A Study to Address The

Use of Internet/Technology in Montana High Schools

By:

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This professional paper has been read by each member of the graduate committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency.

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Chapter I

Introduction

> In our schools, every classroom in America must be connected to the information superhighway, with computers and good software, and well-trained teachers. We are working with the telecommunications industry, educators and parents to connect 20 percent of California's classrooms by this spring, and every classroom and every library in the entire United States by the year 2000. I ask Congress to support this education technology initiative so that we can make sure this national partnership succeeds. (President Clinton 1996)

Montana schools have spent thousands of dollars to update technology this past decade. This has included computers and access to the Internet for writing and research purposes. Many schools in Montana have access to the Internet, but how many of the teachers in Montana schools are encouraging their students to use the Internet as a research tool.

Statement of the Problem

The purpose of this study was to determine the amount of computer/technology resources available to Montana High Schools. Since all Montana High Schools require U.S. Government from students to graduate, Montana U.S. Government teachers were surveyed.

Questions to Be Answered

1. Is the usage of the Internet different depending on school size?
2. What is the availability of Internet access to both U.S. Government students and teachers?

3. What percentage of schools has the Internet, and how many hookups are there per school?

4. What level of Internet/computer literacy do Montana U.S. Government teachers possess?

Need for The Study

A connection to the Internet empowers students. It gives them a research advantage over students who do not have Internet skills or access. It generally gets them excited about learning. A change in student attitude is observed when surfing the net individually or in a small group setting. The traditional teacher-directed classroom changes to a space where students working with their peers in their own school or around the world begin to take responsibility for their own learning. (Cuban in Maskin 1996)

This author and others say that student access to the Internet is very important in today's Information Age. In related readings, studies show that when these high school students continue their education, or go to the workplace, those with computer technology skills will have an advantage. This includes a knowledge of where to gain access to information, and better paying jobs.

This study gathered information from a sample of the population of U.S. Government teachers in the State of Montana. From information gathered with a questionnaire, along with related readings from other authors, the question of whether students in Montana Schools are using the Internet as a research tool and other questions concerning the computer/Internet literacy of Montana U.S. Government teachers, will be answered.

Terminology

The terminology definitions will aid the reader in the study of this project.

Broadband Telephone Lines: New technology phone lines which have the capability of transferring information much faster than conventional phone lines.

CPU (Central Processing Unit): Internal part of a computer which processes information going in and out of a computer to readable form on the computer screen.

E-mail: Electronic mail. Normally a plain text message. E-mail addresses look like a name, an @ character, then a site name. For example the president of the USA's e-mail address is president@whitehouse.gov

Information Age: Term used to describe the era we are now in.

Internet (information highway): (Uppercase I) The vast collection of interconnected networks that all use the TCP/IP protocols and that evolved from the ARPANET of the late 60's and early 70's.

LAN (Local Area Network): A computer network limited to the immediate area, usually the same building or floor of a building.

Modem: A device that you connect to your computer and to a phone line, which allows the computer to talk to other computers through the phone system. Basically, modems do for computers what a telephone does for humans.

URL: (Uniform Resource Locator). An address of a resource on the net, such as http: //www.ukindex.co.uk A URL is something you can type into the Location box in your web browser.

Wired: Term used to identify a computer, or many computers through a LAN, (local access network) being hooked to the Internet.

WWW (World Wide Web): Two meanings - First, loosely used: the whole constellation of resources that can be accessed using Gopher, FTP, HTTP, telnet, USENET, WAIS and some other tools. Second, the universe of hypertext servers (HTTP servers) which are the servers that allow text, graphics, sound files, etc. to be mixed together.

(ILC Glossary of Internet Terms 1997)

Limitations of the Study

The researcher limited the study to U.S. Government teachers in the state of Montana. Many U.S. Government classes have assignments and activities in which outside resources are needed. The purpose of surveying this area was that all students in Montana high schools are required to take U.S. Government. Therefore, every high school in Montana has a U.S. Government class. The teachers in this area would be directly responsible for the use of the Internet as a resource. This should give an accurate measurement of the use of the Internet and Internet/computer literacy of government teachers in the State of Montana.

Organization of the Study

The research project is organized into five chapters. Chapter I has the statement of the problem, questions to be answered, the need for the study to be done in Montana, a definition of terms the limitations, and the organization of the study.

Chapter II is a review of current literature on the topic. The chapter is divided into topics as follows:

1. Access to The Internet
2. Administrators Role In Technology
3. Teachers Role in Technology
4. Future Prospects

Chapter III entails the procedures which will be used to complete the study of this project. It covers the sources of the data, how the instrument for collecting primary data was designed, the time-line for completing the research project, and how the participants for the project were selected.

Chapter IV contains the results of the study. The questionnaire will be presented and analyzed. Chapter V is a summary of the study. It has the conclusions from the study, and the author's recommendations.

Summary

Use of technology, and particularly access to the Internet in the classrooms of Montana high schools are questions which need to be answered. With the money that has been spent in Montana high schools to update technology, a study as to the literacy and use of the people in charge of these resource needs to be examined. In today's era of the "information age," students need to be exposed to and encouraged to use the latest technology.

Chapter II

Related Literature

Introduction

> The renowned scientist and author Arthur C. Clarke recounts in How the World Was One, his history of the communications revolution, a tale of technological shortsightedness that resonates today. In the 1880's he writes, after word reached Britain that Alexander Graham Bell had invented the telephone, a parliamentary commission asked the Post Office chief engineer whether the device would be useful to Britons. "No Sir" the engineer answered. "The Americans have need of the telephone, but we do not. We have plenty of messenger boys."
> Clarke was saying that in the midst of a technological revolution, it is both comforting to cling to familiar ideas and difficult to foresee how a particular invention can set off a chain of events that can change the face of society. And so it is with the phenomenon that has come to be known as the "information highway." (West 1995)

What is this phenomenon called the Internet (information highway)? How are schools in the United States using it? Are teachers and students in schools in the United States like the Post Office Chief Engineer in Britain? Do they think the libraries are adequate and there is no need for the Internet? What level of computer literacy/Internet usage do teachers in the U.S. possess? What kind of availability of Internet access is there to both students and teachers? The following narrative contributes information about these questions and more.

Access to The Internet

Before 1994, access to the Internet was restricted to those in government and universities. It required learning a mainframe operating system, having access to computer terminals, interacting only with other mainframe users, and there was little software available for integration with personal computers. This limited the appeal of using the

Internet to teachers comfortable with a mainframe environment. Today, with the development of software, modems, Local Area Networks (LANS), modems for access to a growing number of Internet providers and the decreasing prices of personal computers, access to the Internet is becoming easier and less expensive. (Wheeler 1996)

In the public schools of Montgomery County, Virginia, located in the Blue Ridge Mountains, a recently approved technology plan spells out in detail how they are going to equip the district's twenty schools, comprising 8900 students, with broadband telephone lines. They claim they are going to take the school from the age of printed page to computer screen. The school district has the good fortune of being located a few miles from what is one of the most "wired" communities in the United States. In the small town of Blacksburg, Bell Atlantic of Virginia, Virginia Polytechnic Institute and State University, and the local government are working together on a cooperative venture to provide ordinary citizens immediate access to the "information highway." The effort is providing Internet access to all residents from the local library, schools, or privacy of their homes. It is just a local telephone call away. The project aims to eventually link schools and homes. (West 1995)

Tools are now available to make gathering information for both students and teachers much easier. With the broad acceptance of computers by schools in the 1980's, student and teacher access to personal computers has increased dramatically. (Hayes and Bybee 1995, in Wheeler 1996) The ratio of students to computers has dropped from 125 to 1 in the 1983-84 school year, to 12 to 1 in 1994-95. If this trend continues, a national student-to-computer ratio of 1 to 1 will be realized in the early twenty-first century. (Wheeler 1996)

Vice President Al Gore challenged the telecommunications industry in January of 1994 to wire every classroom in the nation for access to the "information highway." (West 1995) This has been a top priority of the Clinton Administration since he took office in 1992. President Clinton said in his 1997 State of The Union Address: "We must bring the power of the Information Age into all our schools. Last year, I challenged America to connect every classroom and library to the Internet by the year 2000, so that, for the first time in our history, children in the most isolated rural towns, the most comfortable suburbs, the poorest inner city schools, will have the same access to the same universe of knowledge. That is my plan -- a Call to Action for American Education." (President Clinton 1997)

> The congress finds that--(1) technology can produce far greater opportunities for all students to learn to high standards, promote efficiency and effectiveness in education, and help propel our Nation's school systems into very immediate and dramatic reform, without which our Nation will not meet the National Education goals by the target year 2000. (U.S. Congress 1994)

As the Improving America's Schools Act of 1994 states, "technology has the potential to greatly improve our educational system." How successful has it been? We have seen great growth in the capabilities of educational technologies by the sophistication of software programs, speed advances in the central processing units, increase in storage space of hard and floppy drives, a reduction in the cost of computer units and physical size, and an increase in the access to an ever-expanding information superhighway. Reports indicate that schools are still having trouble implementing technologies in the classroom. (Ritchie and Wiburg 1994)

Administrators Role in Technology

> "Administrators must understand both the capabilities and limitations of technology. Only then can they plan for, budget for, purchase carefully, install properly, maintain dutifully, schedule adequately, distribute appropriately, and replace systematically the electronic technology best suited for their needs." (Mechlenburger in Ritchie 1996)

One of the reasons school administrators may be reluctant to embrace the benefits of educational technologies is that most received their education before computers were incorporated into the education arena. They also have limited experience with educational technologies. Today, most administrators gain their technological experience through self-instruction, vendors, school personnel, consultants, or external courses. Each of these methods contains advantages and disadvantages.

Educational technologies can change how schools are run, how teachers teach, and how students learn. Most states require school administrators to take courses in leadership, management, and the challenges of special education. No states require administrators to take courses to be technologically competent. (Ritchie 1996)

Teachers Role in Technology

In a research project conducted by Dr. Jerry G. Mathews, from Idaho State University, fifty-five Southeastern Idaho School Districts were studied on teacher use and literacy in computer technology. He found that one-third to one-half of the teachers never actually used technology for any instructional purposes in their classrooms. The average number of computers in the classroom was three for all school districts. More than 70 percent of the teachers never used the Internet in the classroom.

The overall pattern of data regarding the teachers ability to use technology indicated that more than one-half perceived themselves as novices when it came to the use

of technology. The survey asked teachers to rate themselves as either novice, intermediate, or advanced. From this study, it appears that in Southeastern Idaho school districts, training and staff development are needed for the teachers to use technology in the classroom.

Dr. Mathews' study found that more frequent use of technology was indicated by teachers with a Bachelor's degree (lower education level). Approximately one-third of the teachers reported their teaching experience as less than one year while one-third reported their teaching experience as more than ten years. Eighty percent of the teachers reported a Bachelor's degree as their educational level. His conclusion was that recently hired teachers with Bachelor's degrees may be better trained in technology and have higher computer literacy than the veteran teachers. (Mathews 1997)

Future Prospects

By the beginning of the 21st century, 60 percent of the new jobs will require skills possessed by only 22 percent of the young people entering the labor market. Already, more than half of the high-wage jobs require the use of networked computers. Jobs that require computer use pay about 15 percent more, on average, than those that do not. The good news is that a recent U.S. Education Department study found that schools are making progress as a nation in wiring its classrooms. Half of the nation's public schools have hooked up to the Internet. The bad news is that this does not mean the Internet is a tool available to half the classrooms. Nationally, fewer than 10 percent of schools have LANs connecting computers to all classrooms.

There is a world of difference between the availability of computers in schools, and the availability of computers in each classroom. Teachers and students need to be able to

use these tools, but the tools are not widely available. And without giving students the opportunity to have hands-on experience, computers might as well not be available at all.

Curriculums haven't changed to keep up with advances in technology, and teachers need to be trained in using the new technology.

A U.S. Department of Education study also found that minority and low-income students are less likely to have classroom access to the Internet than wealthier students. There continues to be an information gap between schools in poor areas and schools in well-off areas. To quote U.S. Education Secretary Riley, "Learning on-line must not become a new fault line in American education." (Hundt 1996)

The evolution of technology should significantly influence curricula. However, this causes conflicts that can be resolved by only long and short term planning. Educators should have anticipated the power of the Internet and expanded their course curricula. Schools should not abandon traditional methods of teaching, but should keep them up-to-date with current models, examples, and technological tools. (Norton 1996)

Summary

Use of technology and particularly the use of the Internet in schools throughout the United States is a priority of political leaders and educators. Goals have been set and are being implemented. Some schools have adequate access and trained teachers, while others are lagging behind. A main concern of the authors is the lack of training in computer/Internet technology of teachers.

Authors feel that schools should integrate technology into classrooms curriculums as soon as possible. Information technology and training, they feel, are going to be vital for the success of high school students in the 21st Century.

Chapter III

Procedures

Introduction

The major purpose of this study is to determine the use of the Internet as a research tool in U.S. Government classes in the State of Montana. A secondary purpose is to determine the Internet/computer literacy of the U.S. Government teachers in Montana.

This chapter will examine: 1. Sources of data; 2. How survey instrument was constructed; 3. A time line for the research project; 4. How participants in the survey were selected.

Sources of Data

Secondary (related literature) data was collected from the MSU-Bozeman Renee Library. These data were in the form of journals, Eric Search for previous research projects, and computer data bases of journals not available in hard cover.

The related literature suggests that schools throughout the United States are making purchases of computer hardware and software for access to the Internet. Authors feel that access to the Internet and implementation by teachers in the classroom is very important for the future success of students.

Many of the authors feel that teachers in the classrooms are not trained or prepared to use this resource to its full capacity in the high school classrooms of the United States. The authors feel that teachers need to be trained so they are comfortable with working with this technology.

One author felt there was a further fault line being created by the have and have not schools in the U.S. Schools which have access to the Internet, and teachers who are comfortable using the Internet vs. schools with no access and trained teachers. (Richie 1996)

The data collected from the survey instrument will be used to analyze the number of connections schools in Montana have to the Internet, Montana U.S. Government teachers allowed use of the Internet for student research purposes, and the computer/Internet literacy of Montana high school U.S. Government teachers.

Data Survey Instrument

A survey instrument was used for this study (Appendix A). The instrument was designed by using other instruments in related studies and questions which were deemed appropriate for this particular study.

The survey instrument was sent to a randomly selected sample of U.S. Government teachers in Montana. The survey instrument has questions relating to the following areas:

1. Is the use of the Internet different depending on size of the school?
2. What is the availability of Internet access to both Montana U.S. Government students and teachers?
3. What percent of Montana schools have Internet access, and how many computer hookups are there per school?
4. What levels of computer/Internet literacy do Montana U.S. Government teachers possess?

The survey instrument was reviewed by the researcher's advisor in the College of Business at MSU-Bozeman. The survey instrument was examined by students and the instructor in the BUED 532 class taught by Dr. Norman Millikin on July 18, 1997.

Time Line of Research Project

July 1997	Completion of Instrument
Fall/Winter 1997-98	Test of Instrument
April 2000	Final Approval
April 2000	Mail Survey
April 2000	Follow-up of Survey
April/May 2000	Data Analysis
June 2000	Final Report Completed

Participant Selection

Participants selected for this study consisted of a population of public high school U.S. Government teachers from Montana. The selection was determined from a list provided by the Montana Office of Public Instruction. The sample population was randomly selected from AA, A, B, and C class schools. The surveys were mailed to the randomly selected school's principal, and this person was asked to distribute the survey instrument to a government teacher in that school. The number of questionnaires mailed was 115, which are two-thirds of the 180 high schools in Montana.

Summary

This chapter addresses the procedures used for this research project. It addressed data gathered from secondary sources collected in the Renee Library at MSU-Bozeman, and research data collected from the primary source in the form of a research instrument.

The survey instrument was reviewed by the BUED 532 class taught in the summer of 1997, and Dr. Norman Millikin, instructor.

Participants were selected by a random sampling of public high school U.S. Government teachers in Montana.

Chapter IV

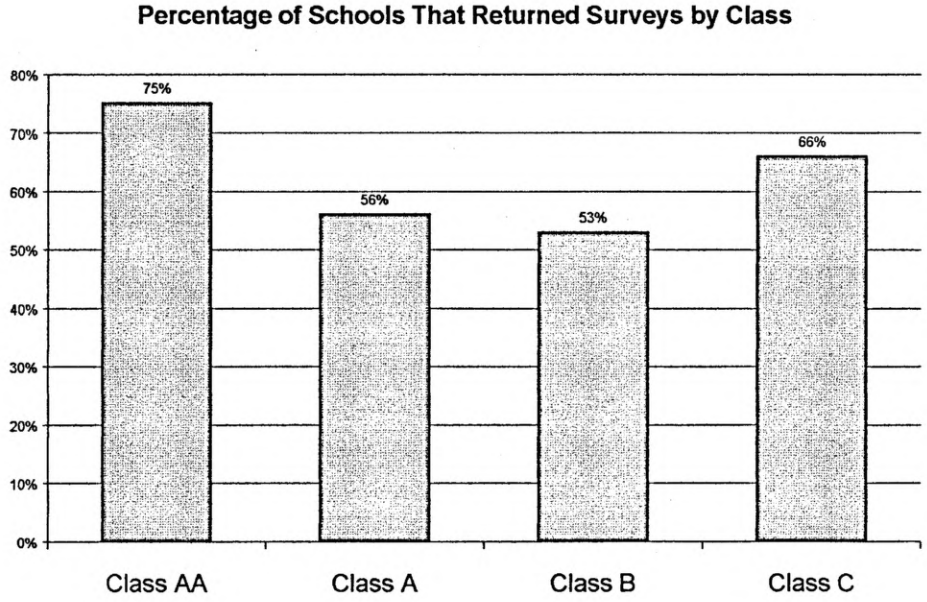
Research Findings

Introduction

A survey instrument was sent to one-hundred fifteen (115) of the one-hundred eighty (180) public high school principals in Montana. This was approximately two-thirds of the public high schools in the state. The schools were randomly selected from a computer-generated list by classification. In Montana there are thirteen (13)class AA, twenty-four (24) A, forty-six (46) B, and ninety-eight (98) C schools.

The responses of surveys mailed to the separate school classes which were returned were: six (75%) class AA, nine (56%) Class A, sixteen (53%) class B, and forty-three (66%) class C schools.

Figure 1



Teacher Education and Experience

The initial questions on the survey were used to determine the size of school where teachers taught, education levels of the teacher, years of teaching experience, grade levels being taught, number of students taught, and number of subjects each teacher had to prep for per day.

Table 1 shows a trend of Montana school teachers earning advanced degrees after their Bachelor's degrees. Class AA, A, and C school respondents showed nearly half or better had earned advanced degrees. Two-thirds of the Class A school teachers had Master's Degrees. Three, or one-half of the AA school teachers had degrees beyond a Bachelor's degree. Forty-five percent or twenty of the Class C teachers have advanced degrees. In the Class B schools, 75 percent of the teachers had Bachelor's Degrees, with three of the teachers having Master's Degrees and one teacher with other degree.

Table 1
Education of Teachers

Degree	Bachelor's	Master's	Specialist	Other
Class AA	3	1	1	1
Class A	3	6		
Class B	12	3	1	
Class C	25	14	3	3
Percentage	56%	32%	7%	5%

Table 2 shows a trend of teachers starting their teaching profession in smaller Montana schools. Eleven of the Class C teachers had three years or less teaching experience. Four of the sixteen Class B teachers had 1-5 years teaching experience, with no teachers with less than one year experience. Class A school respondents had no teachers with less than four years experience, and all Class AA respondents had ten years

or more experience.

Table 2 also showes a trend of teachers with ten or more years experience staying in their Class. All classes of schools showed 50 percent or greater of their teachers with ten or more years experience.

Table 2
Teaching Experience

Experience	10+ years	6-10 years	4-5 years	1-3 years	Less than 1
Class AA	6				
Class A	6	2	1		
Class B	8	4	1	3	
Class C	23	6	3	6	5
Percentage	56%	18%	7%	12%	7%

Table 3 shows a trend teachers in AA schools having far less preps than the teachers in the other classes of schools. All six Class AA teachers taught grade 12, while one teacher taught grade 10. All nine Classes A teachers taught grade 12, five teachers taught grade 11, and two teachers taught grades 9 and 10. All sixteen Class B teachers taught grade 12, fifteen teachers taught grade 11, twelve teachers taught grade 10, and nine teachers taught grade 9. All forty-five Class C teachers teach grade 12, thirty-six teachers grade 11, thirty-seven grade 10, thirty-five grade 9, and two teachers teach grade 8.

Table 3
Teacher Preps and Grades Taught

Grade	12	11	10	9	8
Class AA	12		1		
Class A	9	5	2	2	
Class B	16	15	12	9	
Class C	45	36	37	35	2

Table 4 shows a trend of the number of students being taught per day going down as the size of the school goes down. Of the teachers who answered the question on the number of students taught, one Class AA teacher taught 90-119 students, and the remaining five taught 120-150 students. One Class A teacher taught between 60 and 89 students, three teachers taught between 90-119 students per day, and the remaining two teachers taught 120-150 students per day. Two Class B teachers taught 30-59 students per day. Three taught 60-89 students, four taught 90-119 students and one teacher taught 120-150 students per day. Twelve Class C teachers have 30-59 students per day, fourteen have 60-89 students, one has 90-119 students, and one has 120-150 students.

Table 4
Number of Students Taught per Day

Class Size	120-150	90-119	60-89	30-59
Class AA	5	1		
Class A	2	3	1	
Class B	1	4	3	2
Class C	1	1	14	12

School Internet Access and Connections

The second, or middle part of the survey asked teachers about Internet access at their schools, the number of computers with Internet access and how they were connected, and where computers with Internet access were located.

Tables 5 and 6 show a trend of larger schools having the more sophisticated LAN connections and more computer connections to the Internet. There were some B and C schools which still used modems and telephone lines as their access to the Internet. This shows that some of the smaller schools still lack the necessary funding for more sophisticated connections. All schools had some form of Internet access, and all teachers allowed students to use the Internet as a research tool.

In the AA schools, Internet access was through a LAN, every room had Internet access, and there were 16 or more computers connected to the Internet.

In the Class A schools, the Internet access was also through a LAN, there were 16 or more computers connected to the Internet, and all rooms had access to the Internet.

In Class B schools, all but one school had 16 or more computers hooked to the Internet. Ten were connected through a LAN, two were connected through individual phone lines and modems, and three didn't know how they were connected. Fourteen schools had access through the library and classrooms, sixteen had connections in the computer lab, one school had Internet access in the Gifted and Talented classroom, and two schools had other connections.

Of the forty-three Class C schools, all but four had sixteen or more computers hooked to the Internet. Twenty-seven were connected through a LAN, five through a direct dial-up and modem, and twelve responded they didn't know how their Internet connection was established. Thirty-seven schools responded there was Internet access in

the library, twenty-nine said there was access in the computer lab and classrooms, six said their school had Internet access in the Gifted and Talented classroom, and nine replied there was a connection in other classrooms.

Table 5
How Internet is Connected at Schools

Connection	LAN	Modem	Don't Know
Class AA	6		
Class A	9		
Class B	10	2	4
Class C	27	5	12

Table 6
Rooms With Access to Internet

Access	Comp Lab	Library	Classroom	Gifted and Talented	Other Rooms
Class AA	6	6	6	6	6
Class A	9	9	9	9	9
Class B	16	14	14	1	2
Class C	29	37	29	6	9

Teacher Computer/Internet Literacy

Respondents were asked to rate their own computer and Internet literacy. The trend was that most teachers rated themselves average in both computer and Internet literacy. Five Class C respondents answered that they were advanced in computer and Internet literacy. Two Class C and one Class B respondent said they were non-users of the Internet. One Class C teacher said he/she was a non-user of computers. The remainder of respondents (approximately 16 percent) rated themselves as novice in both computer and Internet literacy.

Table 7
Teacher Computer Literacy

Rating	Non-User	Novice	Average	Advanced
Class AA			5	
Class A		1	7	
Class B		3	8	1
Class C	1	6	29	5
Percentage	2%	15%	74%	9%

Table 8
Teacher Internet Literacy

Rating	Non-User	Novice	Average	Advanced
Class AA			5	
Class A		1	4	2
Class B	1	3	7	1
Class C	2	7	28	5
Percentage	4%	17%	67%	12%

Recommendations of Teachers

In the survey instrument, the teachers were given six questions relating to computer literacy, technology and the Internet. Tables 13 and 14 were questions specifically aimed at teachers pertaining to their education in computers and technology.

In Table 9, teachers were asked if Computer Literacy should be a required course in schools. The seventy-one percent of the teachers in all schools agreed that it should be required. Of the remainder, twenty-three percent slightly agreed, three teachers slightly disagreed and one teacher disagreed completely.

Table 9
Computer Literacy should be a required course.

	Agree	Slightly Agree	Slightly Disagree	Disagree
Class AA	4	1	1	
Class A	5	3		1
Class B	11	3	2	
Class C	33	10		
Percentage	71%	23%	5%	1%

Table 10 makes a statement that technology is important for students to learn. A large percentage, seventy-eight percent, of all teachers agreed that it is important for students to learn technology. Eleven percent slightly agreed technology was important for students to technology, and one teacher slightly disagreed with this statement.

Table 10
Technology is important for students to learn.

	Agree	Slightly Agree	Slightly Disagree	Disagree
Class AA	5	1		
Class A	7	2		
Class B	14	2		
Class C	32	10	1	
Percentage	78%	21%	1%	

Table 11 asks the teachers if they think that the Internet is an important research tool. A general consensus (seventy percent) of the respondents agreed it was an important

research tool. Twenty-seven percent slightly agreed and three percent (2 from Class C schools) slightly disagreed.

Table 11
The Internet is an important research tool.

	Agree	Slightly Agree	Slightly Disagree	Disagree
Class AA	4	2		
Class A	7	2		
Class B	11	5		
Class C	30	11	2	
Percentage	70%	27%	3%	

The statement in Table 12 asks the teachers their opinion on whether schools should put more resources into technology. This question had the least percentage of total agreement of all statements asked. Fifty-five percent of the respondents agreed schools should put more resources into technology. Thirty-nine percent of respondents slightly agreed. Five percent of the respondents slightly disagreed and one respondent, from a Class B school, disagreed that schools need to put more resources into technology. The negative responses were from class A and smaller schools.

This table shows that many teachers feel Montana schools have put enough money into technology hardware and software, and should put more resources into education and training of personnel and other resources. (See Tables 13 and 14, and respondent comments)

Table 12
Schools should put more resources into technology

	Agree	Slightly Agree	Slightly Disagree	Disagree
Class AA	4	2		
Class A	5	3	1	
Class B	8	6	1	1
Class C	23	18	2	
Percentage	55%	39%	5%	1%

Tables 13 and 14 were statements directed at teachers asking their feelings on training and workshops specifically for them. A trend was established that most of the teachers agreed or slightly agreed they needed more training/workshops, and that they would attend training/workshops. In the respondent comments, some teachers felt the school should pay for teachers to receive this training.

The Table 13 question asked teachers if more training and workshops to upgrade their computer/technology skills should be made available to them. Sixty-eight percent agreed, thirty-one percent slightly agreed, and one teacher slightly disagreed. The results were similar in the Table 14 statement which asked teachers if they would attend training/workshops to learn more about computers/technology.

Table 13
More training/workshops should be made available to teachers to upgrade their computer/technology skills.

	Agree	Slightly Agree	Slightly Disagree	Disagree
Class AA	4	2		
Class A	6	3		
Class B	10	5	1	
Class C	30	13		
Percentage	68%	31%	1%	

Table 14
I would attend training/workshops to learn more about computers/technology.

	Agree	Slightly Agree	Slightly Disagree	Disagree
Class AA	4	1	1	
Class A	6	3		
Class B	10	5		
Class C	32	9	2	
Percentage	71%	25%	4%	

Summary

Sixty-four percent (64%) or seventy-four (74) responses were returned from the survey which was mailed to one-hundred fifteen (115) public high schools in Montana. The highest return was from Class AA schools (75%). Returns from other classes in descending order were: Class C (66%), Class A (56%), and Class B (53%). Class C schools were by far the largest number returned with forty-three and Class A the smallest number returned with six.

Teaching experience in the different classes showed a trend of the larger Class AA teachers having the most teaching experience and descending in order to Class C teachers having the least teaching experience. This trend was the same in teacher preps and grades taught.

Students taught per day by teachers showed a trend of the teachers in larger schools teaching the most students per day. The students taught per day by the teachers decreased in each class. Class AA teachers taught between 90-119 students per day, while the majority of Class C teachers taught between 30-89.

All respondents to the survey had Internet access. All Class AA and A schools were connected through a LAN. In Class B and C schools, the majority were connected through a LAN, while seven schools had modem connections, and fourteen of the Class B and C schools responded they didn't know.

The AA and A schools with access through a LAN, had Internet connections in all areas which were asked on the survey. The Class B and C schools had Internet connections in most of their computer labs, classrooms, and libraries. The Gifted and Talented in Class B had one Internet connection and the Class C schools had six Gifted and Talented connections. In Class B there were two other room connections and the Class C had nine other room connections.

The majority of the teachers responding (74%) considered themselves average in general computer literacy. One Class C teacher replied nonuser. A majority (67%) of teachers responding said their Internet literacy was average. Five Class C and one Class B teacher responded that they were advanced in both computer and Internet literacy. Two Class A teachers responded they were advanced in Internet literacy. Three respondents,

two Class C and one Class B, said they were nonusers of the Internet.

Most of the teachers agreed or slightly agreed that computer literacy should be a required course and technology is important for students to learn. One Class A teacher disagreed that computer literacy should be a required course, and three slightly disagreed that computer literacy should be required. One teacher slightly disagreed technology is important for students to learn.

Ninety-seven percent of the responding teachers agreed or slightly agreed that the Internet was an important research tool. Two teachers slightly disagreed with this statement.

Schools should put more resources into technology, was the statement that received the least amount of agreement. Fifty-five percent agreed. Thirty-nine percent slightly agreed, while five percent slightly disagreed and one teacher disagreed. This statement also received the most comments from respondents.

The two statements which were directed at teachers concerning their opinion computer/technology on training and workshops showed most agreed or slightly agreed that more training/workshops would be beneficial. One teacher slightly disagreed that more training workshops should be made available and three slightly disagreed that they would attend training/workshops.

Chapter V

Conclusions and Recommendations

Introduction

The purpose of this study was to determine the amount of computer/technology resources available to Montanà High Schools. To establish these findings, a survey instrument was mailed to a randomly selected group of U. S. Government teachers in Montana.

A survey instrument was sent to one-hundred fifteen (115) of the one-hundred eighty (180) public high school principals in Montana. They were asked to give this survey to a U.S. Government teacher in their school. Seventy-four (74) or sixty-four percent (64%) of the surveys were returned. Responses from the survey were analyzed and tabulated in Chapter 4 of this research paper.

Conclusions

1. All respondents indicated that their schools had some form of Internet connection.

2. All respondents allowed their students to use the Internet as a research tool for assigned projects.

3. The availability of the Internet varied somewhat in the size of school. The larger schools (Class AA and A) all had access to the Internet through a LAN (Local Access Network). These larger schools had computers with Internet connections in most of the classrooms in their schools. Most of the smaller (Class B and C schools) had access through a LAN, but some of the smaller schools were still using a modem and phone line. In some of the smaller schools, the only computers with Internet access were in the library or computer lab. At times this created a problem, as there were not enough computers or there were conflicts for usage of Internet computers.

4. Most responding teachers agreed that computer/Internet technology is important for students to learn and that computer literacy should be a required course. Most also agreed that the Internet was an important research tool.

5. Most respondents agreed more resources should be put into technology in Montana High Schools.

6. A majority of respondents felt there should be more training/workshops to improve their computer/Internet literacy.

7. Most Montana educators, both experienced and recently hired, are Internet/computer technology literate. This study does not support the findings of a similar research project, conducted in 1997, by Dr. Jerry G. Mathews of Idaho State University, Pocatello, Idaho. (Related Literature)

Recommendations

Based on conclusions of survey results and the study of previous literature, the author of this research makes the following recommendations.

1. A few rural areas of Montana (Class B and C schools) need to invest more resources into technology. They are not connected to the Internet through a LAN, (local access network) and have a limited number of Internet computer terminals for students to use. This can be accomplished by passing mill levies, grant writing, working with telecommunication companies, and fund-raising events. As was pointed out in the previous literature, the education of administration and staff is essential to receive more support and funding for technology. Many of Montana's administrators were educated before computers were integrated into the classroom.

2. A large majority of the respondents to the survey stated they were either average or novice in computer/Internet literacy. School districts throughout the state should require and then compensate educators to attend computer/technology workshops. In the surveys which were returned, an overwhelming majority of respondents agreed that training/workshops were needed to improve their computer/technology skills.

3. Computer/technology courses should be required of students in Montana High Schools. Ninety-four percent of respondents stated that computer literacy should be required, and 99 percent stated that computer technology

is important for students to learn. As stated in related literature, no matter what endeavor students turn to after graduation from high school, technological skills will be required. It is either going to be a part of their job requirement, or a factor in their post secondary education.

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Appendix A

Questionnaire

Purpose Statement

This questionnaire will be used to determine the usage, availability, and computer literacy, Montana US Government teachers possess with the Internet. (Information Superhighway)

Directions

Please place a check mark (√) on the correct line and answer the questions which apply to your school.

5. What is the classification of your school?

____ AA
____ A
____ B
____ C

6. What is highest level of education you have achieved?

____ Four year college degree
____ Master's Degree
____ Educational Specialist Degree
____ Doctoral
Other _____

3. What are your total years of teaching experience?

____ Less than one year
____ 1-3 years
____ 4-5 years
____ 6-10 years
____ More than 10 years

4. What grade level do you presently teach? (Check (√)all that applies)

___ 7 ___ 8 ___ 9 ___ 10 ___11 ___ 12

5. What number of subject preparations do you have?

____ 1
____ 2
____ 3
____ 4
____ More than 4

6. How many students do you teach per day?

____ Less than 30
____ 30-59
____ 60-89
____ 90-119
____ 120-150
____ More than 150

7. How would you rate your computer literacy?

____ Non-User
____ Novice
____ Average
____ Advanced

8. How would you rate your Internet literacy?

____ Non-User
____ Novice
____ Average
____ Advanced

9. Is there Internet access in your school?

____ Yes
____ No

If no, when does your school plan to connect to the Internet?

____ This year
____ 1-2 years
____ Not currently in plans
____ Don't know

(Please go to question No. 14, and finish the survey)

10. Is your school connected to the Internet through a LAN (Local Access Network)?
____ Yes
____ No
____ Don't know

11. How many computers are connected to the Internet in your school?

____ 1-5
____ 6-10
____ 11-15
____ 16 or more
____ Don't know

12. Where is Internet accessability in your school? (Check (√) all that applies)
____ Library ____Computer Lab ____ Gifted and Talented
____ Your classroom _____ Other

13. Do you allow your students to use the Internet as a research tool?
____ Yes
____ No

Please respond to the following questions by putting a check mark (√) to indicate your level of agreement/disagreement to the following statements.

A = "Agree" SA = "Slightly Agree" SD = "Slightly Disagree" D = "Disagree"

		A	SA	SD	D
14.	Computer literacy should be a required course.	__	__	__	__
15.	Technology is important for students to learn.	__	__	__	__
16.	The Internet is an important research tool.	__	__	__	__
17.	Schools should put more resources into technology.	__	__	__	__
18.	More training/workshops should be made available to teachers to upgrade their computer/technology skills.	__	__	__	__
19.	I would attend training/workshops to learn more about computers/technology.	__	__	__	__

Comments

Please provide comments or suggestions regarding usage of the Internet, availability, training for both students and teachers in technology, or any other comment you wish to make.

If you would like a copy of the survey results mailed to you, please complete the following:

Name: _____

Address: _____

City/State/Zip _____

Thank You for Your Time in Completing This Survey.

Appendix B



Karl L. Hossner
PO Box 2226, Colstrip, MT 59323, 406-748-3632

March 29, 2000

Ms. Elaine Forrest, Principal
Wolf Point High School
P.O. Box 96
Wolf Point, MT 59022

Dear Ms. Forrest:

As a graduate student in the Business Education Department at MSU-Bozeman, I am doing a research project on the use of the Internet in Montana High Schools and would appreciate your help.

I know you and the staff at Wolf Point High School are extremely busy this time of year. However, from time to time information gathered from schools in Montana help people in our profession learn and make decisions. This research project is aimed at gathering information on usage of the Internet from U.S. Government teachers. Would you give this letter, along with the questionnaire and enclosed stamped envelope, to a government teacher in your high school? Please ask that teacher to take a few minutes to answer the questions and return it to me in the stamped self-addressed envelope.

I appreciate your help in getting this questionnaire to the proper person for completion. Thank you!

Sincerely,

Karl Hossner

Appendix C

Comments From Respondents

On Teacher/Student Technology Training

AA Teachers

Training for teachers is a prime goal. What's the sense of having the technology if teachers don't know how or when to use it?

Technology training should be mandated for both students and teachers. Teachers should be paid to learn the new technology, not just expected to go to after school workshops.

At a recent national conference I attended regarding technology, a good rate speaker who utilizes technology totally warned about: 1. PowerPointing kids to death. 2. Naming Tech Committees rather than Communication Committees as they should be called. 3. Unreliable "academic" resources on the net which I've already experienced when the kids just adopt Internet info rather than thinking critically about the source etc.

B Teachers

The Internet can be overused as a resource for reliable accurate information in Social Studies classes.

I believe that the Internet is a great tool and I use it often. It is just another tool and not the only tool for students.

I believe failure to provide access to technology and Internet is an equity issue which must be resolved by the state.

I believe technology is an important tool in aiding a young person's learning, but I believe the Internet is making some work too easy. Research is a skill that needs to be taught and practiced. The Internet is too easily accessible, and students need to be taught not to solely rely on that one source for information.

C Teachers

We offer advanced computer courses and I have used this class as an opportunity to get my students to use technology to learn history. It was a pleasant and educational experience for all!

I think it is extremely important to teach our students to use the computer wisely. The teachers must then be familiar with computers to promote their use among students. I think that as computer use increases at home, then the community is more willing to make sure that dollars are allocated for technology.

The last set of questions sums it up for me. Before teaching government, I taught computer courses. Many jobs require computer use and a course in high school will benefit students, not just college bound, but also those who plan to work immediately after high school.

Training for teachers, most important! Teachers need to be comfortable enough with computers and programs to offer and use them in classroom activities. If they aren't comfortable, they won't use them. We need in-service in program usage, Word or whatever. Students learn very quickly. Teachers don't.

As a teacher, I need to learn a lot more about computers. There were no computers in my high school and very few in college. How am I to become computer literate when it takes all day to teach? We could use more practical workshops. I am in favor of the Internet and computers as teaching tools, but think we are placing too much emphasis on technology. We tend to neglect the basics.

We need more training so Internet system can be an effective tool in learning.

Our situation is that we have more tech equipment than knowledge to operate, so training is a must.

Teachers and students should be trained to evaluate the credibility of websites.

On Technology Hardware and Software

AA Teachers
The school districts should make a policy on computer type, i.e., Apple or PC. Quit buying both formats which cannot be interchanged.

Just make more computers and software and any other materials available to my school.

Our biggest problem is that there is not an entire classroom set of Internet connected computers - one in classroom and twelve in the library.

Our students prepare PowerPoint presentations using Internet.
We have two word processing designated labs and one lab with fifteen computers for Internet use.

B Teachers

Our school is into technology. We are a part of the Tales Grant. Every teacher has a computer and Internet in the classroom. Students use technology on an everyday basis.

C Teachers

Presently our school does not maintain a full-time position for business/computer, or any other technical support position. Computer upgrades are difficult to maintain. Servers are very slow and are unable to process Internet information quickly. Because of this, training for teachers and students is limited, resulting in a loss of opportunity for all individuals.

Our school needs more computers for our students to use the Internet.

We need to have access throughout the building. I must go to another teacher's room to use the Internet with my class. Often I cannot use the Internet with my class because of classes in the rooms that have access. I would have to disturb another class to use the net.

Other Comments.

C Teachers

Schools should abolish the Internet. Creates lazy students and less informed students. Too much hassle with porno, violence, etc. sites.

Technology plays a key role in our lives today. However, allowing technology to completely take over a class is going too far. Technology is a teaching tool.

Every teacher/classroom should have computers/Internet/voice mail etc. available. We don't.