

1999

# Virginia Beach Middle School Technology Education Teachers Reinforcing Academic Standards

Stephen L. Baird  
*Old Dominion University*

Follow this and additional works at: [https://digitalcommons.odu.edu/ots\\_masters\\_projects](https://digitalcommons.odu.edu/ots_masters_projects)

 Part of the [Education Commons](#)

---

## Recommended Citation

Baird, Stephen L., "Virginia Beach Middle School Technology Education Teachers Reinforcing Academic Standards" (1999). *OTS Master's Level Projects & Papers*. 258.  
[https://digitalcommons.odu.edu/ots\\_masters\\_projects/258](https://digitalcommons.odu.edu/ots_masters_projects/258)

This Master's Project is brought to you for free and open access by the STEM Education & Professional Studies at ODU Digital Commons. It has been accepted for inclusion in OTS Master's Level Projects & Papers by an authorized administrator of ODU Digital Commons. For more information, please contact [digitalcommons@odu.edu](mailto:digitalcommons@odu.edu).

# **Virginia Beach Middle School Technology Education Teachers Reinforcing Academic Standards**

A Study Presented to the Graduate Faculty  
of the Department of  
Occupational and Technical Studies  
Old Dominion University

In Partial Fulfillment  
of the Requirements for the Degree of  
Master of Science

By  
Stephen L. Baird  
November 15, 1999

## Signature Page

This research paper was prepared by Stephen L. Baird under the direction of Dr. John M. Ritz in OTED 636, Problems in Occupational and Technical Studies. It was submitted to the Graduate Program Director as partial fulfillment of the requirements for the Master of Science degree.

Approved by:

 Date 11-15-99

Dr. John M. Ritz,  
Advisor, Chair and Graduate Program Director  
Occupational and Technical Studies  
Old Dominion University

# Table of Contents

	Page
Signature Page	i
Table of Tables	v
Table of Figures	vi
<b>CHAPTER I</b>	
<i>INTRODUCTION</i>	1
Statement of the Problem	2
Research Goals	2
Background and Significance	3
Limitations	5
Assumptions	6
Procedures	6
Definition of Terms	7
Overview and Summary	8
<b>CHAPTER II</b>	
<i>REVIEW OF LITERATURE</i>	10
The Need to Create Standards of Learning Competencies	11
Legislative Action Calling for Higher Learning Standards	12
Implementation and Accountability for New Standards of Learning	14
Educational Solutions for Achieving Mastery of Standards of Learning	16
Expected Results of Integrating the Academic Curriculum with Instruction in the Technology Education Curriculum	17
Summary	18

<b>CHAPTER III</b>	
<i>METHODS AND PROCEDURES</i>	19
Population	19
Instrument Design	20
Data Collection	21
Statistical Analysis	22
Summary	22
<b>CHAPTER IV</b>	
<i>FINDINGS</i>	23
Teaching Assignments	25
Assisting Students in Mastering Competencies	26
Types of Assistance	33
Determining Specific Means of Integration	34
Comments Addressing the Problem of This Study	36
Summary	37
<b>CHAPTER V</b>	
<i>SUMMARY, CONCLUSIONS, AND</i>	38
<i>RECOMMENDATIONS</i>	
Summary	38
Conclusions	40
Recommendations	42
<b>Bibliography</b>	43
<b>Appendices</b>	45
A. Virginia Beach City Public Middle Schools and the Number of Technology Education Teachers at Each School	46
B. Research Study Survey	48
C. Cover Letter Accompanying Survey	52

## TABLE OF TABLES

<b>Table</b>	<b>Page</b>
Table 1: Returned Surveys	24

## TABLE OF FIGURES

<b>Figure</b>		<b>Page</b>
<b>Figure 1:</b>	Teaching Assignments	26
<b>Figure 2:</b>	Mastering Competencies	28
<b>Figure 3:</b>	Actively Involved in Integration	29
<b>Figure 4:</b>	Integration - Best Method	30
<b>Figure 5:</b>	Developing Technology Standards	31
<b>Figure 6:</b>	Focus On Standards	32
<b>Figure 7:</b>	No Involvement In Integration Process	36

# CHAPTER I

## INTRODUCTION

The workplace of the 21st century will require workers who can integrate academic and technical knowledge to meet the demands of changing and emerging careers. To prepare students to enter the workforce of a technologically advanced society, a redesigned educational system must be developed. Students must not only have a strong foundation of knowledge in core academic subjects, they will also need the ability to think critically, problem-solve, work in teams, and acquire up-to-date job skills essential to the success of their careers in the world of work.

In a global and technology-driven workplace, a new vision for academic and technical education must take hold. Educators, parents, and the business community need to work together to ensure that students acquire the skills and knowledge needed to meet required academic standards and industry-recognized skill standards.

The need for educational reform is recognized nationally and at the state and local levels. Educational reform is being supported through legislation and funding, but the real difference in the educational reform for



America's youth will take place in the classroom. Integrating academic and career studies will create a new kind of education, offering students relevant academics and developing critical thinking and problem-solving skills necessary for a career in the 21st century workplace.

This research study was undertaken to determine how Virginia Beach Middle School Technology Education teachers are integrating technical content with the content of core academic subjects to assist students in mastering the Virginia Standards of Learning.

### **Statement of the Problem**

The problem of this study was to determine if Virginia Beach Middle School Technology Education teachers are reinforcing academic standards to help students better achieve mastery of the Virginia Standards of Learning.

### **Research Goals**

The following objectives were established to address this problem:

1. Determine Virginia Beach Middle School Technology Education

teachers involvement in assisting students to master Virginia Standards of Learning competencies.

2. Determine the types of assistance that the Virginia Beach Public School system provides to help align the SOL of the academic curriculum with instruction in the curriculum of Technology Education.
3. Determine specific means that teachers have used to integrate the academic curriculum with instruction in the Technology Education curriculum.

### **Background and Significance**

Our nation's economic survival in the international marketplace and our continued technological advancement in the modern world is directly linked to the academic and technical education the youth of our country receive in preparation for their entrance into our nation's workforce. It is clear from national and regional reports, issued one after another for the past decade, that our educational system is failing to meet the needs of our nation's youth. (Bottoms, 1992, p.1)

A call to change the educational system was first voiced by the federal government's 1983 National Commission on Excellence in Education's report, *A Nation at Risk*, which focused on the ineffectiveness of public education and recommended corrections. (Pautler, 1999, p.15) In 1990, the National

Center on Education and the Economy's Commission on the Skills of the American Workforce issued *America's Choice: High Skills or Low Wages!* declaring that "it now takes nearly three years to achieve the same productivity improvement we used to achieve in one year." (Pautler, 1999, p.17) Clearly the need to reform our educational system and industry training has been justified.

A blueprint for improving our nation's schools by establishing national goals and standards was brought forth in the legislation titled Goals 2000: Educate America Act of 1994. (Scott, 1996, p.155) The act established eight national goals relating to academic and technical skills standards and provided support to help all students achieve these goals. (U.S. Department of Education, Goals 2000, 1994).

America clearly acknowledges the need for change. National, state and local governments are funding those schools which adopt the call for change. Funding is provided through legislation such as the Carl D. Perkins Vocational and Technical Education Act of 1998. The Perkins III Act also addresses educational reform. Perkins III, "promotes reform, innovation and continuous improvement in vocational and technical education to ensure that students acquire the skills and knowledge they need to meet challenging state

academic standards and industry-recognized skill standards, and to prepare for postsecondary education, further learning, and a wide range of opportunities in high-skill, high-wage careers." (U.S. Department of Education, Carl D. Perkins Act, 1998).

The ultimate goal of educational reform is to forge an overall system of education that integrates vocational and academic curriculums to help students achieve both academic and technological competencies. Success of integrating the curriculums of academics and Technology Education ultimately depends on the interaction between the teachers of Technology Education and the core academic subjects. By analyzing the extent of interdisciplinary involvement between Technology Education teachers and core academic teachers and by evaluating the support they receive from their school system, possible solutions towards a redesigned educational and industry training system, which integrates academic and technical knowledge, will emerge.

### **Limitations**

This research study was limited to Virginia Beach Middle School

Technology Education teachers. It was also limited to the work that academic and Technology Education teachers undertook to assist students in mastering the Virginia Standards of Learning.

### **Assumptions**

The following assumptions were made for this study:

1. Virginia Beach Middle School Technology Education teachers are reinforcing academic standards.
2. There was no significant difference between the types of Technology Education courses and required academic courses being taught in any of the Virginia Beach City Public Middle Schools.

### **Procedures**

A listing of all Middle School Technology Education teachers in the Virginia Beach City Public School system was obtained from the Virginia Beach City Public School Administration Department. A survey was designed and conducted on the involvement of Virginia Beach Middle School Technology Education teachers in assisting students to master Standards of Learning competencies, specific methods used, and what type of assistance

was provided by the school system to help align the Standards of Learning of the academic curriculum with instruction in the curriculum of Technology Education. The surveys were then reviewed and a profile developed of the amount, type and support of integration between Virginia Beach Middle School Technology Education curriculum and the core academic curriculum.

### **Definition of Terms**

The following definitions are provided for a better understanding of this study.

#### **Virginia Standards of Learning (SOL)**

In June 1995, the Virginia Board of Education approved Standards of Learning in four content areas- Mathematics, Science, English, and History. Standards of learning were also approved for Social Sciences and Computer Technology.

#### **Integrated Learning**

Integrated learning is when academic and Technical and Career Education teachers collaborate to plan lessons and educational projects.

**Core Academic Subjects**

The core academic subjects for Middle School as identified by the Virginia Beach City School Board are Mathematics, Social Studies, Science, and English courses.

**Technology Education**

The school discipline for the study of the application of knowledge, creativity, and resources to solve problems and extend human potential.

**Mastery**

Passing scores for Standards of Learning tests as adopted by the Virginia Board of Education.

**Overview and Summary**

In Chapter I, the problem of determining the extent of integration between Technology Education teachers and core academic teachers was introduced along with the goal of helping students better achieve mastery of the Virginia Standards of Learning. This problem will be measured using the following goals:

1. The extent of involvement Virginia Beach Middle School Technology Education teachers have had in assisting students in mastering Virginia Standards of Learning competencies.

2. The types of assistance that the Virginia Beach Public School system has provided to help align the SOL of the academic curriculum with instruction in the curriculum of Technology Education.
3. Specific means that teachers have used to integrate the academic curriculum with instruction in the curriculum of Technology Education.

Chapter II is an examination of the need for educational reform and how integration of curriculums between disciplines might be one possible solution. Chapter III deals with the methods used to undertake this study. Chapter IV details the findings of the research and Chapter V summarizes the research study and draws conclusions with respect to the research results.



# **CHAPTER II**

## **REVIEW OF LITERATURE**

The goals of this research study were to determine the extent of and specific means by which teachers have integrated the academic curriculum with instruction in the Technology Education curriculum to assist students in mastering Virginia Standards of Learning competencies. To execute this study effectively and accurately, a variety of materials were researched, analyzed and incorporated into the final observations and conclusions reported later in this research paper.

The Review of Literature in Chapter II has been divided into five categories. The first category deals with the need to create Standards of Learning. The second investigates legislative action which was initiated calling for higher learning standards and the third category explains implementation procedures and accountability for newly developed Standards of Learning. Section four examines possible educational solutions for students to achieve mastery of the standards and the final section theorizes on expected results of integrating the academic curriculum with instructional methods of the Technology Education curriculum.

## **The Need to Create Standards of Learning Competencies**

Today's schools should offer all students challenging, relevant academics and meaningful work-based experiences. A 21st century workforce will require individuals who excel at problem-solving, critical thinking, working in teams, and constantly learning and adapting to new technological developments in the workplace. "The consequences of our education system being out of sync with the changing nature of work have taken a toll on American businesses. More than 50 percent of U.S. employers say they cannot find qualified applicants for entry-level positions. It is estimated that American business spends nearly \$30 billion training and retraining its workforce" (U.S. Department of Education, School, 1996).

Beginning with the publication in 1983 of *A Nation At Risk*, a stream of reports and studies have confirmed that the United States education system is in crisis. Public dissatisfaction with low student academic performance, increasing global economic competition, and consistently poor results on international assessments have focused national attention on the quality of education in America. "Declines over time in performances on tests such as the Student Achievement Test (SAT) and the National Assessment of Educational Progress (NAEP) have been publicized as evidence that our

educational problems continue unabated (Haertel, 1999, p. 663).

Improving student achievement by redesigning our educational system will require fundamental changes in the expectations schools set for all students, the types of courses schools offer, the way teachers are trained, and the way subject matter is taught. As our nation seeks to maintain its competitiveness in the world economy, a grassroots effort is under way by states and local governments to develop new high-academic and high-industry standard skills, to achieve recently established national goals for education, and to redesign our educational system to be bench-marked the highest in the world.

### **Legislative Action Calling for Higher Learning Standards**

In March 1994, Congress enacted Goals 2000: Educate America Act. The Goals Act supports states and communities in their efforts "to improve academic achievement by raising academic standards, supporting high-quality teacher professional development, expanding the use of computers and technology in classrooms, and increasing parental and community involvement in education" (U.S. Department of Education, Goals 2000, 1994). The Goals 2000 Act was passed with strong bipartisan support in

Congress and with the endorsement of every major business, parent and education organization. The 1994 laws complemented and accelerated reforms already underway in many states and school districts.

In a recent study by the General Accounting Office, many States reported that Goals 2000 has been a significant factor in promoting their education reform efforts. With 48 States, Puerto Rico, and the District of Columbia having completed the development of State content standards, it is clear that higher standards are taking hold nationwide (U.S. Department of Education, Goals 2000, 1994).

Congress recognizes that educational reform is a national priority and has enacted laws funding state and local governments efforts to achieve those goals. The Improving America's Schools Act of 1994 reauthorized the Elementary and Secondary Education Act of 1965 (ESEA) supporting state and local efforts based on new challenging state standards. The Educational Excellence for All Children Act of 1999 again reauthorized the ESEA of 1965, reaffirming the critical role of the Federal Government in working with schools, school districts, and states to promote educational excellence for all children. "Every child, parent, grandparent, and taxpayer deserves high-quality public schools in their communities" (U.S. Department of Education, Educational Act, 1999).

New emerging careers and preparing the youth of our nation is also a major focus of federal legislation. Signed into law on October 31, 1998, the

Carl D. Perkins Vocational and Technical Education Act of 1998 supports the alignment of vocational and technical education with state and local efforts to reform secondary schools and improve postsecondary education. Perkins III focuses the federal investment in vocational and technical education on high-quality programs such as:

- ◆ "integrating academic and vocational education and
- ◆ promoting student attainment of challenging academic and vocational and technical standards" (U.S. Department of Education, Carl D. Perkins Act, 1998).

It is obvious that developing high-academic standards and high-industry standard skills through standards-based reform is at the forefront of our national, state, and local governments. Through these high standards the needs of the youth of our nation can be met in preparing them for the world of work in the 21st century.

### **Implementation and Accountability for New Standards of Learning**

The next step in redesigning our education system is to take the high standards developed by the states and move them to the schools and classrooms. Every state is using Goals 2000 to support its own unique

approach to improving education. The Educational Excellence for All Children Act of 1999 expands the authority of states and districts to consolidate administrative funds, authorizes a consolidated state annual performance report and clarifies that states must monitor school districts to ensure compliance with the requirements of ESEA programs.

The Education Accountability Act of 1999 encourages states to develop a statewide accountability system to hold districts and schools accountable for improved student performance. It also helps ensure that classroom teachers are qualified and prepared to teach to high standards. The Education Act also helps guarantee that parents in all states have access to the information they need to evaluate the quality of their schools by requiring annual state, district and school report cards that are distributed to all parents and the public. "The Education Accountability Act builds on the foundation and purpose of standards-based reform: to improve academic achievement and help all students reach high standards by incorporating challenging state content and performance standards into teacher practice and by enhancing school and student accountability for performance" (U.S. Department of Education, Title XI, 1999).

## **Educational Solutions for Achieving Mastery of Standards of Learning**

There is no cookie-cutter approach that can be used to ensure mastery of the new Standards of Learning, but there are certain things that can and should be done to support efforts that promote high-quality education and achievement of the Standards of Learning. Every effort should be made to provide teachers with up-to-date training, putting useful technology into schools and classrooms, reducing class size and strengthening the state teacher licensure process.

Specific programs can be implemented such as High Schools That Work. "High Schools That Work is the nation's first large scale effort to engage state, district and school leaders and teachers in partnerships with students, parents, and the community to improve the way all high school students are prepared for work and further education" (Virginia Department of Education, High Schools That Work, 1998). Another initiative is the integration of core academic programs with technical and career education programs. Integration is the "collaboration of Technical and Career Education teachers with other content area teachers, to plan exciting lessons and educational projects that include academic and technical content areas,

combine Standards of Learning with technical workplace skills, have a real-world application or connection, and involve community and business partners to enhance learning experiences through their resources and expertise" (Bottoms, 1998, p.15).

By setting higher expectations for students, engaging them in rigorous challenging learning, and providing a program of study with real-world relevancy, all students will have the opportunity to master the Standards of Learning and increase their chances for future success in society and the workplace.

### **Expected Results of Integrating the Academic Curriculum with Instruction in the Technology Education Curriculum**

Through the integration of the core academic curriculum with instruction in the Technology Education curriculum, students are able to see the connection between school, work, and the future and to prepare for their next goal, which often combines work with further study. By participating in integration, teachers gain confidence in themselves and their ability to help all students complete challenging studies.

Benefits to the community, state and nation are a challenging program of study that raises students' communication, mathematics, science and technical literacy.



Planned activities that integrate academic and technical studies increase the number of students who complete high school and the number who pursue postsecondary education. Integrated learning also builds respect for the unique talents and abilities of all students, regardless of what they choose to do after high school graduation (Virginia Department of Education, High Schools That Work, 1998).

Increasing student achievement in the core subject areas will be the ultimate test for successful educational reform. Integrating core academics with Technology Education offers a solution for improving a student's ability to master the Standards of Learning.

### **Summary**

A nation focusing attention on the quality of education in America, legislative action supporting educational reform, and mandatory accountability required in the assessment of students mastery of the Standards of Learning, have brought about significant changes in the instructional methods used by teachers, such as the integration of core academic content with the content of Technology Education. The Review of Literature was necessary to bring forth relevant information and facts that are pertinent to the problem of this research paper. In Chapter III, the methods and procedures used to collect data to answer the problem of this study will be discussed.

# **CHAPTER III**

## **METHODS AND PROCEDURES**

The purpose of this chapter is to examine the procedures used to gather data to address the problem of this study. This chapter will describe the population, instrument design, methods of data collection, and the statistical analysis used.

### **Population**

The population of this study consisted of the twenty-seven (27) Virginia Beach Middle School Technology Education teachers under contract to teach Technology Education for the 1999/2000 school year. The Technology Education courses currently recognized by the state of Virginia and offered by the Virginia Beach City School System at the middle school level are: Introduction to Technology at the sixth grade level, Inventions and Innovations for seventh graders and at the eighth grade level, Technological Systems. There were thirteen (13) middle schools in Virginia Beach. These schools and the number of Technology Education instructors who were teaching at these schools during this study are listed in Appendix A of this

report.

### **Instrument Design**

The instrument used to gather the data for this study was that of a survey. The survey was designed by the researcher and titled, Integrating Technology Education with Core Academic Subjects. The survey was designed in a questionnaire form, incorporating both open and closed form questions, to collect integration data at each of the thirteen (13) Virginia Beach Middle Schools. The questions used in the survey were designed to determine the extent of involvement of Virginia Beach Middle School Technology Education teachers in assisting students to master Virginia Standards of Learning competencies by reinforcing the curriculum of the core academic subjects (English, Mathematics, Science, History, Social Sciences, and Computer Technology). The questions formulated for the survey were also designed to determine various types of assistance the Virginia Beach Public School System has provided to help with the integration of the Technology Education curriculum with the academic curriculum.

Determining specific means that Virginia Beach Public Middle School Technology Education teachers have used to integrate the academic

curriculum with instruction in the Technology Education curriculum was the final goal to be analyzed through the design of the questions used in the survey. The survey used in this report can be found in Appendix B of this report.

### **Data Collection**

The surveys used for this study were distributed to the twenty-seven (27) Technology Education instructors at each of the thirteen (13) Virginia Beach City Public Middle Schools. The surveys were distributed along with a cover letter, using the inter-school mail system. The cover letter explained the importance and need for the survey, guaranteed respondent anonymity and requested return of completed surveys either by fax or the inter-school mail system. The cover letter sent out with the surveys can be found in Appendix C of this study. Completed surveys were used to compile the data necessary for analysis by the researcher.

### **Statistical Analysis**

Using the data obtained from the surveys returned to the researcher, basic descriptive statistics were used to determine integration strategies used

by Technology Education instructors to combine technical content with the content of core academic subjects. The frequency and number of responses was calculated and a percentage obtained to determine the involvement of Technology Education teachers with the integration process, the extent to which integration is being incorporated into instruction, and whether integration is beneficial to the Technology Education program. The data was further analyzed using a Likert Scale with a five point forced choice to identify various methods and techniques of instruction used to achieve integration.

### **Summary**

The researcher gathered information for this study through the use of a survey. The data collected was reviewed and basic descriptive statistics were used to reveal the extent and methodology to which integration between Technology Education and the core academic subjects was being used. Chapter IV of this research report will present the findings of the statistical analysis.

# CHAPTER IV

## FINDINGS

The tabulated data, along with an overview of the responses from the surveys returned to the researcher, are presented in this chapter. The problem of this study was to determine if Virginia Beach Middle School Technology Education teachers are reinforcing academic standards to help students better achieve mastery of the Virginia Standards of Learning. The research goals that were established to address this problem were:

1. Determine Virginia Beach Middle School Technology Education teachers involvement in assisting students to master Virginia Standards of Learning competencies.
2. Determine the types of assistance that the Virginia Beach Public School system provides to help align the Standards of Learning of the academic curriculum with instruction in the curriculum of Technology Education.
3. Determine specific means that teachers have used to integrate the academic curriculum with instruction in the Technology Education curriculum.

The survey developed by the researcher, to address the problem and research goals of this study, was sent to each of the twenty-seven (27) Virginia Beach Middle School Technology Education teachers at the thirteen

(13) Virginia Beach City Public Middle Schools. Table 1 lists the thirteen (13) Virginia Beach Middle Schools, the number of Technology Education teachers under contract at each middle school, and the number of surveys returned from each school.

Table 1  
Returned Surveys

<b>Virginia Beach City Public Middle Schools</b>	<b>Tech. Ed. teachers</b>	<b>Surveys returned</b>
<b>Bayside</b>	<b>3</b>	<b>3</b>
<b>Brandon</b>	<b>3</b>	<b>2</b>
<b>Corporate Landing</b>	<b>2</b>	<b>1</b>
<b>Great Neck</b>	<b>1</b>	<b>1</b>
<b>Independence</b>	<b>3</b>	<b>3</b>
<b>Kempsville</b>	<b>2</b>	<b>0</b>
<b>Landstown</b>	<b>2</b>	<b>0</b>
<b>Larkspur</b>	<b>3</b>	<b>0</b>
<b>Lynnhaven</b>	<b>2</b>	<b>2</b>
<b>Plaza</b>	<b>1</b>	<b>1</b>
<b>Princess Anne</b>	<b>2</b>	<b>0</b>
<b>Salem</b>	<b>2</b>	<b>2</b>
<b>Virginia Beach</b>	<b>1</b>	<b>1</b>

A total of sixteen (16) surveys were returned to the researcher, representing

60 percent of the twenty-seven (27) middle school Technology Education teachers in the city of Virginia Beach.

The first section of this chapter examines the teaching assignments of those who returned the surveys. The next three sections will address the results of the survey as they pertain to the research goals of the study. The final section will examine comments included in the returned surveys addressing the problem of this study.

### **Teaching Assignments**

The teaching assignments of those who returned the surveys were determined from the responses to the first question of the survey. The question read:

**1. My teaching assignment consists mainly of classes taught in the.....**

<b>Synergistics Laboratory</b>	_____
<b>Manufacturing/Production Laboratory</b>	_____
<b>Synergistics &amp; Manufacturing/Production Laboratory</b>	_____
<b>Other _____ Please explain _____</b>	_____

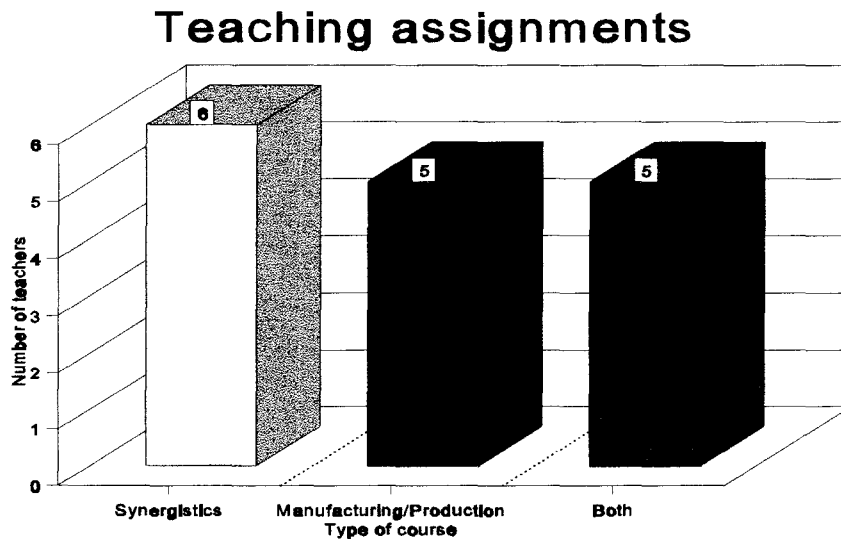
It was determined that five teachers representing 31.25 percent of the respondents taught in the Synergistics Laboratory. Five teachers reported teaching mainly in the Manufacturing/Production Laboratory, representing 31.25 percent of the returned surveys. Four teachers or 25 percent reported



teaching in both the Synergistics and Manufacturing/Production Laboratories.

Figure 1 illustrates the breakdown of the classes taught by the Technology Education teachers who responded to the survey.

**Figure 1**



### **Assisting Students in Mastering Competencies**

In determining Virginia Beach Middle School Technology Education teachers involvement in assisting students to master Virginia Standards of Learning competencies, question number two stated:

**2. Integrating the academic curriculum with instruction in the curriculum of Technology Education will help students master the Virginia Standards of Learning competencies.**

**Strongly Agree** \_\_\_ **Agree** \_\_\_ **Uncertain** \_\_\_ **Disagree** \_\_\_ **Strongly Disagree** \_\_\_

An analysis of the responses was conducted using the Likert scale with a five point forced choice, with five points being assigned to the response strongly agree, four points for agree, three points for uncertain, two points for disagree and one point representing strongly disagree.

The data gathered from the surveys indicated that 10 teachers strongly agreed, representing 62.5 percent of those surveyed, that integrating the academic curriculum with instruction in the curriculum of Technology Education would be beneficial to students. Three teachers, 18.75 percent, agreed with the statement and three teachers, or 18.75 percent, were uncertain. No responses were recorded for disagreeing or strongly disagreeing with the statement. The mean response to this statement was calculated to be 4.43, revealing that a majority of the teachers surveyed, agreed with the statement. Figure two graphically represents the response to this question.

Data was also obtained on the active involvement in the integration of the core academic curriculum with the Technology Education curriculum. The closed form question using the Likert scale read:

**4. I am actively involved in the integration of the core academic curriculum within the Technology Education curriculum.**

**Strongly Agree** \_\_\_\_ **Agree** \_\_\_\_ **Uncertain** \_\_\_\_ **Disagree** \_\_\_\_ **Strongly Agree** \_\_\_\_

**Figure 2**

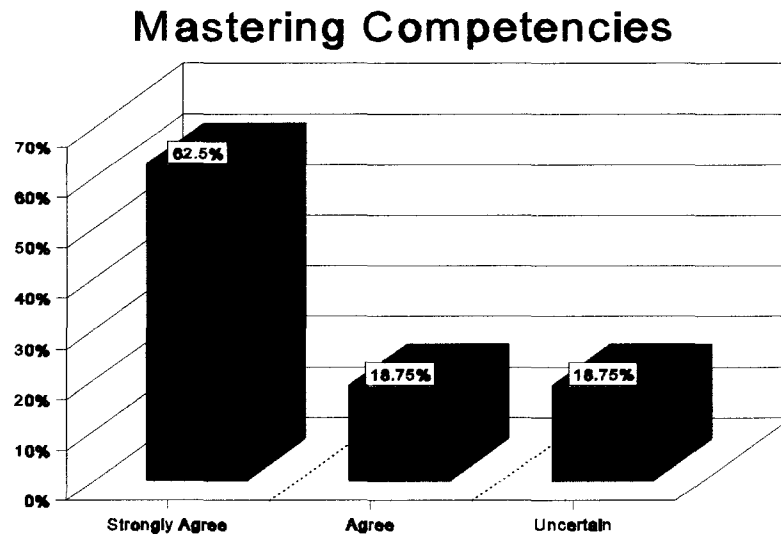
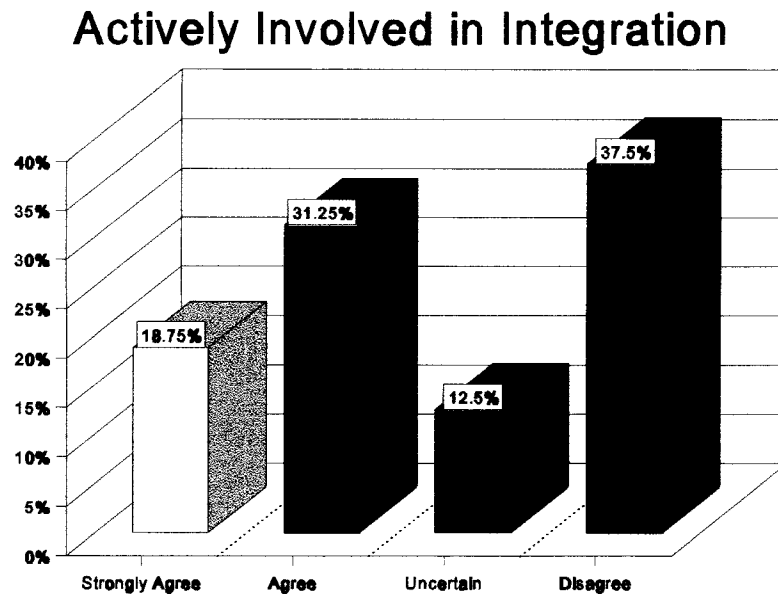


Figure three illustrates the findings of the researcher that three teachers (18.75 percent) strongly agreed with the statement. Five teachers who responded (31.25 percent) agreed with the statement, two teachers or 12.5 percent were uncertain and six teachers representing 37.5 percent of the responses disagreed with the statement. The mean was calculated at 3.31 correlating to the response of being uncertain as to their involvement in integrating the core academic curriculum with the Technology Education curriculum.

Figure 3



To determine whether Virginia Beach Middle School Technology Education teachers felt that integration was the best way to help students, question number six of the survey read:

**6. Integrating the Standards of Learning of the academic curriculum with instruction in the curriculum of Technology Education is the best way to help students achieve mastery of the Virginia Standards of Learning competencies.**

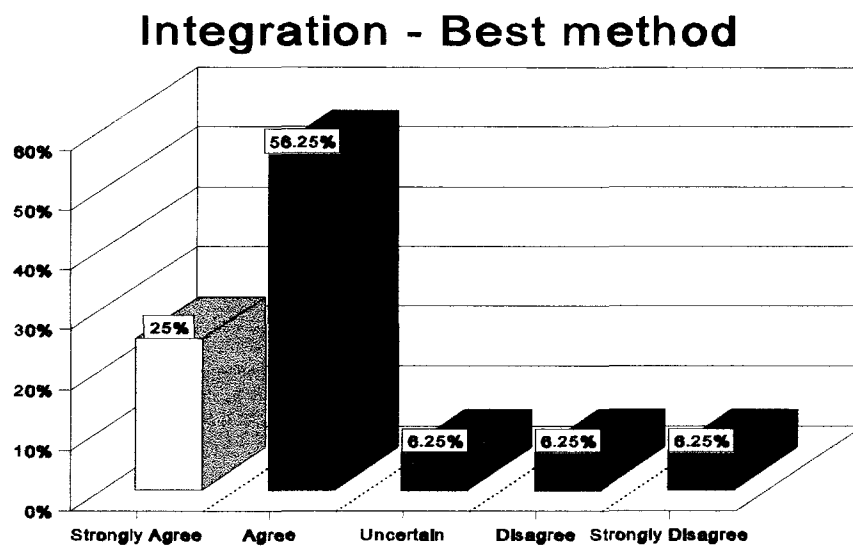
Strongly Agree \_\_\_ Agree \_\_\_ Uncertain \_\_\_ Disagree \_\_\_ Strongly Disagree \_\_\_

In response to the question, four teachers reported that they strongly agreed. This represented 25 percent of those who were surveyed. Nine teachers or 56.25 percent of those surveyed, agreed with the statement. One

teacher (6.25 percent) was uncertain, one teacher (6.25 percent) disagreed and one teacher (6.25 percent) strongly disagreed. The mean response was calculated to be 3.875, asserting that most teachers agreed with the statement.

Figure 4 is a graphic representation of the responses.

**Figure 4**



Question number seven of the survey dealt with whether Standards of Learning should be developed for Technology Education.

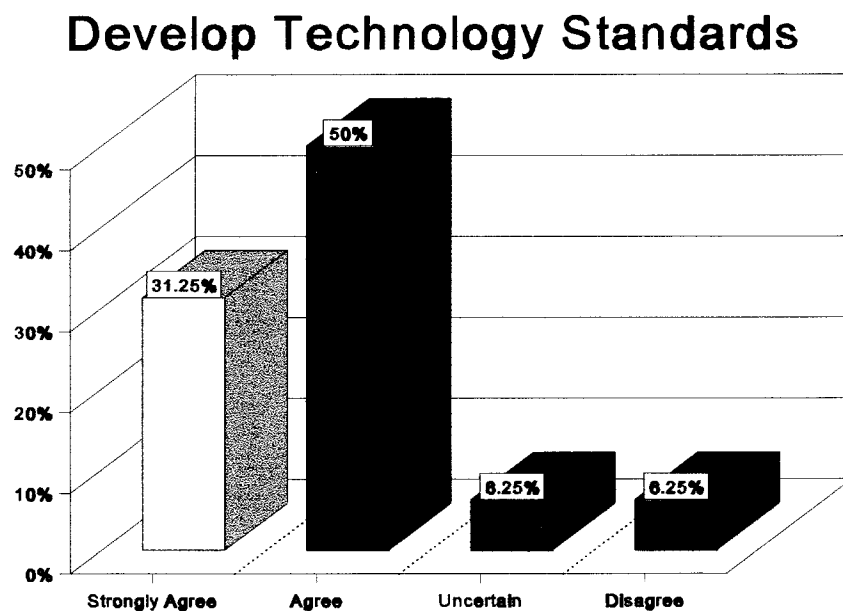
**7. The Technology Education program should develop their own Standards of Learning competencies.**

Strongly Agree \_\_\_ Agree \_\_\_ Uncertain \_\_\_ Disagree \_\_\_ Strongly Disagree \_\_\_

Five teachers representing 31.25 percent of those surveyed strongly agreed with the statement. Eight teachers equalling 50 percent of the

respondents agreed, one teacher was uncertain and one teacher disagreed, both representing 6.25 percent of the returned surveys. The mean response was calculated to be 3.875 which correlates to agreeing with the statement. A graphic representation of the responses can be seen in Figure 5.

**Figure 5**



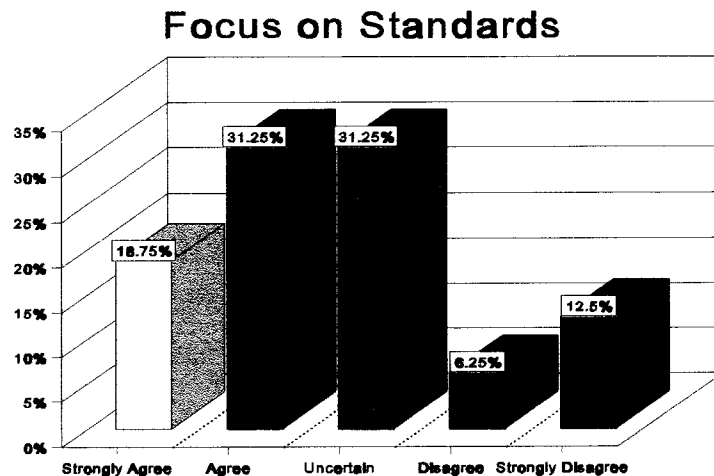
The final closed format question asked was designed to determine if middle school Technology Education teachers believed that the Virginia Beach City Public School System's focus on the Virginia Standards of Learning was detrimental to the middle school Technology Education program. Question number eight read:

**8. The Virginia Beach City Public School System's focus on the Virginia Standards of Learning is detrimental to the Middle School Technology Education program.**

Strongly Agree \_\_\_ Agree \_\_\_ Uncertain \_\_\_ Disagree \_\_\_ Strongly Disagree \_\_\_

In response to the question, three teachers replied that they strongly agreed, representing 18.75 percent of the teachers returning the survey. Five teachers agreed with the question (31.25 percent), five reported being uncertain (31.25 percent), one teacher disagreed (6.25 percent) with the statement and two teachers (12.5 percent) strongly disagreed. The mean was calculated to be 3.375, representing an uncertainty of the school system's focus on the Standards of Learning being detrimental to the Technology Education program. Figure 6 illustrates the findings of the researcher.

**Figure 6**



## Types of Assistance

Data was gathered on the types of assistance provided by the Virginia Beach Public School system to help align the Virginia Standards of Learning competencies with the Technology Education curriculum. Question number three of the survey read:

**3. The Virginia Beach Public School System has provided assistance to help align the Virginia Standards of learning competencies with the Technology Education curriculum by: (check all that apply)**

Updating the Synergistic Laboratory \_\_\_\_\_  
Providing in-services on ways to integrate \_\_\_\_\_  
Offering training classes on integration \_\_\_\_\_  
Other \_\_\_\_\_ Please explain \_\_\_\_\_

Of those responding to the survey, seven teachers (43.75 percent) had been provided with an updated Synergistics Laboratory. One teacher, representing 6.25 percent of those surveyed, had been provided with in-services on ways to integrate. Two teachers (12.5 percent) responded that they had been offered training classes on integration and six teachers (37.5 percent) stated that no assistance had been provided to them.

Data gathered from the survey was also used to determine the types of assistance that the Virginia Beach Public School System should provide to help align the Standards of Learning of the academic curriculum with instruction in the curriculum of Technology Education. Question number nine



stated:

**9. The Virginia Beach City Public School System should provide in-service sessions on: (check all that apply)**

**Integrating the core academic curriculum with instruction in the Technology Education curriculum\_\_\_\_\_**

**Developing methods to help students achieve mastery of the Virginia Standards of Learning\_\_\_\_\_**

**Correlating the Technology Education curriculum with the Virginia Standards of Learning\_\_\_\_\_**

**Other\_\_\_\_\_ Please explain\_\_\_\_\_**

The tabulated data showed that 75 percent felt that in-services on integrating the core academic curriculum with instruction in Technology Education should be provided. The data also indicated that 43 percent thought that in-services on developing methods to help students achieve mastery of the Standards of Learning should be provided by the city and 68.75 percent replied that in-services should be available on correlating the Technology Education curriculum with the Virginia Standards of Learning.

**Determining Specific Means of Integration**

In order to determine specific means that teachers have used to integrate the academic curriculum with instruction in the Technology Education curriculum, question number five stated:

**5. I am involved in the integration process by: (check all that apply)**

**Collaborating with one or more academic teachers on a project** \_\_\_\_\_  
**Structuring my instruction to correlate with Virginia Standards of Learning competencies** \_\_\_\_\_  
**Communicating with core academic teachers about areas of content within the Technology Education curriculum that cover Virginia Standards of Learning competencies** \_\_\_\_\_  
**Other** \_\_\_\_\_ **Please explain** \_\_\_\_\_

Collaborating with one or more academic teachers on a project was used as a method of integration 25 percent of the time. Structuring lessons to correlate with the Virginia Standards of Learning competencies was a method of integration used 75 percent of the time. Communicating with core academic teachers about areas of content covered within the Technology Education program was reported as a method used 37.5 percent of the time and 12.5 percent responded that their involvement in the integration process was through participation in conferences and in-services relating to the Virginia Standards of Learning competencies.

The final question of the survey was formulated to ascertain the reason for not being involved in the integration process. Question number 10 stated:

**10. I am not currently involved in the integration process because: (check all that apply)**

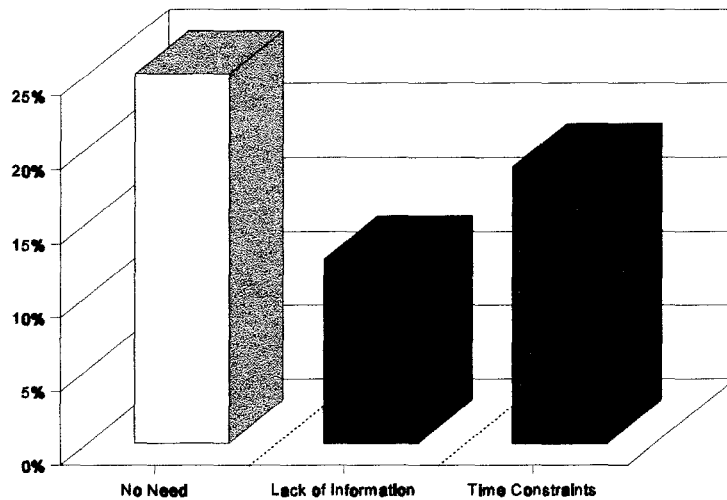
- I do not feel that there is a need for integration** \_\_\_\_\_
- I need more information/training in the integration process** \_\_\_\_\_
- I do not have the time required to develop integration methods** \_\_\_\_\_

Responding to the survey, 25 percent felt there was no need for integration,

12.5 percent stated that they needed more information/training in the integration process and 18.75 percent responded that they did not have the time to develop integration methods. Figure 7 illustrates the respondents answers.

**Figure 7**

**No Involvement in Integration Process**



**Comments Addressing the Problem of This Study**

The problem of this study was to determine if Virginia Beach Middle School teachers are reinforcing academic standards to help students better achieve mastery of the Virginia Standards of Learning. Comments were solicited on the survey regarding the problem of this study. The comments

included with the surveys addressed two major issues. The first issue was that there was a lack of knowledge of what the Technology Education program is about and how the program can help students master Virginia Standards of Learning. The second issue was that the Technology Education program should develop its own Standards of Learning to help maintain the integrity of the program itself.

### **Summary**

The researcher's analysis of the tabulated data revealed the percentage of Virginia Beach Middle School Technology Education teachers reinforcing academic standards to help students better achieve mastery of the Virginia Standards of Learning competencies. The findings also identified methods used by Technology Education teachers in the integration process. Chapter V presents the summary, conclusions, and recommendations for the use of this research study.

# **CHAPTER V**

## **SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS**

This chapter summarizes the research study and draws conclusions by answering the research goals using the data collected from the returned surveys. The researcher will then make recommendations based upon the results of the study.

### **SUMMARY**

The problem of this study was to determine if Virginia Beach Middle School Technology Education teachers are reinforcing academic standards to help students better achieve mastery of the Virginia Standards of Learning.

The following goals were set forth at the beginning of this study:

1. Determine Virginia Beach Middle School Technology Education teachers involvement in assisting students to master Virginia Standards of Learning competencies.
2. Determine the types of assistance that the Virginia Beach Public School System provides to help align the Standards of Learning of the academic curriculum with instruction in the curriculum of Technology Education.

3. Determine specific means that teachers have used to integrate the academic curriculum with instruction in the Technology Education curriculum.

The significance of this study arose from the passage of legislation at the national, state, and local levels calling for educational reform to forge an overall system of education that integrates vocational and academic curriculums to help students master both academic and technological competencies. By analyzing the extent of interdisciplinary involvement between Technology Education teachers and core academic teachers and by evaluating the support they receive from their school system, it was thought that possible solutions for integrating academic and technical knowledge would emerge.

This study focused on the integration of academic and technical content by middle school Technology Education teachers in the City of Virginia Beach. This research study was accordingly limited to Virginia Beach Middle School Technology Education teachers and to the work that they have undertaken to assist students in mastering the Virginia Standards of Learning.

The data presented in this study was compiled through the use of a survey designed by the researcher and sent to all of the Virginia Beach Middle School Technology Education teachers. 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.

**Objective 1: Determine Virginia Beach Middle School Technology Education teachers involvement in assisting students to master Virginia Standards of Learning competencies.**

The tabulated data indicated that less than half (49%) of Middle School Technology Education teachers were actively involved in the integration process. Through this research it was also determined that the majority of those teachers surveyed (81.25%) thought that the integration of the academic curriculum with the Technology Education curriculum would help students master the Virginia Standards of Learning competencies. The findings of this study also showed that 81.25 percent of middle school Technology Education teachers felt that integration was the best method to assist students in mastering the competencies, but at the same time 50 percent felt that the Virginia Beach City Public School system's focus on students mastering Virginia Standards of Learning competencies was detrimental to the

Technology Education program.

**Objective 2: Determine the types of assistance that the Virginia Beach Public School system provides to help align the SOL of the academic curriculum with instruction in the curriculum of Technology Education.**

This study found that there is a lack of training and in-services made available by the school system to help align academic and technical content. While 43.75 percent reported that their synergistics laboratory had been updated, only 12.5 percent had been offered training classes on integration and another 6.25 percent had been provided with in-services on various ways to integrate.

This survey found that 75 percent of the respondents felt that the city should provide in-services on integration and 43 percent believed that these in-services should focus on developing methods to achieve integration. Providing in-services on correlating the Technology Education curriculum with the Virginia Standards of Learning was perceived as necessary by 68.75 percent of those surveyed.

**Objective 3: Determine specific means that teachers have used to integrate the academic curriculum with instruction in the Technology Education curriculum.**

The data indicated that the preferred method of integration was the



structuring of instruction to correlate with the Virginia Standards of Learning (75%). Communicating with core teachers was used to help in the integration process by 37.5 percent and attending conferences and in-services was utilized by only 12.5 percent by teachers as a method of integration.

## **RECOMMENDATIONS**

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

1. It is recommended that the Virginia Beach City Public School system provide in-services and training for middle school Technology Education teachers on methods of integration, and reasons for integration and aligning academic and technical content to help students master Standards of Learning competencies.
2. It is also recommended that the department of Technical and Career Education develop current and relevant competencies for the Technology Education program and that they take an active and leadership role in the integration process.
3. The final recommendation by this researcher is that a combined effort be made by all teachers to actively become involved in the integration process to ensure students mastery of Virginia Standards of Learning competencies and to ensure that students have the skills and knowledge needed for success in the next millennium.

## Bibliography

- Bottoms, Gene and Sharpe, Deede. (1998). Teaching for Understanding through Integration of Academic and Technical Education. Atlanta, Georgia: Southern Regional Education Board.
- Bottoms, G. , Presson A. , and Johnson, M. (1992). Making High Schools Work. Atlanta, Georgia: Southern Regional Education Board.
- Haertel, E. (1999, May 01). Performance Assessment and Education Reform. Phi Delta Kappan. 662-667.
- Pautler, Albert J. (Ed.). (1999). Workforce Education Issues for the New Century. Ann Arbor, Michigan: Prakken Publications, Inc.
- Scott, J. , Sarkees-Wircenski, M. (1996). Overview of Vocational and Applied Technology Education. Homewood, Illinois: American Technical Publishers, Inc.
- U.S. Department of Education. Carl D. Perkins Vocational and Technical Education Act of 1998 (Public Law 105-332) Summary. [On-Line]. Available: <http://www.ed.gov/offices/OVAE/VocEd/InfoBoard/2pgperk.html> [1999, May 28].
- U.S. Department of Education. Goals 2000 Legislation and Related Items. [On-Line]. Available: <http://www.ed.gov/G2K/> [1999, June 3].
- U.S. Department of Education. The School To Work Opportunities Act: Learning and Earning. [On-Line]. Available: <http://www.stw.ed.gov/factsht/fact1.html> [1999, June 6].
- U.S. Department of Education. Title XI: General Provisions, Definitions, and Accountability. [On-Line]. Available: <http://www.ed.gov/offices/OESE/ESEA/prospectus/index1.html> [1999, July 7].

Virginia Department of Education. High Schools That Work. [On-Line].  
Available: [http://pen.k12.va.us/go/Voc\\_Ed/hstw.html](http://pen.k12.va.us/go/Voc_Ed/hstw.html) [1999, June 18]

## **APPENDICES**

- Appendix A - Virginia Beach City Public Middle Schools and the Number of Technology Education Teachers at Each School
- Appendix B - Research Study Survey
- Appendix C - Cover Letter Accompanying Survey

**Appendix A - Virginia Beach City Public Middle Schools and the Number of Technology Education Teachers at Each School**

**Virginia Beach City Public Middle Schools and the Number  
of Technology Education Teachers at Each School**

<b>Virginia Beach City Public Middle Schools</b>	<b>Number of Teachers</b>
<b>Bayside</b>	<b>3</b>
<b>Brandon</b>	<b>3</b>
<b>Corporate Landing</b>	<b>2</b>
<b>Great Neck</b>	<b>1</b>
<b>Independence</b>	<b>3</b>
<b>Kempsville</b>	<b>2</b>
<b>Landstown</b>	<b>2</b>
<b>Larkspur</b>	<b>3</b>
<b>Lynnhaven</b>	<b>2</b>
<b>Plaza</b>	<b>1</b>
<b>Princess Anne</b>	<b>2</b>
<b>Salem</b>	<b>2</b>
<b>Virginia Beach</b>	<b>1</b>

Appendix B - Research Study Survey

**“Integrating the Middle School Technology Education curriculum with the Virginia Standards of Learning”**

The purpose of this study is to determine if Virginia Beach Middle School Technology Education teachers are reinforcing academic standards to help students better achieve mastery of the Virginia Standards of Learning.

1. My teaching assignment consists mainly of classes taught in the.....

- Synergistics Laboratory \_\_\_\_\_
  - Manufacturing/Production Laboratory \_\_\_\_\_
  - Synergistics & Manufacturing/Production Laboratory \_\_\_\_\_
  - Other \_\_\_\_\_ Please explain \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

2. Integrating the academic curriculum with instruction in the curriculum of Technology Education **will** help students master the Virginia Standards of Learning competencies.

Strongly Agree \_\_\_ Agree \_\_\_ Uncertain \_\_\_ Disagree \_\_\_ Strongly Disagree \_\_\_

3. The Virginia Beach Public School System has provided assistance to help align the Virginia Standards of Learning competencies with the Technology Education curriculum by: (check all that apply)

- Updating the synergistic laboratory \_\_\_\_\_
  - Providing in-services on ways to integrate \_\_\_\_\_
  - Offering training classes on integration \_\_\_\_\_
  - Other \_\_\_\_\_ Please explain \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

4. I am actively involved in the integration of the core academic curriculum within the Technology Education curriculum.

Strongly Agree \_\_\_ Agree \_\_\_ Uncertain \_\_\_ Disagree \_\_\_ Strongly Disagree \_\_\_



5. I am involved in the integration process by: (check all that apply)

- Collaborating with one or more academic teachers on a project \_\_\_\_\_
- Structuring my instruction to correlate with Virginia Standards of Learning competencies \_\_\_\_\_
- Communicating with core academic teachers about areas of content within the Technology Education curriculum that cover Virginia Standards of Learning competencies \_\_\_\_\_
- Attending conferences and inservice sessions on the Virginia Standards of Learning \_\_\_\_\_

➤ Other \_\_\_\_\_ Please explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Integrating the Standards of Learning of the academic curriculum with instruction in the curriculum of Technology Education is the **best** way to help students achieve mastery of the Virginia Standards of Learning competencies.

Strongly Agree \_\_\_ Agree \_\_\_ Uncertain \_\_\_ Disagree \_\_\_ Strongly Disagree \_\_\_

7. The Technology Education program should develop their own Standards of Learning competencies.

Strongly Agree \_\_\_ Agree \_\_\_ Uncertain \_\_\_ Disagree \_\_\_ Strongly Disagree \_\_\_

8. The Virginia Beach City Public School System's focus on the Virginia Standards of Learning is **detrimental** to the Middle School Technology Education program.

Strongly Agree \_\_\_ Agree \_\_\_ Uncertain \_\_\_ Disagree \_\_\_ Strongly Disagree \_\_\_

9. The Virginia Beach City Public School System should provide inservice sessions on: (check all that apply)

- Integrating the core academic curriculum with instruction in the Technology Education curriculum \_\_\_\_\_
- Developing methods to help students achieve mastery of the Virginia Standards of Learning \_\_\_\_\_
- Correlating the Technology Education curriculum with the Virginia Standards of Learning \_\_\_\_\_

➤ Other \_\_\_\_\_ Please explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

10. I am not currently involved in the integration process because: (check all that apply)

- I do not feel there is a need for integration \_\_\_\_\_
  - I need more information/training in the integration process \_\_\_\_\_
  - I do not have the time required to develop integration methods \_\_\_\_\_
  - Other \_\_\_\_\_ Please explain \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

11. Please feel free to make any additional comments regarding the integration of the core academic curriculum with instruction in Technology Education to help students better achieve mastery of the Virginia Standards of Learning competencies.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Thank you for your responses!  
Please return this survey to Steve Baird, Technology Education teacher, Bayside Middle School, by Oct. 1, 1999.  
Pony or Fax to 473-5185

Appendix C - Cover Letter Accompanying Survey

September 17, 1999

Dear Colleague,

The workplace of the 21<sup>st</sup> century will require workers who can integrate academic and technical knowledge to meet the demands of changing and emerging careers. Acquiring the skills and knowledge necessary for our students to be successful in the workplace means re-examining methods of instruction used in the classroom to ensure that students are fully prepared to enter a global and technology-driven workplace.

The need for educational reform is recognized nationally and at the state and local levels. In June 1995, The Virginia Board of Education approved Standards of Learning (SOL) in four content areas (mathematics, science, English, history) and computer technology. The implementation of the Virginia Standards of Learning is part of a fundamental educational effort to raise student achievement and to provide a strong educational foundation to prepare Virginia's schoolchildren for success in the 21<sup>st</sup> century.

I have undertaken a research study to determine how Virginia Beach Middle School Technology Education teachers are integrating technical content with the content of core academic subjects to assist students in mastering the Virginia Standards of Learning competencies. My goals for the study are to determine the extent to which Virginia Beach Middle School Technology Education teachers are involved in assisting students to master Virginia Standards of Learning competencies, the types of assistance available to them to achieve integration and specific means that teachers have used to integrate the academic curriculum with instruction in the Technology Education curriculum.

I hope you will feel that this study is worthy of your time and effort to complete the attached survey. After you have completed the survey, please return it to me via our school mail system within 10 days. I would like to add that there will be complete anonymity in regard to your responses. If you have any questions or concerns or if you would like a copy of the results of this survey, please contact me through my school e-mail account. Thank you for your help in this undertaking.

Sincerely,

Steve Baird  
Technology Education  
Bayside Middle School

[slbaird@vbcps.k12.va.us](mailto:slbaird@vbcps.k12.va.us)