleading and Bubba is a junior football player whose season is over.

1. Describe your investigation into the allegation that Cherry and Bubba violated the Good Conduct rule and board policy.
2. To what type of hearing, if any, are Cherry and Bubba entitled? (How much process is due?) Explain.
3. What arguments would attorneys for Cherry and Bubba raise in an appeal from the imposition of the penalty?
4. How would the school’s attorney respond to those arguments, and what additional arguments would s/he make?
5. Can the punishment be imposed against Cherry? Bubba? (i.e., Who wins? School or students?)

D. The elementary principal calls you, the superintendent at Boars Belly Bluff CSD to tell you that apparently a student or students are stealing the noon “take” from the milk line at Timothy Leary Elementary School. It has happened three days this week and two last week. The principal thinks she has it narrowed down to two students: a boy (son of the most prominent attorney in town) and a girl (daughter of the board president).

The elementary principal wants you to purchase a minicam that they can hide in the lunchroom to film (secretly) the milk line during the entire lunch hour. In the alternative, she wants you to bring the police in to search all of the students. If you won’t agree to either of those things, she wants to strip search these two kids herself. (She took School Law at Northwest Missouri State, so she doesn’t have a clue . . .)

What is your decision? Explain your answer, relying on your astute legal knowledge and reasoning ability.
They demand that Bluto be expelled. The superintendent wants your advice. Give it to her.

C. Badacz v. Boars Belly Bluff CSD

Billy Badacz, a touch-as-nails eighth grader, appears at school one day with a rhinestone stud "earring" in his nostril. The other kids at Rooster Poot Middle School tease him, and he responds by physically pushing, shoving, and making verbal threats against the students. Your associate principal verbally warned Billy in the hallway that he (Billy) would be suspended if he continued to react in such an assaultive manner. The next day Billy showed up with a two-inch "hoop" nose-ring sported from his left nostril. Suspecting more of the teasing and more of Billy's reactive behavior would occur, the assoc. principal suspended Billy for violating the school's policy on student appearance: "Students may not wear anything that causes a disruption to the orderly school environment." Billy was told to come back without the nose-ring, and that he was suspended until he got rid of it. As principal, you review all decisions of the associate principal. Review this one.

D. Blue v. Boars Belly Bluff CSD

Boars Belly Bluff High School, student population 600, offers an elective course in photography. Recent renovations to the building included an up-to-date darkroom, and the Instructional Support levy generated enough funding to equip the darkroom and classroom with the latest Nikons and all the chemicals necessary to develop film and produce prints. Enrollment in the course is limited to juniors and seniors. Only about 7% of the schools in Iowa are able to or choose to offer such a course because of (1) expense and (2) liability concerns due to the potential for students to misuse or abuse the chemicals.

Jason Treson and Hugh Blue took the course. Although they were taught how to develop pictures and were warned generally of the dangers of the chemicals, they were not told specifically not to drink, snort, shoot, or otherwise ingest the chemicals.

In March, Jason and Hugh were in the darkroom first hour developing pictures for the school yearbook. Mr. Adams, the teacher, was supervising the other 18 students in the regular classroom. He didn't make a habit of directly supervising students in the darkroom for at least two reasons. First, no more than two people could move around in there, and second, to enter and leave the darkroom would likely bring in light and destroy the development process. He did make a habit of monitoring the amount of time students were in the darkroom working and limited them to 30 minutes (per team of two) at a time.

After about 20 minutes in the darkroom, Jason suddenly burst into the classroom shouting, "Help! Help! Hugh's not breathing!"

Mr. Adams immediately went into the darkroom where he found Hugh Blue motionless on the floor. Mr. Adams didn't know CPR, so he sent a student to the office to get the school nurse. Unfortunately, as she worked only through a contract with the local public health department (her employer) for 1/5 time at the school, she was not working in the building that day. The student had the good sense to tell the office secretary to call an ambulance, and "First Responders" arrived at the school about 8 minutes later. Tragically, it was too late for Hugh; he was pronounced DOA at Wannawin County Hospital.

The District and its insurer immediately launched an investigation. The first person contacted was Jason Mason. After initially claiming no knowledge of what caused Hugh's collapse, he eventually broke down and admitted that the two of them had been sniffing the fixer, one of the chemicals in the darkroom, in an effort to get high. They had done it before, but nothing remotely like this had ever happened.
The autopsy report indicated Hugh Blue died from a myocardial infarction, a heart attack, most likely caused by vasal constriction and anoxia. In short, the inhaling of the fomite had stopped Hugh's heart. There was no evidence of prior cardiovascular disease or weakness, and Hugh had no history of heart trouble that may have contributed to his death.

Within a few weeks of Hugh's funeral, Drew and Lou Blue, Hugh's parents, contacted their family lawyer with the intent of suing the BBB District, its board, superintendent, principal, and Mr. Adams for wrongful death. Analyze the case, including any applicable defenses to be raised by the school.

E. Campbell v. Bears Belly Bluff CSD

Olline Orth, an ultra-conservative, ran successfully for the five-member school board in Bears Belly Bluff in the fall of 1994 on a platform to fire the high school government teacher, Bonnie Jean Campbell, whom Orth smeared as a "commie-liberal-feminazi." Orth exercised her right under the board policy to visit the classrooms in the district by sitting in on Campbell's twelfth grade government class in early March. What Olline saw and heard convinced her more than ever that Campbell should be fired.

Bonnie was wearing a very expensive blouse with a small insignia over the breast pocket of a white-headed salamander with a slanted red line through it. Ms. Orth had no difficulty figuring out that Ms. Campbell's message was "No News" and that it reflected on Speaker of the House Newt Gingrich, not a particular class of reptiles. Campbell's lesson that day concerned the order of succession to the presidency, a legitimate part of the text and curriculum. Although she stayed close to the book, Campbell did make several sarcastic remarks to her students in response to questions about the potential for a "President Newt," including one about dissection in science class or "premature embalming in formaldehyde" as a more appropriate career finish for the Speaker.

Orthreported to Superintendent Spineless that day: "I fully expect to see your recommendation to terminate Bonnie Campbell's employment in April. She doesn't have the right to poison the heads of my children and other students by criticizing elected high-level public officials!" Spineless drew up and served Bonnie with a termination notice. The "just cause" grounds were "inappropriate political proselytizing and mediocre evaluations." Bonnie's prior evaluations had been average to slightly above and she had no other "black marks" in her ten-year personnel file at BBBCSD.

Following a hearing afforded to Bonnie in proper compliance with chapter 279 termination proceedings, the board voted 5-0 to terminate Bonnie's employment. She has appealed to an adjudicator, pursuant to Iowa Code section 279.17, and must make her arguments in favor of overturning the board's decision. Make them for her. Then, wearing your adjudicator hat, decide whether or not to reverse the board and reinstate Bonnie.

F. Parent v. Area Education Agency VIII

Paula Parent, mother of 3 year-old Nevah, appeared at Rooster Poot Elementary School three days prior to the start of school in 1992. Paula spoke with Ida Knough, the elementary secretary, and informed her that Nevah needed a special school because of "pervasive developmental disorder." Ida recommended three private schools in the district with pre-school programs. Nevah enrolled in the BAC Special School. When Paula received her first bill for BAC tuition at the end of September, she sent it to the special education director, Tom Black, at the AEA for payment. Naturally the special ed. director knew nothing about Nevah, her disability, or her needs, so he contacted Paula to discuss the AEA's need to evaluate Nevah prior to approval.
of any private school payments. Paula refused to have Nevah evaluated by the AEA staff. Tom wrote "Refused" across the bill and sent it back to Paula. He heard nothing more for three years.

It is now the beginning of the 1995-96 school year. Paula Parent has filed suit against the AEA for reimbursement for three years' worth of private special school tuition. Paula's attorney has argued that Ida Knough made a referral to the special school on behalf of the school district and AEA, and that because Ida had knowledge that Nevah wouldn't be enrolling at Boars Belly Bluff, that Tom Black had "constructive knowledge" of Paula and Nevah's situation. Before Tom contacts his lawyer, he comes to you, remembering you just had school law this past summer. He wants to know if you think the AEA is responsible for reimbursing Paula Parent for the private school tuition for Nevah, and whether Ida is qualified or authorized to make referrals or approve private school placements on behalf of the district and AEA. He also wonders whether Paula can go straight to court, or whether she isn't required to seek a due process appeal first. What are your thoughts?

G. Gotcha v. Boars Belly Bluff CSD

For three years you have carefully laid the foundation to terminate Ivy Gotcha, one of the laziest, most burned-out, incompetent teachers you have ever seen. You've paid strict attention to the terms of the master contract; you've made well-documented and exceptionally accurate and fair evaluations of her. She sees the train coming, though. You plan to deliver the superintendent's notice of intent to consider termination to Ivy personally, but on April 30, the deadline for notification, Ivy calls in sick. After school, you hop into your car, drive over to Ivy's house and knock on her door. She either refuses to come to the door or isn't home. (Ivy lives alone. Who'd have her?)

There's obviously no time to send the notice by certified mail, so you decide to break into her house to make sure the last three years don't go down the drain. A full perusal of her house and garage clearly indicate Ivy is not home. You carefully eradicate all evidence of your entry and park down the street a ways to wait for her to come home.

At five minutes after midnight, Ivy finally comes home. You catch her at the front door where you push the notice into her hand. But before you can get away, Ivy leaps at you, fists flying, screaming, "I knew you were out to get me!" The strong odor of alcohol emanates from Ivy's contorted mouth and you realize she is drunk as a skunk. Nevertheless, she is capable of getting in a couple of good shots and you've got a broken nose and two new half-size front teeth.

Can you proceed with the termination? If not, why not?

Are there grounds to discharge Ivy under section 279.27? Discuss.
APPENDIX H. SCHOOL LAW COURSE – POSTTEST PERSONAL PROFILE

PERSONAL PROFILE: Please mark the appropriate response on the answer sheet given you. Some questions will require your response to be written on the question sheet. This sheet and the attached sheet will not be given to your instructor.

1. Where are you taking this course?
   A. _____ With Instructor physically present
   B. _____ Without Instructor physically present

2. What is your present marital status?
   A. _____ Single (Never Married)  B. _____ Married
   C. _____ Divorced (Separated or Widowed)

3. What is your age range?
   A. _____ 20 to 30  C. _____ 41 to 50
   B. _____ 31 to 40  D. _____ over 50
   What is your present age in years? ________

4. Do you have any children?
   A. _____ Yes  B. _____ No  List ages ________.

5. While taking this class, did you work at a job?
   A. _____ Yes  B. _____ No
   How many hours a week did you work? ________

6. How many hours per week did you work on this course outside the classroom?
   A. _____ 5 or less  D. _____ 16 to 20
   B. _____ 6 to 10  E. _____ More than 20
   C. _____ 11 to 15  Please give specific # of hours ______

7. Did you take any other course(s) this summer beside this school law course?
   A. _____ Yes  B. _____ No
   How many other hours of courses did you take? ________

8. Have you taken any other ICN courses?
   A. _____ Yes  B. _____ No
   How many? ________
   Please name course(s): ____________________________

9. What was your undergraduate GPA?
   A. _____ Below 2.0  D. _____ 3.3 to 3.5
   B. _____ 2.1 to 2.6  E. _____ 3.6 to 4.0
   C. _____ 2.7 to 3.2  Please give your GPA ______

10. Did you study with a group of fellow students from this class?
    A. _____ Yes  B. _____ No
    If YES, How many? ________

   While taking this course did you experience any mitigating circumstances that might have affected your performance? (personal problems, changes in status, sickness, or other disruptions)
BIBLIOGRAPHY


Elbert, D. (1994, November 28). Class goes to students Drake professors are in four places at once. *The Des Moines Register*, pp. 1B, 4B.


Fujinaka, T. (1998, October). Personal communication. Iowa Communications Network officer, Des Moines, IA.


Holmberg, B. (1989). The concept, basic character and development potentials of distance education. *Distance Education, 10*(1), 127-135.


Iowa Code, Chapter 8D, (1997). [Deals with the Iowa Communications Network.]


Russell, T. L. (1993). *The "no significant difference" phenomenon as reported in research reports, summaries, and papers.* Raleigh: North Carolina State University, Office of Instructional Telecommunications.


Simonson, M., & Smaldino, S. (1994). *Distance education in Iowa: a research plan.* Proceedings of selected research and development presentations at the National Convention of the Association for Educational Communications and Technology sponsored by the research and theory division, Nashville, TN. (ERIC Document Reproduction Service No. ED 373 761)


Sorensen, C. (1996). *Students near and for differences in perceptions of community college students taking interactive television classes at origination and remote sites.* Iowa State University, Ames. (ERIC Document Reproduction Service No. ED 393 509)


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