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Technology Education in Virginia's Private School System

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Technology Education in Virginia's Private School System

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By
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CHAPTER I

INTRODUTION

Technology education is important for all students. By providing an introduction to new and changing technologies to students, technology education prepares them for the technologically advanced work facing them in the future. The United States is facing an overwhelming competition in the global economy. This competition involves mastery and application of new technologies in almost every field of human endeavor (Page, 2005). It is the responsibility of our education systems to adequately prepare students for this new technological world. Technology education programs are the key to introducing students to critical new technologies and the key to preparing them to meet the challenges of tomorrow. Technology education must be taught to meet the needs of students and the needs of our country. Today's students must be able to use technology effectively in order to keep our nation strong and to compete in the expanding global economy. With technology as a top priority for the national economy one major question arises. What are private schools doing to meet this need?

This research project will discover whether private schools in Virginia are meeting the needs of tomorrow's technological leaders by providing technology education courses as outlined by the Virginia Department of Education. Since technology education is one of the most important aspects of education provided today within our schools systems, it is critical for the education of leaders and decision makers of tomorrow. Students that graduate from private schools need to be technological literate in order to be able to make educated decisions on the direction the country will take over the next one-hundred years. Tomorrow's students will need to be able to establish the financial well being of the country. It is important that technology education be an intricate part of curriculum in private and public schools systems to advance the well being of the country and world. This research report was designed to evaluate what technology education courses are offered in Virginia's private schools.

STATEMENT OF THE PROBLEM

The problem of this study was to determine the extent that Virginia's private schools have incorporated technology education courses into their curriculum.

GOALS

The goals of this study will answer the following questions:

1. Do the accredited private schools within the Commonwealth of Virginia offer technology education courses to their student body?
2. What technology courses (titles) are offered in private schools in Virginia?

BACKGROUND AND SIGNIFICANCE

"Over the next decade, the United States will face ever increasing competition in the global economy" (Page, 2005, p. 1). To an overwhelming extent, this competition will involve the mastery and application of new technologies in virtually every field of human endeavor (Page, 2005). "Eighty-five years ago the federal government first committed to vocational education as a national priority" (Silverberg, Warner, Fong, & Goodwin, 2004). It is the responsibility of our nation's educational enterprise – including policymakers – to help secure our economic future by ensuring that our young people are adequately prepared for the technologically advanced market place (Silverberg, et al, 2004). In 2001 the United States passed the No Child Left Behind Act (NCLB); this act was designed to ensure all children get a solid education in reading, mathematics and science. Technology education is rooted in the application of mathematics, sciences and technology principles (ITEA, 1995). Technology education is more critical now due to NCLB's sweeping changes to federal funding of public education. NCLB mandated standards based education programs where states and school systems have to meet

minimum standards and show annual yearly improvement in mathematics, reading and sciences. Technology education has proven to improve student scores on federally required standards tests. West Virginia experienced across the board increases in statewide assessment scores in basic skill areas. Eleven percent of the gain directly correlated to the Basic Skills/Technology Education program implemented ten years ago (Mann, Shakeshaft, Becker, & Kottkamp, 1999).

Today public schools are funded through the Carl D. Perkins program to incorporate technology education programs into their school systems. Since technology education is a critical need of the country, it becomes very important to evaluate the technology education programs provided to students in private schools. This became important due to the NCLB Act. NCLB enabled the redirection of federal funds to parents so they can enroll their children into private schools when and if the public schools fail to meet standards. With parents receiving funding to send their children to private schools it has become very important to identify whether private schools are developing technical literate students. Technology literacy has been identified as a critical need for today and tomorrow's leaders. Technology literacy is critical for the nation and its future decision makers. Identifying the extent private school systems have incorporated technology education programs is critical today and for tomorrow. Private schools need to prepare their future leaders for the technologically advanced work place and society they are entering. Are private school systems preparing their students for the technologically advanced future?

LIMITATIONS

This research study was limited to Virginia accredited private schools that house grades six through twelve. The primary information came from surveying Virginia's private schools. It was limited to determining which private schools are provided technology education courses to students and what technology courses are being offered in Virginia's private schools.

ASSUMPTIONS

Private schools do provide technology education but at a limited level. They do not teach standards for technological literacy as outlined by ITEA. They provide training in computer applications, such as word processing and web research techniques, not technological literacy. Private schools do not offer technology courses recommended by Virginia Department of Education as outline through the Virginia Career and Technical Education Resource Center. The technology education courses offered within the private school systems are limited to computer application operation.

PROCEDURES

The data for this research project came from private schools that were accredited in the state of Virginia. The data gathered for this research was compiled to identify whether private schools were proving technology education within their curriculum. The data for this research were collected from surveys that were sent to accredited private schools in the Commonwealth of Virginia. The surveys were reviewed and a profile developed for technology education courses that were being taught within private schools in Virginia.

DEFINITIONS OF TERMS

The following were definitions of terms used in this research report and were implemented as follows:

ITEA: International Technology Education Association. The largest professional educational association, principle voice, and information clearinghouse devoted to enhancing technology education through technology, innovation, design, and engineering experiences at the K-12 school levels. Its membership encompasses individuals and institutions throughout the world in over 45 countries with the primary membership in North America (ITEA, 1995).

NCLB: No Child Left Behind Act (2001). This is an educational law that requires all students to be trained in reading, mathematics, and science. It sets standards for schools to evaluate the education of students within their districts and to measure minimum standards scores in reading, mathematic, and science.

VCPE: Virginia Counsel for Private Education is the association representing private elementary and secondary schools in the Commonwealth of Virginia.

NASA: National Aeronautical and Space Administration. NASA is the leading force in scientific research and in stimulating public interest in aerospace exploration, as well as science and technology in general (NASA, n.d.).

NSF: National Science Foundation. NSF is an independent federal agency created by Congress to promote the progress of science, to advance the national health, prosperity, and welfare, and to secure the national defense (National Science Foundation, n.d).

TfAAP: Technology for All Americans Project was created by ITEA and funded by the NSF and NASA to increase student attainment of technology literacy.

CTE: Career and Technical Education.

STL: Standards for Technological Literacy. The STL provides a tool to address the mismatch between technological dependency and technological literacy (ITEA, 2000). It distilled the essential core of technological knowledge and skills students in K-12 should have (ITEA, 2003).

SUMMARY

In Chapter I, the need for technology education was established. The need to investigate whether private school systems are preparing their students for the

technologically advanced future was introduced. The need to evaluate the level of technology education provided by the private school systems in Virginia was established.

Chapter II will be a review of the literature on the need for technology education. It will include the history of technology education, standards for technological literacy, and Virginia's Career and Technology Education Resource Center recommended technology education courses.

Chapter III will contain information on the methods and procedures used in this research. It will identify the population surveyed, the type of survey used, and how data were collected.

Chapter IV will provide the finding of the research. It will provide the raw data received from the schools that participated in this research project.

Chapter V will provide the summary of the research project. Then the researcher will draw conclusions from the data provided from the surveyed schools. Finally the researcher will provide recommendations for further research in the area of technology education within the private school sector.

CHAPTER II

REVIEW OF LITERATURE

The aim of this research study was to determine the extent of implementation of technology education into private schools within the state of Virginia. This chapter will present an overview of the history of technology education, *Standards for Technological Literacy* as set forth by the International Technology Education Association and an outline of Virginia's Technology Education program.

HISTORY OF TECHNOLOGY EDUCATION

The predecessor of technology education was industrial arts education. Industrial arts program was replaced with technology education, because the industrial arts programs were being considered outdated and insufficient for the modern education curricula (Snyder, 1992). The industrial arts program was not keeping pace with society or technological advancements. Technology education provided answers to the short comings of the industrial arts program. Technology education focused on technological literacy. "Technological literacy is the ability to use, manage, access, and understand technology" (ITEA 2003, p. 8). To develop technological literacy standards, ITEA was funded from NSF and NASA to establish the Technology for All Americans Project (TfAAP). TfAAP developed "*Technology for All Americans: A Rationale and Structure for the Study of Technology"* which was published in 1996. TfAAP provided guidelines for what everybody needs to know and be able to do in order to become technologically literate. It also provided the foundation for the *Standards for Technological Literacy: Content for the Study of Technology* which was published in 2000. *Standards for Technological Literacy: Content for the Study of Technology* provided a tool to address the mismatch between technological dependency and understanding (ITEA, 2000). It distilled the essential core of technological knowledge and skills students in K-12 should have (ITEA, 2003). This publication provided the standards for technological literacy, with associated benchmarks and their associated grade level. In 2003 TfAAP published

Advancing Excellence in Technological Literacy: Student Assessment, Professional Development and Program Standards. This publication presented standards and enabling guidelines for student assessments, professional development of teachers and the program infrastructure associated with the study of technology (ITEA, 2003).

STANDARDS FOR TECHNOLOGICAL LITERACY

As a nation the United States is increasingly becoming more dependent on technology. In spite of this dependency the population remains largely ignorant of the history and fundamental nature of technology (ITEA, 2000). The need to understand technology is critical for every member of society. Citizens of today must have a basic understanding of how technology affects them and the world around them. Today decisions are being made on technologies that will affect the future of the world for centuries. To make the correct decisions citizens have to be educated on the newest technological advancements and the affects they will have on society, the world, the environment and their children's lives. This is the goal of technology education. The need for technological literacy is fundamentally important for all students. "The vision of achieving technological literacy is the fundamental principle of the Standard for Technological Literacy" (ITEA, 2003, p. 2). To achieve technological literacy, ITEA, through TfAAP, designed the Standards for Technological Literacy to change the face of technology education in the United States and the world. TfAAP provided a strong definition of what technology education is and by provided standards for technological literacy. TfAAP also provided classroom guidance to teachers for implementation of technology education. "Standards for Technological Literacy provide the content basis upon which the study of technology may be built" (ITEA, 2003, p. 5). To see the list of STL refer to Appendix A. The content standards were developed to provide a clear set of outcomes of the study of technology. The STL was developed by technology, mathematics, science, and teachers from other specialties, to spell out what students in K-12 should be learning about technology (ITEA, 2000).

VIRGINIA TECHNOLOGY EDUCATION PROGRAM

"Technology education is the school discipline for the study of the application of knowledge, creativity, and resources to solve problems and extend human potential" (Virginia Council on Technology Education for the 21st Century, 1992, p. 6). The mission of technology education is to ensure that citizens of tomorrow are prepared to live in and contribute to a competitive, technology-based society (Virginia Department of Education, 1997). To accomplish the mission the Virginia Department of Education decided that the technology education program should teach students to understand, use, and control technology (Virginia Council on Technology Education for the 21st Century, 1992). To achieve these aims Virginia Department of Education established specific goals for elementary schools, middle schools and high schools. The Department of Education established the following vision for technology education in Virginia, "The elementary school program focuses on technology awareness" (Virginia Department of Education, 1997, p. 2). The middle school program provides active learning situations and higher-order thinking skill development. "The program, titled Explorations in Technology addresses two principle tenets of early adolescence education: (1) help learners discover and explore personal interests, aptitudes, and abilities, and (2) provide learners with experiences in technology" (Virginia Department of Education, 1997, p. 2). The program content studies all aspects of technology and is presented to extend student understanding of the development, impact, and potential of technology and careers in technology (Virginia Council on Technology Education for the 21st Century, 1992). "The high school technology education program provides challenging experiences for adolescence learner" (Virginia Department of Education, 1997, p. 2). The program provides an in-depth and stimulating study of a variety of technologies developing student's ability to apply scientific principles, engineering concepts and technological systems approaches (Virginia Department of Education, 1997). To support the mission and goals of the Department of Education, Virginia's Career and Technical Education (CTE) Resource Center was developed. CTE assists schools and school districts in preparing technology education curriculum materials for implementation of technology education. This center's website provides a list of the Virginia recommended technology

courses, their expected learning competencies, and it assists in development of technology education curriculum. "The mission of the CTE Resource Center is to support career and technical and occupational-technical preparation programs by providing resources for curriculum development and program design and implementation in response to the Carl D. Perkins Vocational and Technical Education Act" (CTE, n.d). To accomplish this task, Virginia's CTE Resource Center supplies products and services to public secondary career and technical and postsecondary occupational-technical programs throughout the state of Virginia. CTE assists in the design and implementation of competency-based career and technical programs. Figure 1 is an excerpt from Virginia's CTE Technology Course List. To see the complete lists of courses and tasks refer to Virginia's CTE Resource Center webpage available at: http://www.cteresource.org/

Figure 1. Virginia Technology Course List.

The course/competency list outlines the knowledge and skills that should be achieved by students that enroll within the associated courses. Attached to each course is a set of competencies that delineate learning outcomes. The lists consist of Content Framework, Student Competency Record, SOL Correlation by Task, Related Standards of Learning, and Workplace Readiness Skills. The Content Framework provides teachers with a map for development of the associated course. The Student Competency Record provides a means for keeping track of student competency progress throughout the course. The Ratings are assigned by the teacher for classroom competency achievement.

The Standards of Learning (SOL) Correlation provides a correlation between each task and the Virginia SOL for English, History and Social Science, Mathematics, and Science. The Correlation identifies the standards reinforced by specific tasks/competencies within each course (CTE, 2004). The Related SOL page provides an in-depth coverage of which standards are being taught within the selected course.

SUMMARY

In Chapter II the researcher reviewed how technology education came into being. It provided the history of the Standards for Technological Literacy and why they were established. Chapter II also covered Virginia Department of Education's mission and goals of technology education. Virginia's recommended technology education courses and course competencies were provided.

In Chapter III the researcher will cover the methods and procedures to collect data to solve the problem established through this study. The population for the study will be covered, the instrument design will be introduced, data collection procedures will be explained and the statistical analysis will be covered.

CHAPTER III

METHODS AND PROCEDURES

The purpose of this chapter is to examine the procedures used in this research. The topics for this chapter include population, instrument design, method of data collection, statistical analysis and summary. Information for this research was obtained from surveys submitted to the Virginia's private schools administrators.

POPULATION

The population for this research was sixty-eight accredited private schools within the Commonwealth of Virginia. The schools included in this study housed at a minimum grade six through twelve. See Appendix B for the list of private schools that were contacted.

INSTRUMENT DESIGN

The instrument used to gather data for this research was a survey. The survey was used to determine what technology education courses were taught in private schools in the state of Virginia. It consisted of a list of technology education courses developed by the Commonwealth of Virginia, Department of Education, Technology Education Service. The questions used in the survey were designed to determine which private schools in Virginia offer technology education courses. The survey was designed by the researcher and titled Technology Education in Virginia Private Schools. See Appendix C.

METHOD OF DATA COLLECTION

The surveys used for this study were mailed to sixty-eight private schools in the state of Virginia. The surveys were distributed along with a cover letter (Appendix D).

The cover letter explained the importance and need for the study, guaranteed respondent confidentiality and requested return of completed survey by mail. The cover letter and survey that was sent can be found in Appendix C and D.

STATISTICAL ANALYSIS

This research project used frequency of answers to ascertain what private schools in Virginia were offering technology education courses. Of the schools that identified themselves as having technology education courses the survey was used to distinguish what technology courses were provided for the students. The completed surveys were used to compile the data necessary for analysis by the researcher. The frequency and number of responses were calculated and a percentage obtained to determine what schools provide technology education and what courses were being taught in private schools within Virginia.

SUMMARY

Chapter III discussed who, what and how of this research project. Sixty-eight private school administrators were contacted and asked to complete a survey on technology education. The survey identified technology courses and ascertained whether the private schools had incorporated technology education curriculum into their schools. The survey was designed by the researcher to gather information on technology education in the private school sector. Data collection consisted of distribution and reception of surveys. The statistical data used frequency of answers to calculate a percentage to determine the level of technology education within the private school sector.

Chapter IV is where the finding will be provided. In Chapter IV all of the results received for the surveys will be provided. The data collected will be arranged by order of the research goals.

CHAPTER IV

FINDINGS

The goal of this research was to discover whether private schools in Virginia were providing technology education curriculum to their students. The following chapter is the in-depth report on the data received from Virginia's private schools. It is separated into four sections: the first two sections consist of lists of middle schools and high school technology education courses recommended by the Virginia Department of Education. The third and fourth sections are lists of middle school and high school technology education courses that were not recommended by the Virginia Department of Education.

TECHNOLOGY EDUCATION IN VIRGINIA'S PRIVATE SCHOOLS

Research Goal 1: Do the accredited private schools within the Commonwealth of Virginia offer technology education courses to their study body?

Sixty-eight surveys were mailed to the Commonwealth of Virginia's accredited private schools; fifty-two percent were returned. Of the respondents sixty-three percent stated they provided technology education courses within their schools. Of the of the sixty-three percent, fifty-four percent of private schools offered recommended technology education courses, seventy-three percent offered technology courses that were not recommended and twenty-seven percent offered both recommended and non-recommended technology courses within their schools.

Twenty-two schools offered technology education courses. From the twenty-two, six schools offered only recommended courses, six schools offered both recommended and non-recommended courses and ten schools offered no recommended technology courses. Refer to Figure 2.

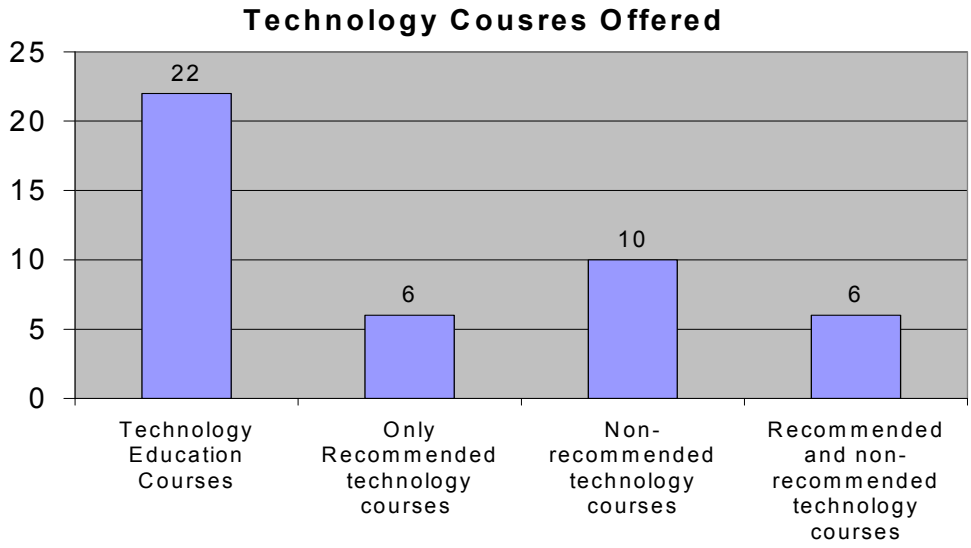

Figure 2. Private Schools That Provide Technology Education Courses.

TECHNOLOGY COURSES OFFERED IN PRIVATES SCHOOLS

Research Goal 2: What technology courses (titles) are offered in private schools in Virginia?

Of the Virginia Department of Education recommended thirty-four courses, four were recommended for middle school level programs and thirty were for high school level programs. Seventeen courses were identified that were not listed on the CTE website. Twelve schools identified technology education courses recommended by the Virginia Department of Education within their schools. From the twelve schools, three schools offered middle school courses only, two schools offered high school level courses only and seven schools offered technology courses at both the high school and middle school levels. From the seventeen non-listed courses, three courses were identified for middle school students, and fourteen courses were offered for high school students. Of the three courses listed for middle school students zero schools offered only middle school courses, seven schools offered high school level courses only and nine schools offered both middle and high school technology programs. Table 1 shows the number of schools that offered technology courses that were recommended by VDOE for middle school technology programs.

Course Title	# of schools offered course	Number of schools that provided Technology Education Courses	Percent of schools that offered course
Introduction to Technology	8	22	36.4
Inventions and Innovations	1	22	4.5
Technological Systems	3	22	13.6

Table 1. Middle School Technology Courses Recommended By VDOE

Table 2 shows the number of schools that offered technology courses which were recommended by Virginia Department of Education for high school technology programs.

Course Title	# of schools offered course	Number of schools that provided Technology Education Courses	Percent
Advanced Engineering	0	22	0
Advanced Manufacturing Systems	0	22	0
Architectural Drawing and Design	1	22	4.5
BioEngineering	0	22	0
Biotechnology Foundations	0	22	0
Communication Systems	0	22	0
Computer Control and Automation	0	22	0
Construction Technology	0	22	0
Digital Visualization	1	22	4.5
Electronics Systems I	0	22	0

Electronics Systems II	0	22	0
Electronics Systems III	0	22	0
Energy and Power	0	22	0
Engineering Drawing and Design	1	22	4.5
Geospatial Technology	0	22	0
Graphic Communications Systems	2	22	9.1
Imaging Technology	1	22	4.5
Information Technology (IT) Fundamentals	3	22	13.6
Introduction to Engineering	0	22	0
Manufacturing Systems	0	22	0
Materials and Processes Technology	0	22	0
Media and Video Technology	4	22	18.2
Power and Transportation	0	22	0
Principles of Technology I	2	22	9.1
Principles of Technology II	1	22	4.5
Production Systems	0	22	0
Technical Drawing and Design	0	22	0
Technology Assessment	0	22	0
Technology Foundations	0	22	0
Technology Transfer	0	22	0

Table 2. High School Technology Courses Recommended By VDOE

Table 3 shows the number of schools that identified technology courses offered at the middle schools but not recommended by Virginia Department of Education.

Course Title	# of schools offered course	Number of schools that provided Technology Education Courses	Percent
Introduction to Computers	2	22	9.1
Keyboarding	5	22	22.7
Multi-media	2	22	9.1
MS Office Applications	5	22	
IC3 Certification	1	22	4.5
Integrated Technology	1	22	4.5
Power and Transportation	1	22	4.5

Table 3. Middle School Technology Courses Not Recommended By VDOE

Table 4 shows the number of schools that offered non-listed technology courses at the high school level.

Course Title	# of schools offered course	Number of schools that provided Technology Education Courses	Percent
Advance Computers	2	22	9.1
MS Office applications and certifications	4	22	18.2
Videography I, II	2	22	9.1
AP Computer	3	22	13.6
Web/Graphic Arts	3	22	13.6
Computer Science	3	22	13.6
Digital Robotics	1	22	4.5
Desktop Publishing	2	22	9.1

CAD/AutoCAD	2	22	4.5
Programming, JAVA /HTML/Pascal	5	22	22.7
Networking	2	22	9.1
Visual Basics	1	22	4.5
Web Design/Desktop Publishing	3	22	13.6
A++/C++ Certification	3	22	
Keyboarding	1	22	4.5
Computer Information Systems/Advanced Computer Information Systems	1	22	4.5
Technology Education I & II	1	22	4.5
IT Certifications	1	22	4.5
International Technology and Global Society	1	22	4.5

Table 4. High School Technology Courses Not Recommended By VDOE

SUMMARY

The researcher's analysis of the data revealed that sixty-three percent of Virginia private schools provided technology education within their curriculum. In this chapter the data showed fifty-four percent of private schools offer recommended technology education courses, seventy-three percent offered technology courses that were not recommended and twenty-seven percent offered both recommended and non-recommended technology courses within their schools.

Chapter V presents the summary, conclusions and recommendation for this research study. It will provide the researcher's conclusions using the collected data and recommendations for further research on the researches subject.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

The problem of this study was to determine the extent that Virginia's private schools have incorporated technology education courses into their curriculum. The following goals were set forth to guide this study:

1. Do the accredited private schools within the Commonwealth of Virginia offer technology education courses to their student body?
2. What technology courses (titles) are offered in private schools in Virginia?

The significance of this study arose from the need of the nation to face the ever-increasing competition in the global economy (Page, 2005). The overwhelming extent of competition will involve the mastery and application of new technologies in virtually every field of human endeavor (Page, 2005). It is the responsibility of our nation's educational enterprise – including policymakers – to help secure our economic future by ensuring that our young people are adequately prepared for the technologically advanced market place (Silverberg, et al, 2004). In 2001 the United States passed the No Child Left Behind Act (NCLB); this act was designed to ensure all children get a solid education in reading, mathematics and science. NCLB enabled public monies to be routed to parents so they could enroll their children into private schools. NCLB's sweeping changes to federal funding which now allows federal dollars to be redirected to private schools upon the failure of public schools has made it imperative to identify whether technology education is taught in the private school sector.

This study focused on the integration of technology education programs in the private school sector. This research was limited to sixty-eight accredited private schools that housed at a minimum of sixth through twelfth grades in the Commonwealth of Virginia.

The data presented in this study was gathered through the use of a survey designed by the researcher and sent to sixty-eight private schools in the Commonwealth

of Virginia. Based on the results of this data, conclusions and recommendations were made.

Conclusions

Based on the findings of this research, the following conclusions were made for this study.

Goal 1. Do the accredited private schools within the Commonwealth of Virginia offer technology education courses to their student body?

From the data collected from the sixty-eight surveys that were sent, thirty-five were returned for a fifty-two percent return rate. Of the thirty-five returned surveys twenty-two schools identified technology courses offered for rate of sixty-three percent. From the twenty-two schools that identified themselves as offering technology courses, four schools offered courses that are not related to technology education for a rate of fifty-one percent of eighteen percent. Courses that are not considered technology education are Keyboarding, Ms Office, A+, C++, HTML, Java Programming, and all certification programs. After removing the schools that offered courses on the use of technology the rate of schools that offer technology dropped from sixty-three percent to fifty-one percent.

Goal 2. What technology courses (titles) are offered in private schools in Virginia?

Table 5 is the list of technology education courses that were identified by the twenty-two private schools.

School Name	State Recommended Courses	Non State Recommended Courses
Alliance Christian Schools		**Middle School** Intro to Computers **High School**

		Advanced Computer
Cape Henry Collegiate School		**Middle School** MS Office, Keyboarding IC3 Certification **High School** HTML, Java Programming, A++ AP Computer, Vidoegraphics
Carlisle School	**Middle School** Intro to Technology **High School** Digital Visualization Media and Video Technology	**High School** Java Programming, Networking, International Technology in a Global Society
Chesapeake Bay Academy		**Middle School** Keyboarding, MS Office Certifications **High School** IC3 Certification Web & Graphic Design IT Certifications
Denbigh Baptist Christian School		**High School** Keyboarding, Advanced Computers, MS Office
Fredericksburg Academy	**High School** Information Technology Fundamentals	**High School** AP Computer Science Intro to Programming
Fredericksburg Christian Schools		**Middle School** Integrated Technology, MS Office **High School** A+, C++, Web Page design
Fuqua School		**Middle School** Keyboarding, Multi-media **High School** Computer Information Systems Advanced Computer Information Systems

Greenbrier Christian Academy	**Middle School** Introduction to Technology Technological Systems **High School** Graphic Communications Information Technology Fundamentals Media and Video Technology Principals of Technology I	
Heritage Christian Academy	**Middle School** Introduction to Technology	**Middle School** Introduction to Computers Multi-media **High School** Technology Education I Technology Education II
Lynchburg Christian Academy	**Middle School** Introduction to Technology **High School** Architectural Drawing and Design	
Nansemond-Suffolk Academy	**Middle School** Technological Systems **High School** Graphic Communication Systems Media and Video Technology Principals of Technology I Principals of Technology II	
Norfolk Collegiate School		**Middle School** Intro Computers **High School** MS Office, Videography I Videography II, AP Computer, Graphic Arts, Desktop publishing, CAD
Our Lady of Walsingham	**Middle School** Introduction to Technology	**High School** Visual Basics
Portsmouth Christian Schools		**High School** Keyboarding, MS Office

The Potomac School	**High School** Engineering Drawing and Design	**High School** Intro to Programming Java Computer Science Digital Robotics
Roanoke Catholic School	**Middle School** Introduction to Technology	
Roanoke Valley Christian Schools		**Middle School** Keyboarding, **High School** C++, Pascal, AutoCAD, MS Office, Desktop publishing
Stonebridge School		**Middle/High School** Keyboarding, MS Office
Steward School	**Middle School** Introduction to Technology **High School** Media and Video Technology	**High school** Intro to Computer Science
Atlantic Shores Christian School	**Middle School** Introduction to Technology Inventions and Innovations Technological Systems Power and Transportation **High School** Graphic Communication Systems Information Technology Fundamentals Media and Video Technology	
Westover Christian Academy	**Middle School** Introduction to Technology **High School** Information Technology Fundamentals	

Table 5. Titles of Private Schools with Titles of Technology Education Courses

From the list of courses offered there is a wide range of technology courses offered by private schools in the Commonwealth of Virginia. The technology courses identified by the surveyed schools identified both technology education courses and the use of technology courses as being technology education. Courses that teach the use of technology are not technology education courses. The following titles are not technology

education: Keyboarding, MS Office, A+, C++, HTML, Java Programming, and certification programs. Some private schools did not identify the difference between technology education and use of technology courses.

RECOMMENDATIONS

Based on the finding and conclusions of this study, the researcher offers the following recommendations:

1. It is recommended that further research be conducted to discover whether the schools that provided state recommended technology courses are teaching the recommended learning competencies outline on the CTE website.

2. It is recommended that further research be conducted to ascertain whether the Standards for Technological Literacy were used in the development of technology courses provided by private schools in Virginia.

3. It is recommended that further research be conducted to ascertain whether private school administrates know the difference between technology education courses and courses that teach the use of technology.

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APPENDICES

Appendix A

Standard for Technological Literacy

Nature of Technology

Standard 1: Students will develop an understanding of the characteristics and scope of technology.

Standard 2: Students will develop an understanding of the core concepts of technology.

Standard 3: Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.

Technology and Society

Standard 4: Students will develop an understanding of the cultural, social, economic, and political effects of technology.

Standard 5: Students will develop an understanding of the effects of technology on the environment.

Standard 6: Students will develop an understanding of the role of society in the development and use of technology.

Standard 7: Students will develop an understanding of the influence of technology on history.

Design

Standard 8: Students will develop an understanding of the attributes of design.

Standard 9: Students will develop an understanding of engineering design.

Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

Abilities for a Technological World

Standard 11: Students will develop abilities to apply the design process.

Standard 12: Students will develop abilities to use and maintain technological products and systems.

Standard 13: Students will develop abilities to assess the impact of products and systems.

The Designed World

Standard 14: Students will develop an understanding of and be able to select and use medical technologies.

Standard 15: Students will develop an understanding of and be able to select and use agricultural and related biotechnologies.

Standard 16: Students will develop an understanding of and be able to select and use energy and power technologies.

Standard 17: Students will develop an understanding of and be able to select and use information and communication technologies.

Standard 18: Students will develop an understanding of and be able to select and use transportation technologies.

Standard 19: Students will develop an understanding of and be able to select and use manufacturing technologies.

Standard 20: Students will develop an understanding of and be able to select and use construction technologies.

The complete Standards for technological Literacy can be found at:
http://www.iteawww.org/TAA/Publications/STL/STLListingPage.htm

Appendix B

Schools Surveyed

School Name	Grades	State Approved Accreditation
Alliance Christian Schools 5809 Portsmouth Blvd. Portsmouth, VA 23701	KG-12	ACSI (A)
Barry Robinson Center 443 Kempsville Road Norfolk, VA 23502	KG-12	VAISEF (A)
Bermuda Run Education Center 3803 Ruffin Road Hopewell, VA 23860	K-12	VAISEF (A)
Blandford Manor 230 Crator Road Petersburg, VA 23803	K-12	VAISEF (A)
Blessed Sacrament/Huguenot 2501 Academy Road Powhatan, VA 23139	PK-12	VCEA (A) SACS-CASI (A)
Broadwater Academy P.O. Box 546 Exmore, VA 23350	PK-12	VAIS (A)
Blacksburg New School 2470 Ramble Road Blacksburg, VA 24060	PS-12	VAIS (A)
Cape Henry Collegiate School 1320 Mill Dam Road Virginia Beach, VA 23454	PK-12	VAIS (A)
Carlisle School P.O.Box 5388 Martinsville, VA 24115	PK-12	VAIS (A) SACS-CASI (A)
Chesapeake Bay Academy 821 Baker Road Virginia Beach, VA 23462-1002	K-12	VAIS (A)
Collegiate School N. Mooreland Road Richmond, VA 23229	KG-12	VAIS (A)

Covenant School 175 Hickory Street Charlottesville, VA 22902	KG-12	VAIS (A)
Crawford Day School 825 Crawford Parkway Portsmouth, VA 23704	KG-12	SACS-CASI (A)
Denbigh Baptist Christian School 13010 Mitchell Point Road Newport News, VA 23602	K-12	ACSI (A)
Emmanuel Christian School 8302 Spruce Street Manassas, VA 20111-2196 (703) 369-3950	KG-12	ACSI (A)
Faith Christian Academy P.O. Box 670, 361 Main Street Hurt, VA 24563	KG-12	ACSI (A)
Flint Hill School 10409 Academic Drive Oakton, VA 22124	JK-12	VAIS (A)
Fredericksburg Academy 132 Falcon Drive Fredericksburg, VA 22408-1931	PK-12	VAIS (A)
Fredericksburg Christian Schools 9400 Thornton Rolling Road Fredericksburg, VA 22408	PK-12	ACSI (A)
Fuqua School P.O. Drawer 328 Farmville, VA 23901-0328	PK-12	VAIS (A)
Graydon Manor 801 Children's Center Road Leesburg, VA 20175	1-12	VAISEF (A)
Greenbrier Christian Academy 311 Kempsville Road Chesapeake, VA 23320	PK-12	ACSI (A)
Guardian Angel Regional Catholic 300 Churchville Avenue Staunton, VA 24401-3257	KG-12	VAIS (A)
Heritage Christian Academy 10500 Newbys Bridge Road Chesterfield, VA 23832	PK-12	ICAA (A) ACSI (A)

Broadwater Academy Headmaster P.O. Box 546 Exmore, VA 23350	PK-12	VAIS (A)
Browne Academy 5917 Telegraph Road Alexandria, VA 22310	PK-12	VCEA (A) SACS-CASI (A)
Brunswick Academy 2100 Planters Road Lawrenceville, VA 23868	PK-12	SACS-CASI (A)
Burgundy Farm Country Day 3700 Burgundy Road Alexandria, VA 22303	PK-12	VISA (A)
Kenston Forest School 73 Ridge Road Blackstone, VA 23824	PK-12	VISA (A)
Leary School 6349 Lincolnia Road Alexandria, VA 22312	K-12	VAISEF (A)
Lynchburg Christian Academy 701 Thomas Road Lynchburg, VA 24502	PK-12	ACSI (A) SACS-CASI (A)
Mountain View Christian Academy 153 Narrow Lane Winchester, VA 22602	K-12	ACSI (A)
Nansemond-Suffolk Academy 3373 Pruden Blvd. Suffolk, VA 23424	PK-12	VAIS (A)
Norfolk Academy 1585 Wesleyan Drive Norfolk, VA 23502-5591	01-12	VAIS (A) SACS-CASI (A)
Norfolk Christian Schools 255 Thole Street Norfolk, VA 23505	PK-12	ACSI (A) SACS-CASI (A) 9-12
Norfolk Collegiate School 7336 Granby Street Norfolk, VA 23505	KG-12	VAIS (A) SACS-CASI (A)
North Cross School 4254 Colonial Avenue, SW Roanoke, VA 24018	JK-12	VAIS (A)

Northstar Academy 8055 Shrader Road Richmond, VA 23294	01-12	VAISEF (A)
Notre Dame Academy 35321 Notre Dame Lane Middleburg, VA 20117	K-12	SACS-CASI (A)
Our Lady of Walsingham 1100 Jamestown Rd., Box 8702 Williamsburg, VA 23187-8702	PK-12	VCEA (A) SACS-CASI (A) 8-12
Pines Treatment Center 240 Corporate Boulevard Norfolk, VA 23502	1-12	VAISEF (A)
Portsmouth Christian Schools 3214 Elliott Avenue Portsmouth, VA 23702	PS-12	ACSI (A)
The Potomac School 1301 Potomac School Road McLean, VA 22101-2398	PK-12	VAIS (A)
Presbyterian Homes & Family 1501 Franklin Turnpike Danville, VA 24540	PK-12	VAISEF (A)
Richmond Academy 3809 Patterson Avenue Richmond, VA 23221	KG-12	SDASPC (A)
Richmond Christian School 6511 Belmont Road Chesterfield, VA 23832	PK-12	ACSI (A)
Rivermont School 1350 Liggates Road Lynchburg, VA 24503	K-12	VAISEF (A) SACS-CASI (A)
Roanoke Catholic School 621 Jefferson Street Roanoke, VA 24016	PK-12	VCEA (A)
Roanoke Valley Christian Schools 6520 Williamson Road, N.W. Roanoke, VA 24019-7010	KG-12	ACSI (A)
Rudlin Torah Academy 12285 Patterson Avenue Richmond, VA 23233	KG-12	VAIS (A)

Seton Home Study School, Inc. 1350 Progress Drive Front Royal, VA 22630	K-12	SACS-CASI (A)
Southampton Academy 26495 Old Plank Road Courtland, VA 23837	PK-12	VAIS (A)
St. Catherine's School 6001 Grove Avenue Richmond, VA 23226	PK-12 Girls	VAIS (A)
St. Christopher's School 711 St. Christopher's Road Richmond, VA 23226	PK-12 Boys	VAIS (A) SACS-CASI (A)
St. Stephen's & St. Agnes School 1000 St. Stephen's Road Alexandria, VA 22304	JK-12	VAIS (A)
Stonebridge School P.O. Box 9247 Chesapeake, VA 23321	PK-12	ACSI (A)
Steward School 11600 Gayton Road Richmond, VA 23233-3402	KG-12	VAIS (A)
Tidewater Academy Box 536, 217 Church St. Wakefield, VA 2388	PK-12	VAIS (A) VISA (A)
Tidewater Adventist Academy 1136 N. Centerville Turnpike Chesapeake, VA 23320	KG-12	SDASPC (A)
Atlantic Shores Christian School 1217 N. Centerville Turnpike Chesapeake, VA 23320	K-12	ICAA (A)
Victory Christian Academy 8491 Chamberlayne Road Richmond, VA 23227	K-12	VAIS (A)
Virginia Beach Friends School 1537 Laskin Road Virginia Beach, VA 23451	K-12	VISA (A)
Wakefield School 4439 Old Tavern Road, Box 107 The Plains, VA 20198	PS-12	VAIS (A)
Westover Christian Academy 5665 Riverside Drive Danville, VA 24541	K-12	ACSI (A)

White Oak School 7180 U.S. Highway 29N Blairs, VA 24527	K-12	VAISEF (A)
Williamsburg Christian Academy 309 Waltz Farm Drive Williamsburg, VA 23185	PK-12	ACSI (A)
Word of Life Christian Academy 5225 Backlick Road Springfield, VA 22151	PS-12	ACTS (A)

Appendix C

TECHNOLOGY EDUCATION IN VIRGINIA PRIVATE SCHOOLS

Purpose: The purpose of this study is to determine the extent that Virginia's private school systems have incorporated technology education courses within their school systems. This survey is designed to identify individual technology education courses offered and provide prospective on technology education's offerings in private school systems.

Directions: To complete this survey, please place a check mark in the right column to indicate which courses (number code) are offered at your school. Return you're the completed survey in the enclosed self-addressed envelope.

Technology Courses for the Middle School, Grades 6-8

Course(s)	Course Title	Offered
DTE8481 DTE8484 DTE8482 DTE8483	Introduction to Technology	
DTE8485 DTE8464 DTE8461	Inventions and Innovations	
DTE8486 DTE8463 DTE8462	Technological Systems	

Technology Courses for the High School, Grades 9-12

Course(s)	Document Title	Offered
DTE8491	Advanced Engineering	
DTE8427	Advanced Manufacturing Systems	
DTE8492 DTE8437	Architectural Drawing and Design	
DTE8467	BioEngineering	
DTE8468	Biotechnology Foundations	
DTE8418 DTE8415	Communication Systems	
DTE8420 DTE8421	Computer Control and Automation	
DTE8432 DTE8431	Construction Technology	
DTE8459	Digital Visualization	
DTE8416 DTE8417	Electronics Systems I	
DTE8412	Electronics Systems II	
DTE8413	Electronics Systems III	
DTE8495 DTE8448	Energy and Power	
DTE8493 DTE8436	Engineering Drawing and Design	

DTE8423	Geospatial Technology	
DTE8494 DTE8458	Graphic Communications Systems	
DTE8455	Imaging Technology	
DTE8496	Information Technology (IT) Fundamentals	
DTE8490	Introduction to Engineering	
DTE8426 DTE8425	Manufacturing Systems	
DTE8478 DTE8433	Materials and Processes Technology	
DTE8497	Media and Video Technology	
DTE8444 DTE8445	Power and Transportation	
DTE9811	Principles of Technology I	
DTE9812	Principles of Technology II	
DTE8446 DTE8447	Production Systems	
DTE8434 DTE8435	Technical Drawing and Design	
DTE8406 DTE8407	Technology Assessment	
DTE8402 DTE8403	Technology Foundations	

DTE8404 DTE8405	Technology Transfer	
DTE8444 DTE8445	Power and Transportation	

_____ Check here, if your school does not offer any of the above listed technology education courses.

If you offer other technology courses than cited above, please list these below.

Appendix D

May 26, 2005

Dear Colleague,

The workplace of the 21st century will require workers who understand technology and can incorporate it into their careers and daily lives. Acquiring the skills and knowledge to accomplish this requires citizens to be technologically literate. Educational systems can provide comprehensive education in all subjects relating to technological literacy. Over the next decade, the United States will face increasing competition from the global marketplace. To compete, our citizens will need to master and apply new technologies – today and tomorrow. Technological literacy has become one of the important aspects for every citizen in the world. Decisions made today will affect the world for the next hundred years. Our schools are the place where technological literacy can be taught.

I am a graduate student in technology education at Old Dominion University. As part of my studies I have gained interest in technology education and private schooling. As a result of these interests, I have selected to undertake my graduate research in these two areas – private schooling and technology education.

I hope you feel this research is worthy and that you will assist me with my study. Enclosed is a short survey asking you to check Virginia approved technology education courses you may offer in your school. I respect your time and information. I ensure you that the data you provide will be kept confidential and only reported in aggregate form. Surveys are labeled for only tracking to follow-up on surveys not returned. If you agree to participate, please return the survey in the self-addressed stamped envelope.

I would like to thank you in advance for you participation in this study. If you have any questions or concerns or if you would like a copy of the results of this research, please feel free to contact me through my school e-mail account. Thank you very much for your help.

Sincerely,

Cara Kimball

Ckimb008@odu.edu