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A Study to Determine the Attitudes and Practices Teachers Possess Relating to Computers, the Internet and the World Wide Web and Their Application to Education

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A STUDY TO DETERMINE THE ATTITUDES
AND PRACTICES TEACHERS POSSESS RELATING
TO COMPUTERS, THE INTERNET AND THE WORLD
WIDE WEB AND THEIR APPLICATION TO EDUCATION

A Research Report
Presented to the Graduate Faculty
of the Department of Occupational and Technical Studies
at Old Dominion University

For Partial Fulfillment
of the Requirements for the
Master of Science Degree in Education

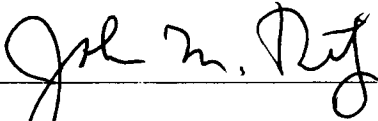
By
James A. Williams

August 1996

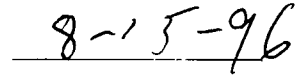
APPROVAL PAGE

This research report was prepared by James A. Williams under the guidance and direction of Dr. John Ritz for OTED 636, Problems in Education. It was submitted to the Graduate Program Director as partial fulfillment of the requirements for the Master of Science Degree in Education.

APPROVAL BY:



DR. John M. Ritz
Advisor and Graduate
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Date

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This study to determine the attitudes and practices teachers possess relating to computers, the Internet and the World Wide Web and their application to education, was made possible by the information provided by the teaching staff at Ocean Lakes High School, Virginia Beach, Virginia. The author wishes to thank the survey participants along with Mr. Bob Bernhard who helped with the distribution and collection of the survey questionnaires.

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James A. Williams

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CHAPTER I

INTRODUCTION

Historically, predictions of how technological advances will "revolutionize" education have often failed to materialize. The invention of movable type and the printing press did have a significant effect on education. However, the invention of radio, and later television, did not have a revolutionary effect on education. Predictions were that television would ultimately replace teachers in the classroom as instructional programs were developed based on curriculum requirements.

Many educators feel that the same thing will happen with computers in school. They believe computers will have very limited applications as tutoring tools for individual students who are having problems in specific subject areas, and little else. However, what many people fail to recognize is that radio and television are limited to one way communication; it is not possible to obtain any amplifying information or clarification about subject material transmitted over radio or television. Computers are capable of two way, interactive communication where instructions can be more easily tailored to fit the level of

understanding of each student. Additionally, where radio and television are primarily entertainment oriented, computers have major applications to business and industry through information processing, production management, etc., while entertainment is a comparatively minor application. Many people are slowly beginning to realize the essential role a knowledge of computers will play in attaining a successful career in almost any field. As a result, President Clinton has called on parents, teachers, school administrators and businesses to create technologically literate high school graduates capable of filling the technologically advanced jobs for the 21st Century.

Statement of the Problem

The problem of this study was to determine the attitudes and practices teachers possess relating to computers, the Internet and the World Wide Web and their application to education.

Research Goals

The four research objectives used to guide this problem were:

1. Determine teacher's attitudes toward the utilization of computers in support of their work as teachers.
2. Determine teacher's perspectives regarding their training to encourage and promote the use of computers by students.
3. Determine to what degree teachers utilize the Internet, the World Wide Web, and the Virginia Pen in their work as teachers.
4. Determine teachers attitudes toward the use of computers and on-line services by students to complete assignments.

Background and Significance

Most educators are slowly beginning to recognize that computers do have a major role to play in education, though there are some disputes as to what that role will be. Twenty years ago, electronic calculators were beginning to be used in schools. Many people were concerned that students using calculators would only learn to push buttons and not learn the mathematical operations which were taking

place. The role of the teacher was and remains to ensure that students learn the mathematical operations before they are allowed to use calculators. Prohibiting the use of calculators severely restricts the complexity of the problems which can be solved which in turn limits the learning that takes place. Computers can also pose a similar problem. Allowing students to write essays on word processors, then edit them using spell check and grammar check programs without first learning the basic rules for spelling and grammar usage is an often heard argument against the use of computers.

However, schools are designed to prepare students to be productive members of society, so why should they at some point not be required to write essays using computers and word processors. Additionally, the volume of information which is available and can be accessed by going on-line electronically is limitless. A major obstacle plaguing the efforts of public schools to install computers and connect them to on-line services is the high cost of the equipment and the training required to utilize it. There are numerous "success" stories of schools where students regularly use computers, access on-line services and use the information to do their school work. However, there are also numerous examples of public schools without funds to maintain the

equipment, train teachers or purchase software upgrades to provide quality instruction. The recently enacted "Telecommunications Act of 1996" should increase the accessibility of the Internet and other on-line services to public school students.

Additional research is needed to support the argument that the availability of computers and on-line access can significantly improve the academic performance of students who are experiencing problems in school. If this idea can be proven, then parents and school administrators would be able to argue for more school funding, or the redirection of funds to purchase equipment and train teachers in its use. Schools would be better able to develop long range plans for the most cost efficient utilization of funds to accomplish the mission of providing a meaning and worthwhile education to their students.

Limitations

This study was limited to one high school in the City of Virginia Beach. Ocean Lakes High School is the newest high school in the City of Virginia Beach. The school is configured with the most up-to-date computer and networking equipment available in the Virginia Beach School System and

therefore may not be representative of facilities available at other high schools. Finally, the desire of some teachers to not participate in the study may create further limitations.

Assumptions

Several basic assumptions were made regarding this study. They include:

1. Teachers recognize the potential value of using computers for education, and given proper training and support would choose to use them.
2. The teachers responding to the survey are full-time (not substitute) members of the Ocean Lakes High School teaching staff.
3. Current budgetary problems associated with the Virginia Beach Public Schools will be resolved with minimal impact on the school system's long term educational goals regarding the use of computers for educating students.

Procedures

A survey was developed and distributed to the teaching staff at Ocean Lakes High School in Virginia Beach,

Virginia. The teachers were asked about their use of computers, if they accessed the Internet or World Wide Web, how frequently they accessed it and if they utilized it as an information or reference source for lesson preparation. The survey results were provided to school administrators who in turn provided information about any long range plans for computer training for teachers and proposed equipment or software upgrades.

Definition of Terms

The following terms will aid the researcher in understanding the study:

CD-ROM An acronym which stands for "Compact Disk; Read Only Memory". Information is permanently recorded on a compact disc; the information is read off the disc and loaded into the computer where it is processed. They are inexpensive and are capable of storing large amounts of data.

Electronic mail (E-mail) The process of sending, receiving, storing and forwarding messages in digital form over a network.

High technology (hi-tech) A term often used to describe new, complex, state of the art innovations (including but not limited to computers and other electronic equipment).

Information Superhighway A title given to a nation wide information network, designed to serve businesses and education, capable of transmitting a large volume of data and information using state of the art telecommunications equipment and computers.

Internet An international computer network which uses telephone lines and computer modems to pass information.

Local area network (LAN) A network of computers (usually contained within a single building or office complex) directly connected together through a master computer called a file server which manages and coordinates the transfer of information between other computers on the network.

Multi-media The use of graphics, sound animation, text and video to present information or provide entertainment using a computer.

Modem A device that allows a computer to communicate with other computers over telephone lines.

National Information Infrastructure (NII) The official title for the nationwide communications network often referred to as the Information Superhighway and/or the INTERNET.

Network A group of two or more computers or devices that are connected for the purpose of exchanging information.

Off-line Processing information on a computer which is not networked with other computers.

On-line Processing information on a computer and exchanging the information with other computers on a network.

Software Computer programs which provide instructions to the computer on how to process information.

Technology Knowledge, methods and activities which are organized and directed to meet the needs and desires of society.

Technology education The process of educating students about technology, how it has impacted society, and developing an awareness of what can be gained from future technological advances.

World Wide Web A world wide network of information sources accessible through the Internet.

Summary

The first chapter of this study dealt with the conclusion that computers, software and "on-line" services play a key role in the educational process. How computers will be utilized by school administrators and teachers to meet the educational goals of the 21st Century were also discussed. The researcher has provided research goals, background and significance, limitations, and assumptions.

The subsequent chapters of this study will include a

review of literature relevant to the subject (Chapter II), the methods and procedures used to conduct this study (Chapter III), the data and findings collected (Chapter IV) and conclusions and recommendations about the study with suggestions for further research (Chapter V).

CHAPTER II

REVIEW OF LITERATURE

The Review of Literature provides an overview of research and published articles addressing the role of computers and related on-line services in education along with the problems associated with their use. Also covered are ways teachers and school administrators are making more effective use of available resources, as well as, plans and possibilities for future applications.

The Role of Computers in Schools

The current controversy over the use of computers in school, what applications they should be used for, and how they should be used is, in many ways, very similar to the debate surrounding the use of calculators in public schools by math and science students. This debate took place in the late 1970s and throughout the 1980s, and was prompted by the rapid development of integrated circuits and digital technology resulting in the availability of inexpensive, highly capable electronic calculators to virtually everyone. During this period many educators recognized the benefits of

allowing math and science students the opportunity to use these machines in school. Using calculators, students could solve more complex problems much faster by not being bogged down doing elementary level mathematical calculations manually by hand. The result is that teachers could cover and assign more material leading to additional knowledge for the students. At the same time, however, other educators and many parents adamantly opposed the use of calculators in schools. The belief was, that if students were allowed to use calculators, they would learn to operate the calculators, but would fail to learn the theories, principles and logic associated with the mathematical operations they were performing. The ensuing debate resulted in numerous proposals of how to use electronic calculators, and ultimately calculators were integrated into the math and science curriculum at the high school level. Today, a scientific calculator is almost a necessity for a high school or college student to be able to successfully complete the increasingly complex work assignments made possible by their use. The use of calculators in lower grades is still very limited to ensure students learn the basic math skills usually taught in elementary schools.¹

1. Anthony Ralston, "Let Them Use Calculators," Technology Review (Aug-Sept 1987): 32.

Though similar to the calculator issue, the problem of how to utilize computers in school is much more complicated. Where calculators were generally limited to performing mathematical calculations with few programming options, the potential educational applications for computers are limited only by the availability of software and teachers able to use and understand how to use them as teaching aids.²

Learning to Write with Wordprocessors

One of the topics most hotly debated is the use of word processing programs by students to do their written homework, themes and reports. Many parents and some teachers oppose the use of these programs claiming they will limit students creativity and hinder the development of "writing skills." This concern is rooted in a large part by the availability of spell checking programs, grammar checking programs, thesauruses and dictionaries contained within word processing programs. However, the problem faced by many teachers is how to make students understand that the report they have just written is unacceptable and needs to be revised and rewritten to correct some errors. For the

2. David D. Thornburg, "The Great Calculator Debate," At (Apr 1988): 88.

student who spent several hours writing it the first time, this is often unacceptable; therefore the report is not rewritten, the student accepts the grade given and never realizes the importance of perfecting writing skills or turning in a written document free of errors that presents a sensible viewpoint.

Students often make the claim that the material covered in school has no "real world" application. The reality is that to be successful in college or in a business environment, students or employees need to be knowledgeable in the operation of word processing programs. The initial thought process of creating a written theme or report that makes sense is the same whether the drafter writes it out longhand or types it into a computer. The advantage of the computer is that the revision and correction process is much more efficient, faster and easier, meaning students will be more likely to do it. The vast majority of businesses understand this and therefore use word processors almost exclusively to create documents and reports. If businesses require it, why should not schools require or at least encourage it? It is the job of schools to train students to be productive members of society. A task many accuse the

schools of failing to do.³

Those who believe students should not be allowed to use spelling and grammar check programs can delete these options within the word processing program itself (though most people realize that these tools are of limited value anyway). The argument to limit these options is much more valid for elementary and middle school students who are in the early stages of developing their writing skills.

Using On-Line Information Sources

A second problem confronting educators (and parents) and the use of computers, stems from the type and amount of information available over the Internet and the relative ease students can obtain it. There is no argument from anyone that access to the Internet greatly enhances the potential for students to learn. With the recent passage of the "Telecommunications Act of 1996", the ability to access the Internet will be available to students nationwide in libraries and schools, even in the most remote areas.⁴

3. Christopher Shea, "What's Happened to Writing Skills," The Chronicle for Higher Education 39 (03 Feb 1993): 34.

4. Dennis L. Bybee, "Congress Passes the **Telecommunications Act of 1996**," International Society for Technology in Education Update (Mar 1996): 01.

Through the Internet, students can readily access the latest information from a seemingly endless list of sources. They can take video field trips all over the world and talk and ask questions face to face with the people actually at the locations. Students can talk to scientists and professors and obtain first hand, information about ongoing experiments or ask questions about the latest scientific discoveries. The advantage with computers and the Internet is that students can track the progress of ongoing research as it happens, and possibly even become involved with it. In the past such information was only available through textbooks, encyclopedias or books written about the subject. The time lag from when the discovery was made until it actually came out in print could be several years or more. Add to this, the fact that school systems cannot afford to buy new text books every year (or even every two years) and we quickly realize the "latest" information presented to students may be five years old or more. In the "information age" when the amount of "knowledge" is supposedly doubling every ten years, this means over fifty percent of what we know is unavailable to our students. ⁵

5. Christopher Conte, "Linking Computers to Schools: Slow Going." Congressional Quarterly (30 Oct 1995): 23.

Evaluating On-Line Information

With information available over the Internet, and the potential for learning seemingly endless, why is the Internet a potential problem for educators? The reason is that the Internet contains ALL types of information; articles can be published by anyone with a computer and the knowledge to use a word processor. Part of the time lag for publishing text books comes from the lengthy review process in place to ensure only socially acceptable, factual material is contained in the book. Generally, there is no such "filter" or review process currently in place on the Internet to limit what students may access, or to determine the accuracy of what they do access. This is thought to be less of a problem in schools because teachers are usually around to monitor what is being accessed. At home parents are often unable to monitor their children while they use the computer. Though some on-line services do offer safeguards for parents to limit what their children can access, and additional safeguards are being developed by the computer industry to enable parents and teachers to further limit access to inappropriate material, these safeguards are not foolproof. In fact, the mere existence of these safeguards only provides a challenge to the inquisitive and

creative nature of some students to develop ways to defeat them. In truth, the priority and long term goal of educators, parents and society in general should be to focus on developing in everyone the skills to question, evaluate and analyze what they read or hear (from any source), to judge whether it is truthful, factual and to determine whether it is socially acceptable. Historically, this "quality assurance" check has always been done primarily by book and magazine publishers. As a result people are generally more likely to accept and believe that information obtained from reading as factual and accurate. Because there is no such "quality assurance" provided to confirm the accuracy of information on the Internet, members of society must realize that the responsibility for determining and judging the accuracy of what they read rests solely with them, the reader.⁶ Parents need to begin developing this skill at an early age and teachers have the responsibility to further develop these analytical skills. For example, Neo-Nazi groups frequently use the Internet to promote their political doctrines and beliefs. Holocaust deniers and historical revisionist groups use the Internet to publish such materials as the out-of-print comic book "Tales of the

6. Daniel E. Kinnaman, "The Problem With Information in the Information Age," Technology and Learning, (Sept 94): 94.

Holohoax" by Michael Hoffman II who is also editor of the Revisionist Researcher magazine.⁷ Depending on the source, children might initially believe this statement. However, children who are taught to question the truthfulness of what they read will check other information sources. When they discover the overwhelming evidence and proof that it did happen, they will be able to recognize the claims as totally false.

Role of Teachers

In order to effectively supervise and assist students in their efforts to learn using computers, teachers must demonstrate some leadership and take the responsibility to learn about computers and how they operate. They need to learn to run the word processors and other educational software used in schools. They must also learn the benefits and procedures for accessing the Internet and to be able to pass these skills on to their students. In order to do this school administrators and school boards must become more sensitive to the needs and desires of teachers and how they feel computers should be used. Giving teachers a role in

7. Kim Goldberg, "Battling Cyber Nazis," The Progressive 59, (May 1995): 13.

the decision making process is one way to motivate teachers to learn to use computers. Teachers should be key players in deciding the type of computers, what capabilities and software purchases are made in addition to what training is provided. In this age of information, teachers must work especially hard to ensure the material they teach is current and up to date. Those teachers who take the initiative to adapt and use computers as instructional aids in their classrooms will earn the respect of their students and will have much more credibility in the subject areas they teach.

Summary

The review of literature provides an overview of issues related to the research problem and the research questions stated in the introduction. President Clinton has called on educators, parents and businesses to work together to produce technologically literate high school graduates capable of meeting the demands for high tech workers projected for the 21st Century. The recent passage of the "Telecommunications Act of 1996" should provide teachers and students across the country with greater access to computers and "on-line" services. Teachers need to concentrate their efforts on identifying and developing ways to integrate

computers into their classrooms. In the next chapter the author will discuss the methods used to compile information used in this study.

CHAPTER III

METHODS AND PROCEDURES

The purpose of this chapter is to explain the methods and procedures used to create and conduct the survey and compile the data used in this study. The items discussed in this chapter include: population, instrument design, data collection methods and data analysis.

Population

The population for this study consisted of 110 teachers on the teaching staff at Ocean Lakes High School in Virginia Beach, Virginia. The survey was administered with the assistance of Mr. Bob Bernhard, a Computer Teacher, at Ocean Lakes High School.

Instrument Design

A number of questions were developed by the researcher to gather information regarding the attitudes of teachers toward the use of computers and on-line services for educational purposes. Additional questions were designed to

identify possible ways to encourage teachers to utilize available resources as teaching aids and sources for reference material. The scope of the questions were based on viewpoints and ideas introduced in the review of literature, combined with the perceptions of the researcher, based on two months of volunteer work conducted at Ocean Lakes High School. The intent of each question was to provide information and allow the researcher to expand on his ideas, draw conclusions and develop possible suggestions to improve the utilization of computers and related services by high school teachers and administrators.

Data Collection Procedures

Cover letters and survey questionnaires were distributed to each teacher's office mail box on May 27, 1996; a June 07, 1996 date was set for responses. Because the normal school session ended on June 07, 1996, with final exams scheduled for the week of June 10-15, 1996, a follow-up cover letter and survey were sent out to each teacher's office mail box on June 02, 1996.

Statistical Analysis

The responses for each question were compiled and tabulated to provide general information about teachers who used computer services, what subjects and grade levels they taught, and what types of computer software, applications and/or services they used.

Summary

This chapter provided information on how the research was conducted. The population, instrument design, and procedures for gathering, compiling and analyzing the survey data were all discussed.

CHAPTER IV

FINDINGS

The problem of this study was to determine the attitudes and practices teachers possess relating to computers, the Internet and the World Wide Web and their application to education. This chapter contains the results of data collected from the survey questionnaires. The data was used to determine the following research goals:

1. Teacher's attitudes toward the utilization of computers in support of their work as teachers.
2. Teacher's perspectives regarding their training to encourage and promote the use of computers by students.
3. To what degree teachers utilize the Internet, the World Wide Web, and the Virginia Pen in their work as teachers.
4. Teachers attitudes toward the use of computers and on-line services by students to complete assignments.

SURVEY RESPONSE

Forty-six out of one hundred ten surveys were returned, resulting in a 41.8 percent response rate. The survey

participants were asked to provide demographic information (questions 1 through 3), about how long they had been teaching, and what grades and subject areas they taught. Questions 4 through 8 were designed to provide data about how teachers utilize computers to perform their role as teachers. Questions 9 through 12 were designed to provide data about the attitudes of teachers regarding the use of computers and on-line services by teachers and students in school. Possible responses for questions 9 through 12 were strongly agree, agree, unsure, disagree and strongly disagree. Responses for questions 4, 5, 9, 10, 11, and 12 were tabulated to determine a mean rating for each question, with numerical values equating to each response provided in Table 1. Table 2 provides additional breakdowns of responses based on the number of years taught.

Table 1: Table of Survey Responses

QUESTION	TOTAL	Pct (%)	Stat.
1. How long have you been teaching?			
1-5 Years.	<u>16</u>	<u>34.8%</u>	
6-10 Years.	<u>07</u>	<u>15.2%</u>	
11-17 Years.	<u>14</u>	<u>30.4%</u>	
18-25 Years.	<u>07</u>	<u>15.2%</u>	
+25 Years.	<u>02</u>	<u>04.3%</u>	
2. What grade level(s) do you teach?			
09	<u>15</u>	<u>32.6%</u>	
10	<u>35</u>	<u>76.1%</u>	
11	<u>30</u>	<u>65.2%</u>	
12	<u>27</u>	<u>58.7%</u>	
3. What subjects do you teach?			
Math/Science.	<u>15</u>	<u>32.6%</u>	
Language arts.	<u>10</u>	<u>21.7%</u>	
Social Studies.	<u>05</u>	<u>10.9%</u>	
Foreign Language.	<u>02</u>	<u>04.3%</u>	
Technology/Vocational Skills.	<u>05</u>	<u>10.9%</u>	
Other.	<u>13</u>	<u>28.3%</u>	
4. How often do you use a computer in the performance of your job as a teacher?			Mean 5.3
Daily (6).	<u>25</u>	<u>54.3%</u>	
Several times per week (5).	<u>15</u>	<u>32.6%</u>	
Once per week (4).	<u>03</u>	<u>06.5%</u>	
Twice per month (3).	<u>02</u>	<u>04.3%</u>	
Once per month (2).	—	—	
Do not use a computer (1).	<u>01</u>	<u>02.2%</u>	
5. How often do you access the Internet, World Wide Web, or Virginia Pen?			Mean 2.2
Daily (6).	<u>04</u>	<u>08.7%</u>	
Several times per week (5).	<u>05</u>	<u>10.9%</u>	
Once per week (4).	<u>02</u>	<u>04.3%</u>	
Twice per month (3).	<u>05</u>	<u>10.9%</u>	
Once per month (2).	<u>01</u>	<u>02.2%</u>	
Do not use on-line services (1).	<u>29</u>	<u>63.0%</u>	

Table 1: Table of Survey Responses (Continued)

6. As a teacher, for what tasks do you utilize a computer?			
Lesson plan preparation.	<u>40</u>	<u>87.0%</u>	
Maintaining student grades.	<u>24</u>	<u>52.2%</u>	
Research/information (off-line).	<u>22</u>	<u>47.8%</u>	
Research/information (on-line).	<u>11</u>	<u>23.9%</u>	
Other.	<u>14</u>	<u>30.4%</u>	
7. As a teacher, what type(s) of software do you utilize in the performance of your job?			
Word Processing.	<u>45</u>	<u>97.8%</u>	
Encyclopedias.	<u>16</u>	<u>34.8%</u>	
Programming.	<u>06</u>	<u>13.0%</u>	
Spreadsheets.	<u>13</u>	<u>28.3%</u>	
Statistical Analysis.	<u>06</u>	<u>13.0%</u>	
Modeling and Simulation.	<u>06</u>	<u>13.0%</u>	
Other.	<u>08</u>	<u>17.4%</u>	
8. As a teacher, I would like to have the opportunity to obtain additional computer training in the following areas.			
Word Processing.	<u>06</u>	<u>13.0%</u>	
Accessing On-line Services.	<u>29</u>	<u>63.0%</u>	
Modeling and Simulation.	<u>10</u>	<u>21.7%</u>	
Spreadsheets.	<u>07</u>	<u>15.2%</u>	
Programming.	<u>08</u>	<u>17.4%</u>	
Statistical Analysis.	<u>11</u>	<u>23.9%</u>	
Other.	<u>04</u>	<u>08.7%</u>	
9. As a teacher, having access to on-line services is important.			Mean
Strongly Agree (5).	<u>16</u>	<u>34.8%</u>	4.0
Agree (4).	<u>17</u>	<u>37.0%</u>	
Unsure (3).	<u>10</u>	<u>21.7%</u>	
Disagree (2).	<u>03</u>	<u>06.5%</u>	
Strongly Disagree (1).	—	—	

Table 1: Table of Survey Responses (Continued)

10. Students should be encouraged to do their homework using computers.			Mean 4.2
Strongly Agree (5).	<u>20</u>	<u>43.5%</u>	
Agree (4).	<u>20</u>	<u>43.5%</u>	
Unsure (3).	<u>03</u>	<u>06.5%</u>	
Disagree (2).	<u>02</u>	<u>04.3%</u>	
Strongly Disagree (1).	<u>01</u>	<u>02.2%</u>	
11. Students should be encouraged to utilize on-line services in school.			Mean 4.1
Strongly Agree (5).	<u>16</u>	<u>34.8%</u>	
Agree (4).	<u>18</u>	<u>39.1%</u>	
Unsure (3).	<u>11</u>	<u>23.9%</u>	
Disagree (2).	<u>01</u>	<u>02.2%</u>	
Strongly Disagree (1).	—	—	
12. My level of knowledge about computers is adequate to meet my teaching needs and the needs of my students.			Mean 3.4
Strongly Agree (5).	<u>05</u>	<u>10.9%</u>	
Agree (4).	<u>23</u>	<u>50.0%</u>	
Unsure (3).	<u>06</u>	<u>13.0%</u>	
Disagree (2).	<u>10</u>	<u>21.7%</u>	
Strongly Disagree (1).	<u>02</u>	<u>04.3%</u>	

Table 2: Table of Survey Responses by Number of Years Taught 30

QUESTION	NUMBER OF YEARS TEACHING				
	1-5	6-10	11-17	18-25	+25
1. How long have you been teaching?	16	07	14	07	02
2. What grade level(s) do you teach?					
09	<u>07</u>	<u>01</u>	<u>04</u>	<u>02</u>	<u>01</u>
10	<u>14</u>	<u>05</u>	<u>10</u>	<u>05</u>	<u>01</u>
11	<u>11</u>	<u>05</u>	<u>08</u>	<u>05</u>	<u>01</u>
12	<u>10</u>	<u>02</u>	<u>09</u>	<u>05</u>	<u>01</u>
3. What subjects do you teach?					
Math/Science.	<u>07</u>	<u>04</u>	<u>03</u>	<u>01</u>	—
Language arts.	<u>04</u>	<u>01</u>	<u>03</u>	<u>02</u>	—
Social Studies.	<u>03</u>	—	<u>01</u>	—	<u>01</u>
Foreign Language.	—	—	<u>01</u>	<u>01</u>	—
Technology/Vocational Skills.	<u>02</u>	—	<u>03</u>	—	—
Other.	<u>03</u>	<u>02</u>	<u>04</u>	<u>03</u>	<u>01</u>
4. How often do you use a computer in the performance of your job as a teacher?					
Daily.	<u>05</u>	<u>04</u>	<u>10</u>	<u>04</u>	<u>02</u>
Several times per week.	<u>08</u>	<u>02</u>	<u>03</u>	<u>02</u>	—
Once per week.	<u>02</u>	—	<u>01</u>	—	—
Twice per month.	<u>01</u>	<u>01</u>	—	—	—
Once per month.	—	—	—	—	—
Do not use a computer.	—	—	—	<u>01</u>	—
5. How often do you access the Internet, World Wide Web, or Virginia Pen?					
Daily.	—	—	<u>02</u>	<u>01</u>	<u>01</u>
Several times per week.	<u>01</u>	<u>02</u>	<u>01</u>	<u>01</u>	—
Once per week.	—	—	<u>02</u>	—	—
Twice per month.	<u>04</u>	—	—	<u>01</u>	—
Once per month.	<u>01</u>	—	—	—	—
Do not use a on-line services.	<u>10</u>	<u>05</u>	<u>09</u>	<u>04</u>	<u>01</u>

Table 2: Table of Survey Responses by Number of Years Taught (Continued)

6. As a teacher, for what tasks do you utilize a computer?					
Lesson plan preparation.	<u>14</u>	<u>06</u>	<u>13</u>	<u>05</u>	<u>02</u>
Maintaining student grades.	<u>11</u>	<u>03</u>	<u>06</u>	<u>03</u>	<u>01</u>
Research/information (off-line).	<u>09</u>	<u>02</u>	<u>05</u>	<u>05</u>	<u>01</u>
Research/information (on-line).	<u>03</u>	<u>01</u>	<u>03</u>	<u>03</u>	<u>01</u>
Other.	<u>04</u>	<u>04</u>	<u>03</u>	<u>03</u>	<u>—</u>
7. As a teacher, what type(s) of software do you utilize in the performance of your job?					
Word Processing.	<u>16</u>	<u>07</u>	<u>14</u>	<u>06</u>	<u>02</u>
Encyclopedias.	<u>04</u>	<u>02</u>	<u>05</u>	<u>04</u>	<u>01</u>
Programming.	<u>01</u>	<u>01</u>	<u>03</u>	<u>01</u>	<u>—</u>
Spreadsheets.	<u>02</u>	<u>04</u>	<u>04</u>	<u>02</u>	<u>01</u>
Statistical Analysis.	<u>04</u>	<u>01</u>	<u>01</u>	<u>—</u>	<u>—</u>
Modeling and Simulation.	<u>02</u>	<u>02</u>	<u>01</u>	<u>—</u>	<u>01</u>
Other.	<u>03</u>	<u>—</u>	<u>04</u>	<u>—</u>	<u>01</u>
8. As a teacher, I would like to have the opportunity to obtain additional computer training in the following areas.					
Word Processing.	<u>02</u>	<u>—</u>	<u>03</u>	<u>01</u>	<u>—</u>
Accessing On-line Services.	<u>09</u>	<u>04</u>	<u>09</u>	<u>06</u>	<u>01</u>
Modeling and Simulation.	<u>05</u>	<u>—</u>	<u>04</u>	<u>01</u>	<u>—</u>
Spreadsheets.	<u>02</u>	<u>01</u>	<u>02</u>	<u>02</u>	<u>—</u>
Programming.	<u>03</u>	<u>01</u>	<u>03</u>	<u>01</u>	<u>—</u>
Statistical Analysis.	<u>03</u>	<u>01</u>	<u>04</u>	<u>03</u>	<u>—</u>
Other.	<u>—</u>	<u>01</u>	<u>02</u>	<u>—</u>	<u>01</u>

Table 2: Table of Survey Responses by Number of Years Taught (Continued)

9. As a teacher, having access to on-line services is important.					
Strongly Agree.	<u>05</u>	<u>03</u>	<u>04</u>	<u>03</u>	<u>01</u>
Agree.	<u>05</u>	<u>04</u>	<u>06</u>	<u>02</u>	—
Unsure.	<u>04</u>	—	<u>03</u>	<u>02</u>	<u>01</u>
Disagree.	<u>02</u>	—	<u>01</u>	—	—
Strongly Disagree.	—	—	—	—	—
10. Students should be encouraged to do their homework using computers.					
Strongly Agree.	<u>05</u>	<u>04</u>	<u>06</u>	<u>03</u>	<u>02</u>
Agree.	<u>07</u>	<u>03</u>	<u>06</u>	<u>04</u>	—
Unsure.	<u>01</u>	—	<u>02</u>	—	—
Disagree.	<u>02</u>	—	—	—	—
Strongly Disagree.	<u>01</u>	—	—	—	—
11. Students should be encouraged to utilize on-line services in school.					
Strongly Agree.	<u>04</u>	<u>05</u>	<u>03</u>	<u>03</u>	<u>01</u>
Agree.	<u>07</u>	<u>02</u>	<u>06</u>	<u>03</u>	—
Unsure.	<u>04</u>	—	<u>05</u>	<u>01</u>	<u>01</u>
Disagree.	<u>01</u>	—	—	—	—
Strongly Disagree.	—	—	—	—	—
12. My level of knowledge about computers is adequate to meet my teaching needs and the needs of my students.					
Strongly Agree.	<u>01</u>	<u>02</u>	<u>01</u>	—	<u>01</u>
Agree.	<u>10</u>	<u>04</u>	<u>07</u>	<u>02</u>	—
Unsure.	<u>02</u>	—	<u>04</u>	—	—
Disagree.	<u>03</u>	<u>01</u>	<u>02</u>	<u>03</u>	<u>01</u>
Strongly Disagree.	—	—	—	<u>02</u>	—

DATA ANALYSIS

The following is an analysis of the demographic information and responses for each question contained in the survey. Total survey responses, percentage breakdowns and statistical results are presented in Table 1.

Demographic information:

Question 1 asked, "How many years have you been teaching?" The largest percentage of participants were from the 1-5 year category, 34.8%. The 6-10 year group made up 15.2% of the participants. The 11-17 year group made up 30.4% of the participants. The 18-25 year group made up 15.2% of the participants, and the +25 year group made up 4.3% of the participants.

Question 2 asked, "Please circle the grade level(s) you teach." The highest percentage was for grade 10 (76.1%), while the lowest percentage was for grade 9 (32.6%). The overall percentages totaled more than 100% because most teachers teach at several grade levels.

Question 3 asked, "Please circle the subject(s) you teach." The subject area with the highest percentage was Math and Science (32.6%), while the lowest percentage was for Foreign Language (4.3%). The "other" category (28.3%) was made up of Special Education, Physical Education, and Music teachers.

Question 4 asked, "How often do you use a computer in the performance of your job as a teacher?" The response to this question indicated that most teachers used a computer at least several times per week. The mean was 5.3 on a scale of 1 to 6 (6 = daily usage and 1 = no usage).

Question 5 asked, "How often do you access the Internet, World Wide Web or Virginia PEN?" The response to this

question indicated that most teachers (63%) DID NOT access on-line services. The mean was 2.2 on a scale of 1 to 6 (6 = daily usage and 1 = no usage).

Question 6 asked, "As a teacher, for what tasks do you do utilize a computer?" The response to this question indicated that most teachers (87%) used a computer to prepare lesson plans. The "other" category (30.4%) consisted of responses about desk-top publishing and word processing.

Question 7 asked, "As a teacher, what type of software do you utilize in the performance of your job?" The software most frequently used by teachers (97.8%) was for word processing.

Question 8 asked, "As a teacher, I would like to have the opportunity to obtain additional computer training in the following areas." The response to this question indicated that most teachers (63%) would like to have additional computer training in the use of on-line services.

Question 9 asked, "As a teacher, having access to on-line services is important." The mean response for this question was 4.0, indicating teachers agreed that access to on-line services was important.

Question 10 asked whether "Students should be encouraged to do their homework using computers?" The mean response for this question was 4.2, indicating teachers agreed that students should be encouraged to use computers to do their homework.

Question 11 asked if "Students should be encouraged to utilize on-line services in school?" The mean response for this question was 4.1, indicating that teachers agreed that students should be encouraged to utilize on-line services in school.

Question 12 asked teachers if their level of knowledge about computers was adequate to meet their teaching needs and the needs of their students. The mean response for this question was 3.4, indicating that teachers were somewhat satisfied that their level of knowledge about computers was adequate to meet their teaching needs and the needs of their students.

Summary

Chapter IV presented the results of the survey designed to address the problem and answer the research goals. Forty-six out of 110 teachers responded to the survey for a 41.8 percent response rate. The survey data was then analyzed to determine percentages for all questions and mean responses (based on a Likert scale) for survey questions 4, 5, 9, 10, 11 and 12 (see Table 1). Chapter V will provide the Summary, Conclusions and Recommendations for the research study.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The problem of this study was to determine the attitudes and practices teachers possess relating to computers, the Internet and the World Wide Web and their application to education. This chapter summarizes the procedures used in the research study, draws conclusions based on the findings of the study, and provides recommendations supported by the research findings.

SUMMARY

The ultimate goal of schools is to provide students with an education which will enable them to become productive members of society. An extensive knowledge of computers and their applications is proving to be a valuable asset for anyone pursuing a career in the business world. Major organizations and corporations are making extensive use of the Internet and other on-line services to conduct their business operations world wide. In order to meet the increasing demand for a computer literate society, the "Telecommunications Act of 1996" has been passed. The ultimate goal of this legislation is to provide everyone the opportunity to access the Internet and other on-line services through public schools and libraries. To accomplish this goal, educators must take responsibility to develop an instructional curriculum which will harness the educational potential of computers and on-line services.

The survey instrument in this study was developed to determine the attitudes of teachers towards the use of

computers and on-line services in schools and to evaluate their readiness to take the responsibility for developing new ways to utilize computer technology in school. The survey was distributed to one hundred-ten teachers at Ocean Lakes High School in Virginia Beach, Virginia; forty-six teachers responded to the survey questionnaire.

CONCLUSIONS

Using the data presented in Chapter IV of this research study, several conclusions can be made based on the research goals contained in this study.

1. Determine teacher's attitudes toward the utilization of computers in support of their work as teachers

It is the conclusion of this study that most teachers at Ocean Lakes High School make extensive use of computers in support of their work as teachers (54.3% used them on a daily basis, an additional 32.6% used them several times per week).

2. Determine teacher's perspectives regarding their training to encourage and promote the use of computers by students.

The study concludes that teachers at Ocean Lakes High School are somewhat satisfied with their training and level of knowledge about computers, and their ability to use computers to support learning (10.9% strongly agreed, 50.0% agreed). However, many teachers expressed a desire to learn more about accessing on-line services (63.0%).

3. Determine to what degree teachers utilize the Internet, the World Wide Web, and the Virginia Pen in their work as teachers.

Though most teachers indicated that access to on-line

services was important (34.8% strongly agreed, and 37.0% agreed). The study concluded that most teachers do not make use of on-line services (8.7% utilized on-line services daily, and 10.9% used them several times per week, while 63.0% did not use on-line services at all). This is despite the fact that each teacher has free access to the Virginia PEN education network. This could possibly be attributed to a lack of training about how to access on-line services, this is supported by the large number of respondents (63.0%) who expressed a need to learn more about on-line services. Additionally, several teachers mentioned limitations to accessing on-line services caused by a shortage of telephone lines dedicated for on-line use.

4. Determine teachers attitudes toward the use of computers and on-line services by students to complete assignments.

The study concluded that teachers do feel students should be encouraged to utilize computers (43.5% strongly agreed, and 43.5% agreed) in support of their school work assignments. The study also concluded that teachers feel students should be encouraged to utilize on-line services (34.8% strongly agreed, and 39.1% agreed) in support of their school work assignments.

RECOMMENDATIONS

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

1. Develop joint partnerships with local businesses to provide students with examples of "real world"

computer applications and develop courses to teach such applications.

2. Provide teachers with the opportunity to receive additional on-site training in the use computers, including the use of on-line services, desktop publishing, multimedia instructional development and other areas of interest expressed by teachers.
3. Increase the number of dedicated telephone lines available for on-line services and/or make on-line access available through the schools Local Area Network (LAN).
4. Have teachers evaluate computer systems, and educational courseware, and make recommendations of systems and courseware to buy.
5. Design new school buildings with computer network connections and cabling installed during construction.
6. Conduct a follow-up study to determine if there is any impact or changes generated as a result of the "Telecommunications Act of 1996".

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APPENDICES

APPENDIX A - Sample Cover Letter

APPENDIX B - Computer Usage Survey Questionnaire

Appendix A

To: Member of the Ocean Lakes High School Teaching Staff

From: James Williams, ODU Graduate Student

Subject: Computer utilization survey.

May 24, 1996

I am a participant in your Adopt-A-School program at Ocean Lakes High School where I supervise students in your computer lab. Based on my experiences, I have become interested in your attitudes and practices related to the use of computers to support instruction and to aid in student learning. I am also a graduate student pursuing a M.S. degree which will certify me to become a teacher.

One of the requirements I have to complete in order to graduate is a school-based research project. I ask your help in completing this project. You are the teachers at Ocean Lakes, and it is only you who can tell me how you feel about the use of computers in the classroom.

As members of the teaching staff at the most technologically advanced high school in Virginia Beach, you can provide valuable information about the use of computers and on-line services by teachers and students. Information compiled from this survey may be used to further develop computer labs, networking capabilities, telecommunications and training requirements or other computer related areas. Additionally, it may be used to identify deficiencies or future needs for new courses in the teaching curriculum. For these reasons your participation in this survey is sincerely appreciated.

Attached is a questionnaire which will provide the information for my research. It should not take more than a few minutes to complete. Though all responses will be kept strictly confidential, please put your name on the questionnaire so I can follow-up with those who do not respond. Please return your responses to Mr. Bernhard by June 07, 1996 so I can complete my study.

Thank you,

James Williams

Enclosure: Survey

7. As a teacher, what type of software do you utilize in the performance of your job? (Check all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Wordprocessors | <input type="checkbox"/> Spreadsheets |
| <input type="checkbox"/> Encyclopedias | <input type="checkbox"/> Statistical Analysis |
| <input type="checkbox"/> Programming | <input type="checkbox"/> Modeling and Simulation |
| <input type="checkbox"/> Other _____ | |

8. As a teacher, I would like to have the opportunity to obtain additional computer training in the following areas. (Check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Word processing | <input type="checkbox"/> Spreadsheets |
| <input type="checkbox"/> Accessing On-line services | <input type="checkbox"/> Programming |
| <input type="checkbox"/> Modeling and Simulation | <input type="checkbox"/> Statistical Analysis |
| <input type="checkbox"/> Other _____ | |

For the following questions, please circle the term that best describes your response.

9. As a teacher, having access to on-line services is important.

Strongly Agree Agree Unsure Disagree Strongly Disagree

10. Students should be encouraged to do their homework using computers.

Strongly Agree Agree Unsure Disagree Strongly Disagree

11. Students should be encouraged to utilize on-line services in school.

Strongly Agree Agree Unsure Disagree Strongly Disagree

12. My level of knowledge about computers is adequate to meet my teaching needs and the needs of my students.

Strongly Agree Agree Unsure Disagree Strongly Disagree