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An Analysis of Attitudes Toward Instructional Technology Integration at Heritage High School

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**AN ANALYSIS OF ATTITUDES TOWARD INSTRUCTIONAL
TECHNOLOGY INTEGRATION AT HERITAGE HIGH SCHOOL**

A Research Paper

**Presented to the Graduate Faculty in
the Department of Occupational and Technical Studies
at Old Dominion University**

**In Partial Fulfillment
Of the Requirement for the
Master of Science Degree**

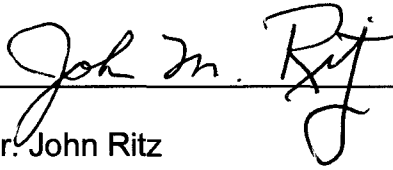
By

NICOLE P. EDWARDS

JUNE 2005

Approval Page

This research paper was prepared by Nicole Edwards under the direction of Dr. John Ritz in OTED 636, Problems in Occupational and Technical Education. It was submitted to the Graduate Program Director as partial fulfillment of the requirements for the Degree of Master of Science.

Approved By:  6-2-05
Dr. John Ritz Date
Advisor and Graduate Program Director

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A handwritten signature in black ink, appearing to read 'NP Edwards', with a long horizontal flourish extending to the right.

---Nicole P. Edwards ---

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CHAPTER I

INTRODUCTION

The world has changed in many ways because of technology. In almost every field of professional endeavor the influence of technology is increasingly all encompassing. People depend on technology (food, transportation, clothing, entertainment, medical, and business) for just about everything; technological changes have enhanced and improved the quality of life better than the lives of our ancestors (Marquardt & Kearsley, 1999).

Technological advances have greatly impacted economic growth and development; technological changes often lead to the restructuring of world power, wealth, and relationships. The demand for financial wealth and control over the world economy is becoming increasingly competitive since the beginning of modern times (Marquardt & Kearsley, 1999). It is erroneous for people to believe that technology education is “second rate” as compared to an academic education. Traditionally, teachers, parents, and students regarded the term “technology education” (or vocational education) as being unimportant or not essential. Today, we live in a different world, where times, words, and viewpoints have changed. The terms “vocational” and “technology” are favorably looked upon. When jobseekers browse the classifieds ads, many see that jobs are in technology fields. Today, when people hear the word “technology,” the perceptions are now envisioned as people who wear white garments and not the fix it all blue-collar machinery guy working on an assembly line.

Regrettably, the United States is experiencing a labor shortage in high-tech employment and its accompanying skills. The traditional craft/technician jobs are becoming blurred with advancements in computer technology. Regardless of what profession a person might choose, he or she will need to know basic computer skills. Possessing computer skills is necessary to survive and succeed in the twenty-first century. Schools need adequately trained teachers to educate technologically literate students just as much as school buildings need appropriate cabling, telephone lines, and outlets to operate. School divisions and individual schools that do not provide proper support through adequate funding and technical assistance cannot properly prepare students. As the United States and world countries continue to race for economic control, it is imperative that students, teachers, and citizens not live in technological ignorance.

Many educational studies have highlighted the benefits of integrating computer or instructional technology across the curriculum and its positive effect on student learning. Despite the optimism, it is important to identify attitudinal and demographic factors that influence teacher effectiveness when implementing instructional technology.

Integrating instructional technology into classes poses challenges to many teachers. Teachers throughout the United States are encouraged to incorporate an array of technologies: from CD-Rom applications, to the Internet, streaming video, new teaching tools such as Smart Boards, and other technologies into their teaching practices. They are also asked to

change the way they teach students which greatly differs from lecture style teaching. Because many senior teachers are not trained for these new changes, they feel frustrated and pressured into learning computer technology. Consequently, numerous teachers are not integrating technology correctly into their classrooms. Furthermore, with younger school-aged children being the first ones exposed to the many computer technologies being created today, some students are teaching teachers.

On July 1, 2003, a “technology standards” benchmark was established for all Virginia teachers to meet in order to become certified or re-certified. However, the push for technology integration among many school districts has left some teachers overwhelmed when it comes to meeting the goals. There have been studies on instructional technology integration but not much research on teachers’ attitudes towards instructional technology integration when a school provides comprehensive technology training for its entire staff. An awareness of teachers’ attitudes in instructional technology integration is necessary because it analyzes what teachers “feel is” and “is not” a “value added”. Given that computer technology plays such a vital role in society, it is important to understand current attitudinal catalysts of teachers’ attitudes towards technology integration. In this study Heritage High School was selected because of teacher and technology demographics. Heritage is a 9-12th grade Technology Magnet school located in Newport News, Virginia. The school building was established in 1997 and was furnished with computers and televisions in every classroom, video tape decks that are accessible

through the telephone, computer smart boards, and other technologies available for check-out. In the summer of 2003, 100 percent of the entire teaching staff was trained to meet levels I and II of the Virginia Technology literacy standards through the Intel Teach to the Future technology training program.

For this study, 125 teachers were selected in measuring teachers' views towards mandatory achievement for Virginia technology literacy requirements. The problem is that teachers are in an instructional "must do" situation and are being thrust into the fast-paced technological community that can make them feel frustrated and pressured into learning these new skills.

Statement of the Problem

The problem of this study was to determine teachers' attitudes towards instructional technology integration at Heritage High School.

Research Goals

The research goals of this study would determine the following:

1. What were teachers' attitudes towards having basic instructional technology skills?
2. What were teachers' attitudes towards using instructional technology in the classroom?
3. What populations of teachers were satisfied with their degree of instructional technology knowledge?

4. What populations of teachers felt they were implementing instructional technology into their lessons successfully?
5. What populations of teachers felt meeting Virginia Technology Standards for instructional technology integration are necessary in education?
6. What populations of teachers felt they had the necessary skills to design projects that combine multiple instructional technologies?
7. What populations of teacher would leave the field of education because of mandatory instructional technology standards?
8. What populations of teachers felt they were being adequately trained with instructional technology skills by their employer?

Background and Significance

Although school districts have rearranged budgets to keep up with the pace of computer hardware and software, many teachers still can not effectively integrate the latest technology into their lessons. July 1, 2003, was the benchmark year for all Virginia teachers to meet the minimum “technology standards” to become certified or re-certified in order to teach. Also, teachers will have to use instructional technology to support Standards of Learning (SOL's) in every subject. Some teachers consider themselves overwhelmed when it comes to learning instructional technology goals and are quoted as saying, “it feels like learning a foreign language” and others quote “if it isn’t broke, then don’t fix it.” For the most part some teachers feel it is just too much, while others do not feel it is necessary at all.

As far as students are concerned, many students say that the technology skills they have learned have come from outside of school. For other students, access and experience with technology is dependent upon their teacher's technological skillfulness. When using technology in the classroom, it is not uncommon for students to teach teachers. Students have expressed that it only hurts "the student" when teachers know less than students.

Whether a teacher has an eager or less enthusiastic attitude towards technology integration, their values will be reflected in the classroom. Teachers have the ability to affect, influence, encourage, and discourage students' interests, decisions, and life choices. Teachers will eventually realize that advancing the use of instructional technology strengthens the profession of teaching as well as wields students with the greatest use of technical knowledge and skill. Through the uses of technology teachers can create learning contexts that help students have more independent roles in their own learning. This can also empower students so that as they begin to make life choices, they also need to be prepared to survive in a technological society. Computer technology competence is necessary to survive and succeed in the twenty-first century. Ignorance about fundamental instructional technology features of modern life is not healthy for students, teachers, schools or society.

In undertaking this study it was necessary to analyze teachers who may feel they were in a "must do" situation and were being thrust into a

technological environment that was both frightening and intimidating. This study analyzed teachers' positions on mandatory achievement in Virginia technology literacy requirements and analyzes the disparities in attitudes between senior and junior teachers.

Limitations

The following limitations were used in conducting this study:

1. This study was limited to determining teachers' instructional technology proficiency levels including: word processing, programming, Internet, and digital technology.
2. The population used was limited to teachers at Heritage High School, Newport News, Virginia.
3. This study was limited to the 2003-2004 school year.
4. This study was limited to teacher attitudes at Heritage High School.
5. This study was limited to Virginia Technology Standards levels I and II.

Assumptions

This research study was based on the following assumptions:

1. Many senior teachers at Heritage High School were uncomfortable with their level of instructional technology knowledge and were not fully integrating instructional technology into their lessons.

2. Many senior teachers felt they were being pushed too far too fast and would consider leaving the field of education if there were too many persistent changes in computer software and programs.
3. The push for teachers to master one technological skill only to re-train to learn another was a factor leaving teachers to the point of frustration and caused them to abandon instructional technology uses in the classroom altogether.
4. Lack of technology related training was causing teachers to abandon instructional technology in the classroom.

Procedures

The data for this research was collected from the population of teachers employed at Heritage High School during the school year of 2003-2004. A fixed choice item survey was administered to all teachers at Heritage. Their anonymous responses were collected and used to determine the findings. Participants placed unnamed surveys in a drop box located at the entrance and exits points in the school. The data on the survey would indicate which groupings of teachers were most prepared for instructional technology use in the classroom, what were teachers' attitudes towards technology related training and integration, and which populations of teachers felt proficient with their level of instructional technology integration and training.

Definition of Terms

The following terms are defined to assist the reader of this study:

Core Classes - Mandatory academic classes' in which students are tested. These classes prepare students for state standards of learning testing (NNPS, 2002).

Educational technology - Using multimedia technologies or audiovisual aids as a tool to enhance the teaching and learning process (www.2educ.ksu.edu).

Instructional technology - the use of communications media - hardware and software - to help people learn (Funderstanding, 2001).

SOLs - Virginia Standards of Learning standardized testing (VDOE, 2002).

Technological literacy - The ability to use, manage, understand, and assess technology (USDE, 1996).

Technology - Human innovation in action that involves the generation of knowledge and processes to develop systems that solve problems and extend human capabilities. The innovation, change, or modification of the natural environment to satisfy perceived human needs and wants (ITEA, 2000).

Overview of Chapters

Chapter I introduces the reader to the importance of instructional technology literacy and its major influences upon teaching, the reason for

approaching a study on attitudes towards technology integration at Heritage High School, and factors limiting this research. Chapter II provides a review of literature in regards to technology literacy, reviews previous studies on teachers and instructional technology, and reviews the significance of computer technology literacy in schools. Chapter III provides information on instrument design and methods of data collected. Chapter IV provides the findings of the research, and Chapter V summarizes, concludes, and offers future recommendations for this study.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter is to report background information related to this study. This chapter will examine the importance of instructional technology in the twenty-first century, look at Virginia technology standards for teachers, look at instructional technology teacher training and professional development, explore teacher technology competence versus student technology competence, and explore societal educational values and attitudes.

Technology and Society

Today's students face a significantly different and more complex world than previous generations. In almost every field of professional endeavor, the influence of technology is increasingly all encompassing. Technology is key to a strong twenty-first century American economy. Workers fluent in both how to think with and use technology will make the workplace more effective, increase productivity, and help to ensure America's competitiveness in a global economy (Marquardt & Kearsley, 1999). If American education is to remain relevant and competitive with other nations, it must account for these technological changes in the curriculum as well. New instructional technology can engage students in real-life applications of academics and encourage them to be more independent and responsible for their own learning. It is important that students have the self-confidence, knowledge base, and computer technological fluency that will enable them to continue to learn

throughout their lives. Connecting learning to the world beyond the classroom can bring relevant, real-life context to the study of basic skills, work skills and critical thinking.

Teachers who embrace how computer technology adds a powerful tool to their expertise are enabled to meet the individual learning needs of their students more effectively. When teachers integrate technology into the classroom they have more options. With computer technology, teachers can stimulate and excite by making web sites for students to visit, link to subjects on science, play match games after reading history pages, and make pie-graphs, line-charts, or bar graphs on the computer when integrating mathematic materials. Teachers can show slide show presentations to students on their subject and students can take virtual tours to Paris, France, or Osaka, Japan. The benefits of technology are endless and can help excite students in becoming better learners. Using tools such as digital cameras, software programs, scanners, etc., are other ways to use technology in the classroom. With instructional technology, teachers are not only limited to drilling students using books. Although the waves of technology are endless, many teachers are still not using them. Senior teachers are facing a more technological complex world in their lives. Therefore a teacher might use this type of teaching technology poorly, use it well, or not at all.

Virginia Technology Standards for Teachers

For developing teacher and student skills in effective uses of technology, in 1996, Virginia Department of Education developed a six-year plan for instructional technology. The plan follows a three-tier process for technology integration and teachers had to deal with requirements outlining tasks ranging from basic computer skills, to incorporating the Internet, spreadsheets, and video technology. Some teachers felt they were being pushed into the technology much too fast. Others believed people were too technology dependent and people would not know how to use their brains as in the past. Furthermore, it is difficult to stay abreast with the technology because it is changing so rapidly and it is hard to keep up.

Although the state of Virginia has committed a great deal of effort (over 200 million dollars in resources) devoted to making teachers and students more sophisticated users of technology, recent studies have found technology integration is not teachers' primary concern. An article on Virginia schools reports teachers concentrate primarily on core skill development in Standards of Learning (SOLs) standardized testing rather than advancing student learning on the whole. Separate SOLs for technology have encouraged teachers to focus on the development of basic skills rather than integrating technology across the curriculum.

Teacher Training and Professional Development

At present, technology is available in schools and classrooms but many teachers lack understanding about how to manage and use technology. Hence, this has kept instructional technology integration from reaching its full potential in the classroom. There is a significant need for educators to learn how to integrate technology in education. The state of Virginia is lagging in its use of instructional technology in education even though two-thirds of the states' gross product growth can be attributed to high-tech firms.

While teacher preparation programs are well intentioned, they are not providing the kind of training and exposure teachers need to be proficient and comfortable when integrating technology. Additionally, the training that is offered to teachers is hard to keep up with because the technology is changing so rapidly (Marquardt & Kearsley, 1999).

Many teachers feel they do not have a lot of opportunities to improve their abilities because professional development is not handled systematically. A previous study had been conducted on "Attitudes on Technology Integration." Researchers from the Center of Study of Learning and Performance at Concordia University found 17 percent of teachers had reported not receiving any technology related training. Some urban and rural school systems have successfully integrated distance learning technology but on the whole, districts have not been given much guidance on how to use instructional technology in innovative ways in their classrooms. Virginia education leaders have recently taken some actions to address teacher

training, though tight budgets limit the use of training necessary to use the technology and hardware.

Instructional Technology or Traditional Teaching

In the United States, some educators are beginning to favor classroom environments in which students take charge of their own learning, by learning to think critically and analytically, working collaboratively, and creating products to demonstrate what they have learned instead of schooling where a teacher stands in front of the classroom and lectures. Some research indicates that students in computer-using classrooms learned more and learned faster. By automating the routine parts of teaching, technology enables teachers to spend more time on the human side of their roles, and to reach more students without losing the quality of interaction. Teachers need visions of how technology can enhance and enrich learning opportunities for students. Technology should be presented as a tool for overall school improvement (Volti, 2001).

Teachers Opposed to Student Technology Competence

When students in our elementary, middle and high schools are not exposed to technology, the consequence of technological neglect can affect people their whole lives, from irritation with common applications to an inability to participate in decisions about some of the most important issues of our day. If you want to educate a nation that has a good background in

technology you have to start young. Today, children are the first ones to come in contact with emerging technologies. While technology will never replace the traditional skills that students need to have (reading, mathematics or science) the use of technology is argued a new literacy that complements the traditional curriculum. Any youngster who does not have computer literacy skills when he or she grows up in today's world is handicapped.

Research shows Virginia is falling short of its goals for instructional technology. Many teachers are indicating they are not fully aware of the state's technology vision or how to implement it into their curriculum. Teachers often feel that just when they think they know enough they have to learn something else, or be taught the following year because they have upgraded the software. Senior teachers are reported as not learning the technology because they figure the younger teachers will. Although some technology creates more work for teachers, technology has its wonderful benefits. Technology has affected social, economic, and cultural changes throughout history. The US is at the forefront of the world because of technological advancements, allowing millions of people to receive education, quality of life, health benefits and cures. Schools must provide teachers as professionals with the appropriate support to facilitate effective applications.

Educational Attitudes and Society

A teacher's attitude has ability to affect, influence, encourage, and discourage students' interests, decisions, and life choices. In Asian countries,

for instance, teacher's attitudes are different from those in the United States. In the United States many Americans believe it is more important to encourage children to feel good about themselves and explore various areas of knowledge. Asian parents and teachers believe that all children have the potential to master challenging academic tasks if they work hard enough. In contrast, many American parents and teachers regard natural ability as the key to academic success. Asian children spend more free time studying, reading, and playing academic related games than do children in the United States. The differences in attitude may contribute to the fact that American parents are less inclined to encourage activities at home that might enhance school performance. Is it hard to tell why Asian children perform so well academically? How much of the success can be attributed to their educational innovations? How much can be attributed to attitudes?

It is important to point out that a study on teachers' attitudes towards instructional technology is important because it establishes attitudinal patterns. This study sets out to study teacher's attitudes towards technology integration when technology training levels I and II are provided by the employer.

Summary

This chapter examined the importance of instructional technology for teachers, looked at Virginia teacher technology standards, provided a look at instructional technology training and professional development for teachers,

explored teacher technology competence versus student technology competence, and explored educational attitudes in society. Chapter III includes the methods and procedures applied when conducting this study.

CHAPTER III

METHODS AND PROCEDURES

This chapter explains the methods and procedures used while undertaking this study. This chapter discusses the population, instrument design, methods of data collection, statistical analysis, and summary.

Population

The population utilized in this study included 125 teacher participants from differing departments and curricula employed at Heritage High School. The participants utilized in this study were teachers who voluntarily turned in their survey forms at the end of this study. All employees from Heritage were given prior consent to participate in this study by the schools administration.

Instrument Design

The instrument design used in this research was a self-made, 10-item, fixed question survey. When measuring attitudinal data, the scores were calculated according to the 5-point Likert scale rating from 5 (strongly agree) to 1 (strongly disagree). Using this framework allowed identification of general factors that predict attitudes towards technology. Comparisons of teacher's attitudes are measured according to teaching years of experience. A previous study had been conducted on "Attitudes on Technology Integration" with the Researchers from the Center of Study of Learning and Performance at Concordia University. Their questionnaire consisted of five sections with a list

of 33 statements rating teachers levels of agreement or disagreement with each statement, using a 6-point scale. This type of measurement has been used in other published reports and has established reliability and validity. Their survey was used as a guide when conducting this study. See Appendix A for the instrument used in this study.

Methods of Data Collection

A letter asking permission from the administrative staff was submitted for approval. Once approved, a date for conducting this study was established. The method of data collection used for this study was passing out surveys to participants as they entered the schools' end of year forum. Participants were informed that their survey responses would be anonymous and would be used for a graduate student research project. After distribution of the surveys, the teachers turned in their forms to a drop box during transition from the forum.

Statistical Analysis

The data were presented by percentile and mean scoring of surveys according to years of teaching experience. Tables were used to present the results of the data. The 5-point Likert scale was used to rate participant responses from 1, strongly disagree, to 5, strongly agree. The mean scoring values are described for each teaching group according to teaching years of

experience. The mean scoring values also are described for the teaching group as a whole as well as their related percentage values.

Summary

The purpose of this chapter is to explain the methods and procedures for conducting this study. The researcher's goal for this study was to analyze teaching attitudes of instructional technology integration at Heritage High School. Addressed in this chapter were those who were the participants, method of collecting data, and instrument design used. The data in this study is reported in Chapter IV.

CHAPTER IV

FINDINGS

The purpose of this chapter was to present the data obtained from teacher participants at Heritage High School. The problem of this study was determining teachers' attitudinal and demographic factors that influence teacher effectiveness when integrating technology at Heritage High School. This chapter looks at the teaching groups who may feel they are thrust into a technology "must do" situation," and reports the findings from a survey of teacher attitudes toward instructional technology integration. The survey contains responses from a variety of participating teachers at Heritage High School, ranging from 1 to 30 years in teaching experience. The research goals in this study looked at the following:

1. To determine what were teachers' attitudes towards learning basic technology skills.
2. To determine what were teachers' attitudes towards using technology in the classroom.
3. To determine what populations of teachers were satisfied with their degree of technological knowledge.
4. To determine what populations of teachers felt they were implementing technology into their lessons successfully.
5. To determine what populations of teachers felt meeting Virginia Technology Standards for technology integration were necessary in education.

6. To determine what populations of teachers were designing projects that combine multiple technologies.
7. To determine what populations of teacher would leave the field of education because of mandatory instructional technology standards.
8. To determine what populations of teachers felt they were being adequately trained with instructional technology skills by their employer.

Teacher Survey Response

Out of 125 teachers, 38 percent responded to the survey. Of the 48 surveys received, 13 surveys were turned in by teachers with 1-5 years of teaching experience which made up 27 percent of the survey population. Fifteen surveys were turned in by teachers with 5-10 years of experience which made up 31 percent of the survey population.

Eight surveys were turned in from teachers with 15-20 years of experience which made up 17 percent of the survey population. Four surveys were turned in by teachers with 15-20 years of experience which made up 8 percent of the survey population. Eight surveys were turned in by teachers with 25-30 years of experience which made up 17 percent of the survey population. See Table 4.1.

The 5-point Likert scale was used and rated each question from 1, strongly disagree, to 5, strongly agree, in this study. See Likert Scale Table 4.2. The explanations of mean scoring values are described in Table 4.3.

**Table 4.1 Response of Participating Teacher Surveys According to
Years of Teaching Experience**

<u>Years of teaching experience</u>	<u>% of Teachers</u>	<u>Teacher mean by years of experience</u>
1-5	27%	n=13
5-10	31%	n=15
10-15	17%	n=8
15-20	8%	n=4
25-30	17%	n=8
	100%	Total 48 surveys

Table 4.2 Likert Scale

5	Strongly Agree
4	Agree
3	Uncertain
2	Disagree
1	Strongly Disagree

Table 4.3 Mean Score Values

5	-	4.5	Strongly Agree
4.5	-	3.5	Agree
3.5	-	2.5	Uncertain
2.5	-	1.5	Disagree
1.5	-	1.0	Strongly Disagree

Instructional Technology Integration Survey Questions

Questions 1-10 were designed to answer Research Goals 1 through 8 of this study. The 5-point Likert scale was used to rate participant responses from 1, strongly disagree, to 5, strongly agree. The mean scoring values were described for each teaching group according to teaching years of experience as well as percentage values.

Report of Survey Findings

Question 1 was designed to categorize each teacher group by years of teaching experience and to signify teachers who were exposed to Intel Teach to The Future Technology Levels I and II training during the 2003-2004 school year. One-hundred percent of the 48 teachers that responded to the survey answered yes to this question. See Table 4.4

Table 4.4

Question 1, Are you currently a full-time teacher with at least one year of teaching experience?

<u>Years of teaching experience</u>	<u>Teachers responded yes to question #1</u>	<u># of turned in surveys</u>
1-5	Yes	n=13
5-10	Yes	n=15
10-15	Yes	n=8
15-20	Yes	n=4
25-30	Yes	n=8
		Total 48 surveys

Question 2 was designed to answer research Goal 1 and determined what were teachers' attitudes towards using basic instructional technology in the classroom. The findings to Question 2 showed a mean scoring of 3.9 for all teachers and indicated that teachers agreed they had satisfactory levels of professional experience using computer software tools, on-line testing, and etc. The teaching groups that were uncertain with their level of professional experience using instructional technology were teachers with 25-30 years of teaching experience (3.38 mean score) and teachers with 1-10 years of teaching experience (3.5 mean score). Overall, the response to Question 2 indicated that 29 percent of teachers strongly agreed and 29 percent of teachers agreed they had professional experience using computer software tools and on-line testing. See Table 4.5.

Table 4.5

Question 2, Do you have any personal or professional experience with any technology classes associated with education? These may include submitting assignments on-line, on-line testing, live two-way point-to-point television and audio, using bulletin boards to communicate with students, computer software tools, etc?

# of years teaching	Mean score	Strongly Agree	Agree	Uncertain
(1-5)	3.5	15%	46%	23%
(5-10)	3.5	40%	27%	27%
(10-15)	4.1	62%	13%	25%
(15-20)	3.0	0%	0%	100%
(25-30)	3.38	13%	37%	25%
All teachers	3.9	29%	29%	31%

Question 3 was designed to answer research Goal 8 and determined what populations of teachers felt they were being adequately trained by their employer. The findings to this question showed a mean scoring of 4.58 for all teachers and indicated that teachers strongly agreed that their employer had provided them with clear and comprehensive training for meeting technology levels I & II training. The population of teachers with 15-30 years of teaching experience (5.0 mean score) strongly agreed to Question 3. Overall, the response to Question 3 indicated that 67 percent of all teachers strongly agreed, 25 percent agreed, and 8 percent of all teachers were uncertain if their employer had provided them with clear and comprehensive training for meeting technology levels I & II training. See Table 4.6.

Table 4.6

Question 3, Do you feel your employer provides easy, clear, and comprehensive access to training in meeting your technology levels I and II requirements?

# of years teaching	Mean score	Strongly agree	Agree	Uncertain
(1-5)	4.38	54%	31%	15%
(5-10)	4.66	67%	33%	0%
(10-15)	4.62	63%	38%	0%
(15-20)	5.0	100%	0%	0%
(25-30)	4.50	75%	0%	25%
All teachers	4.58	67%	25%	8%

Question 4 was designed to answer research Goal 3 and determined what populations of teachers were satisfied with their degree of instructional technology knowledge. The findings to this question showed a mean scoring of 4.22 for all teachers and indicated that teachers agreed that they were satisfied with their degree of instructional technology knowledge. The population of teachers with 15-20 years of experience strongly agreed to Question 4 and exhibited the highest mean scores (4.75) whereas teachers with 25-30 years of teaching experience responded agreed and exhibited the lowest mean scores (3.87). Overall, the responses to Question 4 indicated that 50 percent of all teachers strongly agreed, 33 percent of teachers agreed, and 4 percent of all teachers strongly disagreed that they were satisfied with their degree of instructional technology knowledge. See Table 4.7.

Table 4.7

Question 4, Are you satisfied with your level of instructional technology knowledge?

Table 4.7				
# of years teaching	Mean score	Strongly agree	Agree	Strongly disagree
(1-5)	4.23	38%	47%	0%
(5-10)	4.06	47%	33%	7%
(10-15)	4.62	75%	13%	0%
(15-20)	4.75	75%	25%	0%
(25-30)	3.87	38%	37%	13%
All teachers	4.22	50%	33%	4%

Question 5 was designed to answer research Goals 2 and 4 and determined what populations of teachers felt they were implementing instructional technology successfully into their lessons. The findings to this question showed a mean score of 3.93 for all teachers and indicated that teachers agreed that they were integrating technology successfully into their lessons. The population of teachers with 15-20 years of experience (4.75 mean score) strongly agreed with Question 5 and exhibited the highest mean score. Teachers with 25-30 years of teaching experience exhibited the lowest mean score (3.25) and they were uncertain if they were integrating technology successfully into their lessons. Overall, the response to Question 5 indicated that 44 percent of all teachers strongly agreed, 23 percent agreed, and 23 percent of teachers were uncertain if they were integrating technology successfully into their lessons. See Table 4.8.

Table 4.8

Question 5, Do you feel you are integrating technology successfully into your lessons?

# of years teaching	Mean score	Strongly agree	Agree	Uncertain
(1-5)	3.61	31%	23%	31%
(5-10)	4.26	53%	27%	13%
(10-15)	4.12	50%	13%	38%
(15-20)	4.75	75%	25%	0%
(25-30)	3.25	25%	25%	25%
All teachers	3.93	44%	23%	23%

Question 6 was designed to answer research Goal 6 and determined what populations of teachers felt they had the necessary skills to design projects that combined multiple technologies. The findings to this Question 6 showed a mean scoring of 4.06 for all teachers and indicated that teachers agreed that they were integrating technology successfully into their lessons. The population of teachers with 15-20 years of experience (4.37 mean score) agreed with Question 6 and exhibited the highest mean scores. Teachers with 25-30 years of teaching experience exhibited the lowest mean scores (3.38) and were uncertain if they were integrating technology successfully into their lessons. Overall, the response to Question 6 indicated that 42 percent of all teachers strongly agreed, 33 percent agreed, and 17 percent of teachers were uncertain if they were integrating technology successfully into their lessons. See Table 4.9.

Table 4.9

Question 6, Do you feel you have the necessary skills to design lessons that combine multiple technologies?

# of years teaching	Mean score	Strongly agree	Agree	Uncertain
(1-5)	3.5	24%	38%	38%
(5-10)	3.5	60%	13%	7%
(10-15)	4.1	75%	25%	0%
(15-20)	4.37	25%	75%	0%
(25-30)	3.38	13%	50%	25%
All teachers	4.06	42%	33%	17%

Question 7 was designed to answer research Goal 7 and determined what populations of teachers would leave the field of education because of mandatory instructional technology standards. The findings to this question showed a mean scoring of 1.29 for all teachers and indicated that teachers strongly disagreed that they would leave the field of teaching because of mandatory technology standards. The population of teachers with 25-30 years of experience (2.87 mean score) only disagreed with Question 7 and exhibited the highest mean score. Teachers with 15-20 years of teaching experience exhibited the lowest mean score (1.00) and strongly disagreed with Question 7. Overall, the response to Question 7 indicated that 2 percent of all teachers strongly agreed, 2 percent were uncertain, and 85 percent of teachers strongly disagreed that they would leave teaching because of mandatory instructional technology standards. See Table 4.10.

Table 4.10

Question 7, Would you leave the field of education because of mandatory technology standards?

# of years teaching	Mean score	Strongly agree	Uncertain	Strongly disagree
(1-5)	1.23	0%	0%	76%
(5-10)	1.40	7%	7%	86%
(10-15)	1.25	0%	13%	87%
(15-20)	1.0	0%	0%	100%
(25-30)	2.87	0%	13%	87%
All teachers	1.29	2%	2%	85%

Question 8 was designed to answer research Goal 5 and determined what populations of teachers felt Virginia Technology Standards for instructional technology were necessary requirements. The findings to this question showed a mean scoring of 3.75 for all teachers and indicated that teachers agreed that school personnel should be required to meet technology standards in order to hold a license issued by the Virginia Board of Education and for instructional purposes. The population of teachers with 25-30 years of teaching experience (3.38 mean score), 1-5, and 5-10 years (3.5 mean scores) indicated they were uncertain if school personnel should be required to meet technology standards in order to hold a license issued by the Virginia Board of Education and for instructional purposes. Overall, the response to Question 8 indicated that 38 percent of all teachers strongly agreed, 37 percent of teachers were uncertain, and 11 percent of teachers strongly disagreed that school personnel should be required to meet technology standards in order to hold a license issued by the Virginia Board of Education and for instructional purposes. See Table 4.11.

Question 9 was used to determine survey response of teacher groups according to years of experience. Twenty-seven percent of teachers had 1-5 years of teaching experience. Thirty-one percent of teachers had 5-10 years of teaching experience. Seventeen percent of teachers had 10-15 years of teaching experience, 8 percent of teachers had 15-20 years of teaching experience, and 17 percent of teachers had 25-30 years of teaching experience. See Table 4.12.

Table 4.11

Question 8, Do you feel all school personnel should be required to meet technology standards in order to hold a license issued by the Virginia Board of Education for instructional purposes?

# of years teaching	Mean score	Strongly agree	Uncertain	Strongly disagree
(1-5)	3.5	15%	50%	25%
(5-10)	3.5	47%	20%	13%
(10-15)	4.1	38%	50%	0%
(15-20)	4.37	75%	0%	0%
(25-30)	3.38	38%	38%	0%
All teachers	3.75	38%	37%	11%

Table 4.12

Questions 9, How many years of teaching experience do you have?

# of years teaching	% of teachers	# of teacher participants by # years teaching
1-5	27%	n=13
5-10	31%	n=15
10-15	17%	n=8
15-20	8%	n=4
25-30	17%	n=8
		Total 48 surveys

Question 10 was designed to answer research Goal 8 and determined what populations of teachers felt they were adequately trained by their

employer. The findings to this question showed a mean score of 4.12 for all teachers and indicated that teachers agreed that they were adequately trained. Teachers with 25-30 years of teaching experience (3.38 mean score) and teachers with 1-10 years of teaching experience (3.5 mean score) felt uncertain if they were adequately trained. Teachers with 15-20 years of teaching experience exhibited the highest mean scores (4.37) and agreed that they were adequately trained by their employer. Overall, the response to Question 10 indicated that 50 percent of all teachers strongly agreed, 19 percent agreed, and 3 percent of all teachers strongly disagreed that they were adequately trained by their employer. See Table 4.13.

Table 4.13

Question 10, Overall, do you feel that you have been adequately prepared with instructional technology skills provided by your employer?

# of years teaching	Mean score	Strongly Agree	Agree	Strongly disagree
(1-5)	3.5	38%	23%	0%
(5-10)	3.5	53%	20%	0%
(10-15)	4.1	63%	25%	0%
(15-20)	4.37	75%	25%	0%
(25-30)	3.38	38%	0%	13%
All teachers	4.12	50%	19%	3%

Summary

This chapter presented the responses to the Instructional Technology Integration Survey at Heritage High School. The mean scoring values described each teaching group according to teaching years of experience and determined if the 8 research goals were achieved in this study. Chapter V provides information on the summary and conclusions based on the results of this study. Also, recommendations for instructional technology integration for teachers are presented in Chapter V.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The problem of this study was to analyze teacher attitudes towards technology integration at Heritage High School. A summary of the study is explained in this section, with conclusions and recommendations for conducting this study. The purpose for conducting this study was determining teachers' attitudes towards technology integration when they are in a "must do" situation for mandatory technology standards.

This study described the importance of instructional technology literacy and its impact upon society. Teachers throughout the United States were encouraged to integrate a wide range of technologies so that students could become accustomed to using technology in the classroom. Although technology was available in most schools and classrooms, many teachers lacked experience managing and using technology to their fullest potential. There was a great need for teachers to learn how to integrate technology in classroom settings. The problem of this study was determining teachers' attitudes towards instructional technology integration. When teachers were in a "must do" situation, they can feel frustrated and pressured into learning new technology skills. This research aimed to determine the following goals:

1. What were teachers' attitudes towards having basic technology skills?

2. What were teachers' attitudes towards using technology in the classroom?
3. What populations of teachers were satisfied with their degree of technological knowledge?
4. What populations of teachers felt they were implementing technology into their lessons successfully?
5. What populations of teachers felt meeting Virginia Technology Standards for technology integration are necessary in education?
6. What populations of teachers felt they had the necessary skills to design projects that combined multiple technologies?
7. What populations of teachers would leave the field of education because of mandatory technology standards?
8. What populations of teachers felt they were being adequately trained with technology skills by their employer?

This study explained that this research was limited by the use of the population of teachers at Heritage High School during the 2003-2004 school year. Also, it was limited to measuring levels of technological knowledge for each survey participant. This research study was based upon the assumption that many senior teachers at Heritage High School were uncomfortable with their level of technological knowledge. Due to this factor teachers may not be fully integrating technology into their lessons successfully. It was the researchers attempt to find if senior teachers felt they were being pushed too

far too fast. The data for this research were collected from the population of teachers employed at Heritage High during the school year of 2004-2005. A closed choice item survey was administered to teachers at Heritage. Their anonymous responses were collected and used to determine questionnaire results. The data from the surveys were used to determine teachers' attitudes towards technology when conducting this study.

The participants selected in this study were the 125 teachers employed at Heritage High School during the 2003-2004 school years. The participants were chosen according to three factors: they were part of a population of teachers who had just completed a full school year of teaching, the participating teachers come from a variety of experiences, backgrounds, and teaching skill, and all of the teachers within these groups were exposed to the same form of mandatory technology training (Intel Teach to the Future 2003-2004) provided by Heritage High School. Out of 125 surveys, the researcher received 48 completed surveys from teachers with at least one year of teaching experience (27 percent of teachers had 1-5 years of teaching experience. 31 percent of teachers had 5-10 years of teaching experience. 17 percent of teachers had 10-15 years of teaching experience, 8 percent of teachers had 15-20 years of teaching experience. 17 percent of teachers had 25-30 years of teaching experience.) The overall survey return rate was 38 percent. The data were used for determining teacher attitudes towards instructional technology integration.

The 5-point Likert scale ratings for each statement ranged from 1, strongly disagree, to 5, strongly agree. The mean scoring values were described for each teaching group according to teaching years of experience. The mean scoring values are described for teachers as a whole as well percentage values. An analysis of each research goal is explained in the conclusions.

Conclusion

In conclusion, the researcher aimed to analyze eight research goals in this study. The data for research Goals 1 through 8 were explained as follows:

1. Research Goal 1 of this study asked, "What were teachers' attitudes towards having basic technology skills?" The results of this study determined that 29 percent of all teachers strongly agreed and 29 percent agreed that they had basic levels of professional experience using technology. Thirty-one percent of all teachers felt uncertain with having basic technology skills. Teachers with 25-30 years of teaching experience (3.38 mean score) felt more uncertain than any other teaching group.
2. Research Goal 2 asked, "What were teachers' attitudes towards using technology in the classroom?" The results of this study determined that 44 percent of all teachers strongly agreed, 23 percent agreed, and 23 percent of all teachers felt uncertain that they were successfully

integrating technology in the classroom. Teachers with 25-30 years of teaching experience (3.25 mean score) indicated more uncertainty than any other teaching group.

3. Research Goal 3 asked, "What populations of teachers were satisfied with their degree of technological knowledge?" The results of this study determined that 50 percent of all teachers strongly agreed, 10 percent were uncertain, and 4 percent of all teachers disagreed that they were satisfied with their degree of technological knowledge. The populations of teachers with 1-20 years of teaching experience agreed they were satisfied with their degree of technological knowledge. Teachers with 25-30 years of teaching experience (3.87 mean score) felt more uncertain than any other teaching group.
4. Research Goal 4 of this study asked, "What populations of teachers felt they were integrating technology into their lessons successfully?" The results of this study determined that 44 percent of all teachers strongly agreed, 23 percent agreed, and 23 percent felt uncertain that they were integrating technology successfully into their lessons. The populations of teacher with 1-20 years of teaching experience agreed that they were integrating technology successfully into the classrooms. Teacher with 25-30 years of teaching experience (3.25 mean score) felt more uncertain than any other teaching group that they were integrating technology into their lessons.

5. Research Goal 5 asked, "What populations of teachers felt meeting Virginia Technology Standards for technology integration were necessary in education?" The results of this study determined that 38 percent of all teachers strongly agreed, 37 percent were uncertain, and 11 percent strongly disagreed that meeting Virginia Technology Standards for technology integration were necessary. The population of teachers with 1-5, (3.5 mean score) 5-10, (3.5 mean score) and 25-30 (3.38 mean score) felt uncertain that technology standards were necessary, 10-15 whereas all other teaching groups agreed they were necessary.
6. Research Goal 6 asked, "What populations of teachers felt they had the necessary skills designing projects that combined multiple technologies?" The results of this study determined that 42 percent of all teachers strongly agreed, 33 percent agreed, and 17 percent of all teachers felt they had the necessary skills designing lessons that combined multiple technologies. Teachers with 10-15 (4.1 mean score) years of teaching experience and 15-20 years of teaching experience agreed they had the necessary skills. Teachers with 25-30 (3.38 mean score) years of teaching experience, 1-15 (3.5 means scores) years of teaching experience felt more uncertain than any other teaching group.
7. Research Goal 7 asked, "What populations of teacher would leave the field of education because of mandatory technology standards?" The results of this study determined that two percent of all teachers

strongly agreed, two percent were uncertain, and 85 percent of all teachers strongly disagreed that they would leave the field of teaching because of mandatory technology standards. Teachers with 25-30 years of teaching experience (2.87 mean score) felt more threatened by technology standards than any other teaching group.

8. Research Goal 8 asked, "What populations of teachers felt they were adequately trained by their employer with technology skills?" The results of this study determined that 50 percent of all teachers strongly agreed, 19 percent agreed, and 3 percent felt uncertain that they were adequately trained by their employer with technology skills. Teachers with 1-10 years of teaching experience (3.5 mean scores) and teachers with 25-30 years of teaching experience (3.38 mean scores) felt more uncertain than any other teaching group.

In general, most teachers approved of the idea of instructional technology integration in schools. The data collected and presented in this study showed that the population of teachers with 25-30 years of teaching experience felt least accomplished with technology integration standards than any other teaching group. Teachers with 15-20 years of experience felt most satisfied with technology integration whereas teachers with 10-15 and 5-10 years of teaching experience indicated satisfaction. Teachers with 1-5 years of teaching experience showed some difficulty toward instructional technology integration.

Recommendations

Based on the results of this study, recommendations are made for future studies:

1. Employers should provide levels I and II technology training courses for teachers in the summer with paid stipends for attendance. Courses should consist of learning basic computer skills for level I training and learning intermediate computer skills that integrate technology for level II training.
2. Provide structured technology courses in local schools so that teachers have access to technology training in their local schools. Have students attend one half of the school day and utilize the remaining half for teacher training.
3. Various instructional technology courses should continue to be required for all new teachers entering the field of education at the college level.
4. Provide guidance on how to use instructional technology in the classrooms in innovative ways so that teacher training is addressed. Continue to offer interactive, on-line, and computer technology courses to teachers for graduate credit and technology recertification points.

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APPENDICES

APPENDIX A. Sample of the Survey Questionnaire

APPENDIX B. Sample of the Cover Letter

APPENDIX C. Sample of Survey Participant Letter

APPENDIX A

Sample of Survey Questionnaire

Instructional Technology Integration Survey

Technology Standards for Instructional Personnel is a means for education personnel to demonstrate a proficient level of technology competence for successful technology integration in academic areas. In the state of Virginia, all instructional personnel must demonstrate a proficient level of technology competence in order to meet mandatory Virginia Technology literacy certification requirements. This survey is designed to explore the attitudes, opinions, and behaviors of teachers towards technology integration in schools.

Survey Instructions: Circle the most appropriate answer or number. Circle five if you agree the most and one if you agree the least.

(1-5 Likert Scale)

1. Are you currently a full-time teacher with one year of teaching experience?

Yes

No

2. Do you have any personal or professional experience with any technology classes associated with education? These may include submitting assignments on-line, on-line testing, live two-way point-to-point television and audio, using bulletin boards to communicate with students, computer software tools, etc?

5
Strongly
Agree

4
Agree

3
Uncertain

2
Disagree

1
Strongly
Disagree

3. Do you feel your employer provides easy, clear, and comprehensive access to training in meeting your technology levels I, II, and III requirements?

5
Strongly
Agree

4
Agree

3
Uncertain

2
Disagree

1
Strongly
Disagree

4. Are you satisfied with your level of technology knowledge?

5
Strongly
Agree

4
Agree

3
Uncertain

2
Disagree

1
Strongly
Disagree

5. Do you feel you are integrating technology successfully into your lessons?

5	4	3	2	1
Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree

6. Do you feel you have the necessary skills to design lessons that combine multiple technologies?

5	4	3	2	1
Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree

7. Would you leave the field of education because of mandatory technology standards?

5	4	3	2	1
Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree

8. Do you feel all school personnel should be required to meet technology standards in order to hold a license issued by the Virginia board of Education for instructional purposes?

5	4	3	2	1
Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree

9. How many years of teaching experience do you have?

5	4	3	2	1
1-5	5-10	10-15	15-20	25-30

10. Overall, do you feel that you have been adequately prepared with instructional technology skills provided by your employer?

5	4	3	2	1
Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree

Thank you for your participation in this survey.

APPENDIX B

Sample of Cover Letter

MAY 6, 2004

TO: MR. TIMOTHY SWEENEY
PRINCIPAL HERITAGE HIGH SCHOOL
NEWPORT NEWS, VIRGINIA

FROM: NICOLE P. EDWARDS

SUBJECT: PERMISSION TO CONDUCT A STUDY ON TECHNOLOGY
INTEGRATION AT HERITAGE HIGH

Dear Mr. Sweeney,

I am studying Technology Education as a graduate student at Old Dominion University. I am hoping to finish my degree requirements by completing my research proposal this year. I need your permission to conduct a survey on the subject of "Attitudes Towards Instructional Technology Integration at Heritage High School." This study may be helpful to you as well as the faculty considering the staff at Heritage is 93% certified in technology levels I and II. It would be interesting to see the results as compared to national studies on technology integration. I would really like to conduct a study on the staff at school. My survey will consist of a majority of fixed choice items. Fixed choice response will allow for greater uniformity of responses and confidentiality. I am asking for your permission to conduct a study at Heritage High School during the dates June 9-11, 2004. Thank you for taking a moment of your time to consider Heritage High School as a participant in this study. If you need more information in order to make a decision please contact me by e-mail at Nicole.Edwards@nn.k12.va.us or at home 757-262-0008.

Thank you,
Nicole P. Edwards



Graduate Student
Old Dominion University

APPENDIX C

Sample of Survey Participant Letter

June 9, 2004

Heritage High School

5800 Marshall Ave.

Newport News, VA 23608

Dear Survey Participant,

The following questionnaire is a part of a research project being conducted by a graduate student at Old Dominion University. The purpose of the project is to explore the attitudes, opinions, and behaviors of teachers at Heritage High School on technology integration.

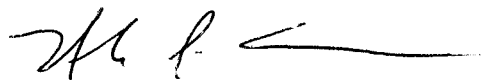
To participate in the survey, you need to be a full-time teacher with at least one year of teaching experience. Your participation is critical to the success of this study. A high response rate is necessary to accurately identify the views and attitudes of technology integration and will add value to the study.

Please be assured that your responses will remain completely anonymous. There is no way for anyone to identify who returned any given questionnaire. Also, there are no correct or incorrect responses in the survey. Please answer the items as accurately as you can. Your views are important, regardless of their nature.

Completing the survey should only take 5 to 10 minutes. Would you please take just a few minutes to complete this questionnaire and return it in the box located at the main office entrance and the cafeteria exits? The boxes are labeled "Technology Survey." Your cooperation will be greatly appreciated.

Thank You,

Nicole P. Edwards



Graduate Student

Old Dominion University

Enclosure: Questionnaire