2009

Emerging Workforce Trends and Issues Impacting the Virginia Community College System

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EMERGING WORKFORCE TRENDS AND ISSUES IMPACTING THE VIRGINIA COMMUNITY COLLEGE SYSTEM

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A Dissertation Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
Requirements for the Degree of

DOCTOR OF PHILOSOPHY IN EDUCATION

COMMUNITY COLLEGE LEADERSHIP

OLD DOMINION UNIVERSITY

2009

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ABSTRACT

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The mission of the Virginia Community College workforce development leaders is to expand their training and development services to new and emerging high growth occupational areas in support of Virginia's economic growth and changing workforce needs in each of their regions. This research was designed to identify: high demand occupational skill needs; current training services; the shifting and changing trends based on technology, competition, and workforce composition; and the need for partnerships. A survey, based on current and emerging trends and their impact on workforce development training services, was sent to the 22 Virginia Community College workforce development leaders. This purposeful sampling provided a 100% return and data that reinforced the literature findings and the projections of the Department of Labor through 2016. Of the 22 workforce development leaders surveyed 19 listed healthcare skill training as the highest in-demand occupational need in their regions. Following healthcare seven of the 22 leaders reported technology across many occupational areas as high demand skill training areas. Strong college and industry collaborative efforts were reported as necessary to provide training and services that increase employee skills and abilities and provide an efficient route to emerging high growth, high demand occupational areas.

The International Technology Education Association (ITEA) categorized nine technology trends that continue to emerge increasing the impact on the need to create learning technology resources. All nine were rated by the workforce development leaders on a scale of one to five with a mean response impact rate between 2.36 and 3.59. Information and Communication Technology received the highest with mean response impact rate of 3.59 while Agricultural and related Biotechnologies had the lowest mean impact response rate of 2.36. However, all nine were determined to have some form of impact across the diverse regions of Virginia. This research identified the need for continuous focus and further study of the emerging technologies identified by the ITEA in particular the Science, Technology, Engineering, and Mathematics (STEM) educational areas. The standards in the nine identified areas of technological literacy were set up for all students from kindergarten through grade twelve. The challenge is to continue the growth and development of curricula for workforce skill training that builds on the standards already defined.

Data collected from the workforce development leaders, the literature, and many research centers, such as the National Center for Career and Technical Education, highlighted the need for further research to study best practices that strengthen partnerships currently in place and build extensive networks that include: college and university researchers, business and industry leaders, and frontline subject matter and skill experts. Further study on professional development opportunities is necessary to fill the gap between reflection on the emerging trends and issues and the actions needed to add real-world, specific, innovative resources to present training and development services that strategically build a skilled workforce that contributes to economic progress.

ACKNOWLEDGMENTS

There are many faculty, friends, and family members who have helped me to complete this dissertation. I extend my gratitude to all for their support and assistance. The Chair of my Dissertation Committee, Dr. John M. Ritz, was a gracious mentor who demonstrated support, confidence, and patience in my efforts to work my way through this challenging, scholarly pursuit. His time, efforts, and belief in my work were the catalyst to my completion. My committee members, Dr. Dennis E. Gregory and Dr. Philip A. Reed, encouraged me with thoughtful and respectful critique, time, and attention to my writing. Dr. Gregory also provided the tourniquet that stopped the severe loss of confidence and rigorously propelled me back on the path to completion.

My husband, Bill Landon, deserves an "Associate Ph.D." for patiently listening, supporting, and celebrating all the milestones along the way. My daughters, Colleen and Kimberly, my grandchildren, and my sister Trish, were a constant source of encouragement and joy like water in the desert. My sister, Judy Brooks, made my figures professionally compliant, and my brother-in-law, Dennis Haggerty, Ph.D. from Carnegie Mellon University, reminded me constantly that I could do it too.

My work colleagues, in particular my Vice President, Theresa Bryant, assisted me with encouragement, time, and appeals to her colleagues which netted my 100% return rate.

A special moment of remembrance is included here to my Grandmother and Mother who told me I could do anything and would be so proud.

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CHAPTER I

INTRODUCTION

In the past decade studies have been conducted on the future characteristics and needs of the American workforce (Karoly & Panis, 2004; Batelle Memorial Institute, 2005; VanNoy, Jacobs, Korey, Bailey, & Hughes, 2007). The U. S. Department of Labor (DOL) commissioned a study by the RAND Corporation in 2004 that projected shifting trends that would create a need for many different types of workplace skills (Karoly & Panis, 2004). The shifts and changes have proven true but have developed more rapidly than predicted. The emerging workforce trends have evolved so quickly that in January 2008, Columbia University's Community College Research Center undertook a study focused on noncredit workforce education and contract training that questioned whether community colleges were meeting the changing workforce needs (VanNoy et al., 2008). Given the historical mission of the workforce development services of community colleges as one of providing services that meet the job skill needs of diverse employers and their employees in many different regions (Cohen & Brawer, 2003), it is important to understand the strategies that community colleges must develop to remain true to their role. Past studies have shown that the development of strong working initiatives and partnerships are vital to the community college role of projecting and fulfilling future workforce needs and are instrumental in strengthening economic development plans (Cohen & Brawer, 2003).

The Virginia Community College System (VCCS) (Appendix A) offers more noncredit and customized training programs than any other provider in the state

(Mangum, 2008). In 2006-2007 there were over 3,000 employers in Virginia who took advantage of noncredit offerings for their workforces (Mangum, 2008).

This study examines emerging workforce trends and issues facing the 22 workforce development service areas (Appendix B) in the VCCS (J Sargeant Reynolds and John Tyler Community Colleges are combined under the Community College Workforce Alliance in Richmond, VA), and it adds a current perspective to the body of knowledge available in the literature on the effectiveness of community colleges serving the workforce needs of their regions. The researcher identifies emerging trends and issues that will assist VCCS workforce development leaders in their strategic planning efforts to move beyond their current benchmark standards established in the *Dateline 2009* strategic plan (Virginia Community College System, 2003). This set of standards was developed in 2003 by all of the 23 college presidents and 22 workforce development services leaders, the Chancellor, and the State Board for Community Colleges (Virginia Community College System, 2003). The goals set in 2003 committed community colleges in Virginia to increase their offerings and provide more access to education and training opportunities. *Dateline 2009* (Virginia Community College System, 2003) has been a constant annual measurement tool for meeting the state's workforce needs. The goals were projected for 2009, and now must be updated to meet the workforce challenges projected over the next five years, which are necessary to support accelerated occupational growth areas in the Commonwealth of Virginia (Mangum, 2008).

Statement of the Problem

The problem addressed by this study is the identification of training needs for employers and employees serviced by the Virginia Community College System. The

researcher seeks to discover the emerging trends facing Virginia's diverse workforce population and the issues and challenges facing the state's community colleges, employers, and employees. The results of this research will help the Virginia community college workforce development services to implement strategies that support economic growth by meeting the ever-changing workforce training needs of Virginia.

Research Goals

This research seeks to identify the emerging workforce trends and issues impacting the Workforce Development Services within the Virginia Community College System (VCCS). The research questions addressed in this study include:

1. What are the emerging high growth, high demand occupational workforce skill needs (United States Department of Labor, 2009) in economically vital sectors of the economy in the Virginia Community College System Workforce Development Services areas?
2. What are the trends in training and development services that have been consistently provided year after year, using the same content and same delivery methods, by the Virginia Community College System Workforce Development Services?
3. What are the emerging training and development trends and issues facing the Virginia Community College workforce development leaders as they guide their divisions toward services and partnerships that contribute to the economic strength of their regions based on those trends that are shifting and changing due to the "role of technology in the workplace, the competitive climate, and the changing composition of the labor force" (Freeburg & Hall, 2008, p. 154)?

4. What partnerships are needed to maintain and further develop resources and professional development opportunities for emerging industries and technologies?

The answers to these questions will provide valuable information to Virginia's Community College workforce leaders and will add depth to the program and service goals they develop for the next five years. In preparing employees for the workforce with the skills and competencies that match the current and future job market, community college workforce leaders "align education and economic development to better prepare the emerging workforce" (Virginia Community College System, 2007).

Background and Significance

Across the nation, community colleges are strategically placed in rural, suburban, and urban areas that range in size from small local communities to large cities, enabling the colleges to provide access to services that enhance the economic viability of their regions. The diverse societal characteristics and demographics that exist in the nation are prevalent in the Commonwealth of Virginia, where there is a rich 40 year history of 23 community colleges combined under one governing organization, the Virginia Community College System (VCCS). The colleges work together as a state entity, and individually, to provide the best opportunities possible for each of their regions (Virginia Community College System, 2008). The size and diversity of the Virginia Community Colleges make them a study group with opportunities for replication in research of ever-changing trends and issues that affect development and delivery of relevant and necessary services to meet the challenges of the workforce arena of the future.

One of the many studies conducted to predict workforce personnel skill needs was commissioned by Maricopa County Community College (Battelle Memorial Institute,

2005) as a means to enhance strategic planning. The college partnered with Battelle, a leader in international research and development, to determine the key technical skills and training needs for future high tech occupations (Batelle Memorial Institute, 2005). The final report noted the competitive workforce challenges that face the Maricopa County region and the declining pool of qualified workers in science and technology fields (Batelle Memorial Institute, 2005). The Maricopa study focused primarily on the future high tech manufacturing workforce skill training needs for their region but the results were relevant and transferable to other areas across the nation.

More recent research by the Community College Research Center (CCRC) at Columbia University was broader and examined innovative practices in 20 community colleges across 10 states that played a role in preparing the workforce of the future. The study noted the primary role of the workforce development arm of the community college as one of meeting workforce training needs in a flexible and customized fashion (VanNoy, Jacobs, Korey, Bailey, & Hughes, 2007).

This researcher's study of the VCCS Workforce Development Services leaders focuses on the emerging workforce trends and issues in the Commonwealth of Virginia and adds to and extends the previous research conducted by Maricopa Community College and the Columbia University Research Center, as well as the most recent Mangum study in Virginia which examined the relationship between workforce training and economic development (Mangum, 2008). Because of the diversity in size, culture, geography, and people served by the VCCS, the survey allows for a broad scope of application during a time of high-paced technological changes, far-reaching economic global issues, increased workplace diversity, and marketplace shifts from integration to

specialization (Karoly & Panis, 2004). Community colleges in general, and workforce development services specifically, must be able to provide the knowledge and skill training that result in competitive economic advantage for their region.

A study to successfully identify employee training requirements is very timely because the VCCS is assessing their *Dateline 2009* (Virginia Community College System, 2003) strategic goals and developing future goals. The 22 college leaders in Virginia's Workforce Development Services (Appendix A) work on their local goals and strategies under the auspices of the Workforce Development Advisory Council. Their roles, services, strategies, and practices have always been clearly defined as workforce preparation to meet the needs of existing, expanding, and new companies (Virginia Community College System, 2008).

Currently the community college workforce development leaders are experiencing significant difficulty in projecting future workforce needs because of the ambiguous needs in the job market as well as changing economic variables (Mangum, 2008). Also the workforce development leaders traditionally have limited funding, are self-supporting, and are considered the working and earning arm of the college (Mangum, 2008). In the current economic environment, the challenges of the workplace and the economics of providing the best services for the best price, and supporting the college, are worthy of investigation.

The Workforce Development Services of the VCCS is identified as one that disproportionately bears the cost of the programs offered (Mangum, 2008). Section 23-215.C of the Virginia Code mandates that the VCCS offer the maximum noncredit courses possible, and state funding is supposed to be a 30/70 split with the state providing

30 percent of the costs and the rest charged to the businesses requesting workforce development programs (Code of Virginia, 2004). Conversely, a study by Mangum Economic Consulting, LLC, commissioned by the VCCS, found that the amount authorized by the Code of Virginia was actually a fixed amount that does not keep up with the considerable volumes of training actually provided (Mangum, 2008). The timeliness and significance of this research lies in the workforce development services leaders' ability to contribute information, expertise, and a diverse regional awareness to a coordinated effort that will identify emerging workforce skill needs across the state of Virginia.

In addition to identifying trends in workforce training needs, the college leaders are commissioned to expand into new and emerging areas so as to develop a highly skilled workforce that will attract new businesses to the state, resulting in positive economic growth (Virginia Community College System, 2008). At the beginning of this decade, a report commissioned by the Department of Labor (Karoly & Panis, 2004) showed increasing needs for upgraded technology skills in every occupation to insure successful economic competition. It is critical that community colleges are prepared to meet the shifts and changes that were predicted and support employers and employees in successfully competing in the accelerated occupational growth areas (Mangum, 2008).

Both the Cooper Center and Mangum studies pointed to the need for noncredit training services that were technical in nature, geared to specific occupations, or developed as general workplace skills (Mangum, 2008; Weldon Cooper Center for Public Service, 2008). These courses included, among other things, training for: highly technical health services, computer support specialists, and the development of front desk

computer skills (Mangum, 2008; Weldon Cooper Center for Public Service, 2008). The Weldon Cooper Center for Public Service classified the percentage of jobs available as of December 2008 by "range of educational attainment" (Weldon Cooper Center for Public Service, 2008, p. 2) needed to perform effectively as seen in Figure 1.

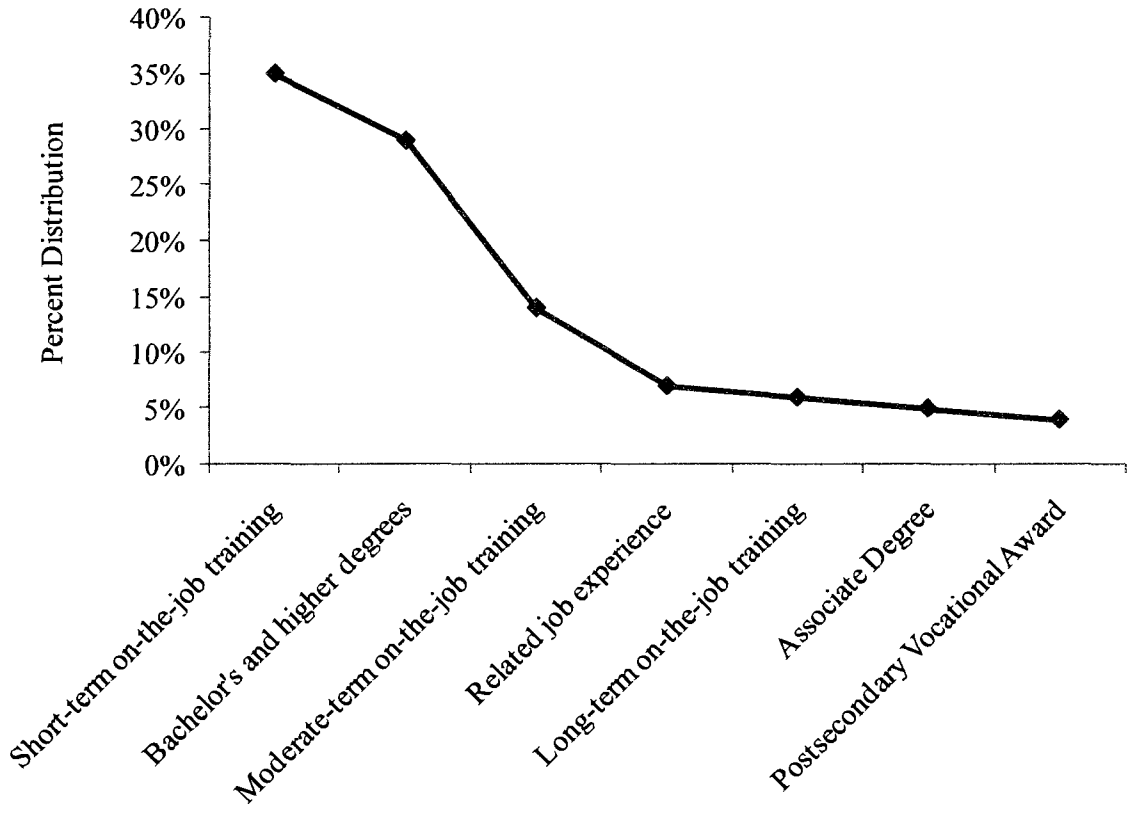

Figure 1. Virginia Average Annual Job Openings by Most Significant Source of Postsecondary Education, 2006 projection to 2016 (Weldon Cooper Center for Public Service, 2008; U.S Department of Labor, 2008)

The need shown by the U. S. Department of Labor (2008), and further depicted by the Weldon Cooper Center for Public Service (2008), was averaged over a range of occupations in Virginia but provided assistance in beginning the process of analyzing the

emerging trends and changes in the delivery of workforce development customized training. Details of specific occupations across the state emerged as the survey research was conducted in this study. The study provides insight from the workforce development leaders of each of the 23 Virginia community colleges in 22 regions by accumulating information on the programs and services they have each been asked to develop and deliver in the last year, and by identifying the trends emerging throughout Virginia as the leaders work on their goals beyond *Dateline 2009* (Virginia Community College System, 2003). It is necessary to acquire new data so the VCCS leaders are better able to work collectively, and individually, to meet the challenges inherent in the fast paced workplace they are presently facing and enable them to provide a powerful contribution to Virginia's economic health (Mangum, 2008).

Research Limitations

Typically the sample participants to be surveyed are randomly chosen from a large group of participants to "achieve a degree of precision" (Dillman, 2000, p. 9); this research used purposeful sampling of all 22 workforce development leaders in the Virginia Community College System. The goal was to obtain a response rate of 100 percent from this stakeholder group to ensure validity and avoid "coverage error" (Dillman, 2000, p. 9). Even with a 100 percent response rate there was the chance that not all leaders were equally connected to their departments and to the key stakeholders in their region. The time commitments of the workforce development leaders were also a hindrance to truly thoughtful responses. To neutralize these limitations and gain commitment to participation, the survey was kept simple and directly relevant to their

current goal-setting process beyond the *Dateline 2009* strategic goals (Virginia Community College System, 2003).

In the current weak and unpredictable economy, workforce development leaders were further impacted by the challenge to create new partnerships, maintain current partnerships, and bring financial support to the college as state funds decreased. Although this economic instability made this survey research difficult, it also acted as a catalyst to create new entrepreneurial strategies and strong working partnerships with industry in an attempt to provide the necessary services by making credible assessments of future needs. The challenge in dealing with the purposeful selection of the leaders in a negative economy as they struggled to remain economically viable was to prove a return on their investment of time by the promise to provide valuable collective survey responses back to them as they worked to renew their level of commitment and motivation (Weldon Cooper Center for Public Service, 2008) to the employers and employees in their regions.

A minor limitation to this study was the researcher's personal involvement in providing current workforce development services and setting goals for future workforce training services in the second largest of Virginia's community colleges and the thirty-fifth largest community college in the nation. The danger was in potentially translating feedback from the researcher's perspective in a large urban environment rather than from the subjects' environment, which could have been completely different based on their background and experience. This limitation was overcome by the use of a survey and external editors and was therefore, only a minor consideration in controlling for limitations.

Research Assumptions

In choosing the 22 leaders in Virginia's 23 Virginia community college workforce development regions to respond to the survey, the researcher assumes that there is a strong communication link within each of the workforce development departments that keep the leaders well-informed. Since the leaders constantly represent their departments in each of their regions and account for their strategic plans to the Chancellor (Virginia Community College System, 2007), it is imperative that each of them remain well-informed of the workforce training needs within each of their regions. The researcher also assumes that the 22 workforce development leaders are closely networked with their regions' Economic Development Departments and meet frequently to gain timely information about new companies and their new occupational outlooks. Additionally the assumption is that employer workforce training requests are generally similar to those made of the others throughout the state of Virginia. These assumptions are related to the type of training, services, and collaborative efforts needed to support both the current workforce and that of the future. In formulating these assumptions it was understood that in the real world there are varying levels of understanding, communication strengths, and economic development networks within each of the 22 regions. However the rationale was to "simplify the assumptions . . . to focus attention on the particular issue" (Freeburg & Hall, 2008, p. 104) which was to "summarize existing knowledge" (Freeburg & Hall, 2008, p. 105) and identify emerging trends and issues impacting the current and future workforce.

The researcher assumed that strong college and industry partnerships contributed to the efforts of the VCCS Workforce Development Services in striving to provide

noncredit and customized training that is on the technical cutting edge. Strong increases in employees' abilities technologically will provide paths to efficiency in the more highly demanded occupational areas. In addition to industry and college partnerships there are state models to be shared between educational institutions such as the Virginia Tech partnership with Danville Community College in the Institute for Advanced Learning and Research (IALR). From kindergarten through college and beyond collaborative efforts work to provide access to skill training that is recognized nationally and internationally (Davis, 2008). As all 22 workforce development leaders shared the emerging trends and issues they faced, it was assumed that models for success would be shared and many more partnerships formed. The state-of-the-art workforce skill training, employer services, and corporate partnerships that are continuously developed with innovative practices will benefit the community colleges in achieving their mission to positively impact economic productivity (Mangum, 2008).

Procedures

This research used a survey to identify changes to emerging high demand workforce needs, current training services, diverse training methods and resources, and partnerships necessary to the evolution of new services. The survey included a combination of open-ended comments and statements using the Likert-type scale concept, which is the most widely used and tested method in survey research (Dillman, 2000). It was based on "pivotal work trends" (Freeburg & Hall, 2008, p. 149) that encompass:

1. Technology in every workplace.
2. The competitive global economy.

3. Changes in workforce composition (Freeburg & Hall, 2008).

Using both types of statement structures in a simple design that measured impact on the workforce development training services, resources, partnerships, and goals gave the researcher the advantage of both a sense of perspective and meaning to the survey feedback (Dillman, 2000).

The survey collected data from all 22 of the workforce development services leaders in the Virginia Community College System with the promise of aggregate results that would benefit both this research and the leaders' specific goal-setting processes. These leaders were integral to decision-making in the system that affects strategies, processes, and outcomes, and therefore they had the most current information available from all federal, state, and local entities. The insight into the trends and issues in both current and future program and service development will be a very advantageous tool for the leaders as they experience the changing environment in each of their regions. The researcher had the support and cooperation of the Vice Chancellor of the VCCS Workforce Development Services in getting all 22 leaders to share their expertise, which was a strong validation of the study (Dillman, 2000).

The size and diversity of the colleges made this system a study group that also has broad national implications. This research may help determine the ever-changing trends and issues affecting workforce development leaders across the nation. Its goal is to support the workforce leaders to collaboratively and proactively develop and offer services that are relevant and necessary for state, regional, and national economic growth.

Prior to its use, the survey was reviewed by an expert panel consisting of the Vice President of Community Education at Lonestar College in Tomball, Texas, the Dean of

Community Education at Mira Costa College in Oceanside, California, and the Dean of Enterprise and Economic Development at Tacoma Community College in Tacoma, Washington. They pilot tested the survey and offered constructive critique for clarity and ease (Dillman, 2000). To initiate the survey and achieve maximum participation and feedback, a letter was sent to each of the 22 VCCS leaders to request participation, explain the goals of the research survey, and advise that the aggregate results will be provided to them and will be invaluable to their strategic planning (Dillman, 2000). Within a week the survey was sent both electronically and by U. S. Mail with a pre-paid, pre-addressed return envelope. A follow-up email reminder was sent two weeks later. The research goal was 100% return of surveys from all 22 VCCS workforce development leaders.

Definition of Terms

Terms used in this research are, for the most part, defined according to the Virginia Community College statutes and the Code of Virginia.

Customized training: Training courses paid for by organizations that are designed to meet the specific skill needs of their specific employee group (Mangum, 2008).

Emerging training and development trends and issues: Changes in the nature and type of training needed to support "technological advances, job availability, and the changing faces of the labor force" (Freeburg & Hall, 2008, p. 113).

High tech occupations: Defined by using "four key features: innovation, skilled labor, regional synergy, and separation of design and production activities" (Bardhan, Jaffee, & Kroll, 2004, p. 2).

Likert-type Scale: A widely used measurement instrument in questionnaires to show levels of agreement or disagreement from one extreme to the other (Dillman, 2000).

Noncredit programs: Course offerings with flexible, short-term schedules with work-related content that are scheduled for open enrollment and are often customized to meet the specific needs of employers and employees (VanNoy et al., 2008).

Occupational Information Network (O*NET): Grant funded program administered by the North Carolina Employment Security Commission and sponsored by the U. S. Department of Labor/Employment and Training Administration (USDOL/ETA) that is the primary source of occupational information (Occupational Information Network, 2009).

Regions: Twenty-three Virginia community colleges, divided into 22 regions (J. Sargeant Reynolds and John Tyler were combined in 2003 to create the Community College Workforce Alliance [CCWA]), on 40 campuses that were established by the State Board for Community Colleges to deliver quality higher education and workforce training throughout their service regions (see Appendix B).

SEVA-PORT: The Southeastern Virginia Partnership for Regional Transformation was formed in July 2007 and funded by a $5 million WIRED grant to "integrate, enhance and build linkages between the emerging industry of Modeling and Simulation (M&S) and the expanding Port-related industries of Transportation, Warehousing and Distribution (TWD), while at the same time reducing the human costs by developing the skills and talent of dislocated workers and untapped labor pools" (Southeastern Virginia Partnership for Regional Transformation, 2008, p. 1).

Virginia Community College System (VCCS): The state agency responsible for developing and providing postsecondary education and workforce training in Virginia (Virginia Community College System, 2008).

Virginia Community College Workforce Development Leaders: The 22 "Vice Presidents and Deans of Workforce Development for the VCCS who lead the workforce development department at each of their colleges and serve as an advisory body to the Vice Chancellor of Workforce Development Services on System-wide matters related to non-credit instruction/services and workforce, economic, and community development" (State Board for Community Colleges, 2008, p. 5).

Vocational Education: "An educational system whose purposes are dominated by preparation for economic roles" (Grubb & Lazerson, 2004, p. 3), accessibility, and a lifelong career skill orientation. The *Carl D. Perkins Vocational Education Act of 1984* (Monacott, 2003) merged career and technical subject areas and in 1998 at the American Vocational Association Conference the name was changed to Career and Technical Education (Monacott, 2003).

WIRED: An initiative, "Workforce Innovation in Regional Economic Development" (Employment & Training Administration, 2006), instigated by the U. S. Department of Labor Employment & Training Administration in November 2005 that brings together local, state, federal, universities, community colleges, business, and industry to assist them in developing innovative approaches to economic and workforce transformation" (Southeastern Virginia Partnership for Regional Transformation, 2008, p. 1) resulting in successful globally competitive practices.

Workforce Development: "The preparation of a workforce that is able to meet the needs of existing and expanding businesses and industries throughout the Commonwealth, the needs of new companies attracted to Virginia, and the needs of companies in new and emerging disciplines" (Virginia Community College System, 2007, House Joint Resolution (HJR) 622).

Workforce Development Advisory Council: The group of advisors that provides assistance to the Vice Chancellor of Workforce Development in Virginia on the development and delivery of credit and noncredit services that enhance the economic climate in the Commonwealth (Virginia Community College System, 2007).

Workforce Development Services: The noncredit education and training department in each community college whose role is to provide programs and services to employers and employees to increase their competitive strength and increase their economic viability (Virginia Community College System, 2007).

Overview of Chapters

Chapter I presented the problem and questions of this study and underscored its significance. The emerging trends and issues facing Virginia's workforce and subsequent economic impact made it critical for the VCCS Workforce Development Services to move to the forefront to address employer and employee needs and to discover the appropriate course offerings and services to achieve success. There are sufficient background, predictions, and recent studies to indicate further research is necessary to bridge the service gap for the VCCS Workforce Development services. Analysis of workforce training services, Department of Labor statistics, economic factors and predictions, along with the strength of collaborative partnerships, made it imperative to

perform a quantitative analysis of specific demands for specific skills to prepare qualified workers. The researcher determined a survey of the workforce development leaders would yield credible and relevant results to add to current literature and serve as one of the catalysts for workforce development strategic planning for Virginia's workers.

The review of existing literature in Chapter II revealed similarities in the prediction and realization of the present economic environment, the emergence of technology in many occupations, the need for strong college and industry partnerships, and the diversity of needs for skill training (Mangum, 2008). The gap in research to this point is found in the lack of shared realistic training programs and strategies built on the predictions and emergence of highly technical advancements that create skill training needs across almost every occupational area for both the marginally and highly skilled workers (Freeburg & Hall, 2008). The literature links workforce development strategies to economic development and depicts community colleges as being the necessary first responders by nature of their mission and placement (Cohen & Brawer, 2001) within the state of Virginia and across the nation.

The details of the survey process are found in Chapter III with the findings delineated in Chapter IV. A summary of the findings, supported by the literature review and Department of Labor statistics, along with conclusions and recommendations for further research are found in Chapter V and provide a backdrop for goal and strategy planning beyond the Virginia Community College *Dateline 2009* strategic goals.

CHAPTER II

REVIEW OF LITERATURE

The Workforce Development Services leaders in the Virginia Community College System (VCCS) continuously plan to provide training and services that prepare the diverse workforce in their state for emerging high growth, high demand occupations, industry's use of advanced materials and processes, and the latest in technological processing, interfacing, and training techniques (Nespoli, McDonnell, & Bowman, 2005). To gain insight into the paths that led to the current trends and issues that face the 22 workforce development leaders in the 23 community colleges in Virginia, a solid foundation of literature from the past decade was needed. The study of the literature was focused on: the emerging high growth, high demand occupational workforce skill needs, current training and development programs and services, emerging training and development trends and issues along with the shifting and changing trends in workforce needs, and the partnerships necessary to develop resources and opportunities for the present and future workforce. The VCCS workforce development leaders are reviewing their past five years' trends and issues and moving to adapt to the current and future training needs of Virginia's workforce. These actions also involve striving to understand the changing increases and declines in the job market, in required occupational expertise, and in alternative training methods needed to guide their strategic planning (Kasper, 2002). The identified need is to move forward beyond *Dateline 2009* (VCCS current five year plan), included in this literature review as a perspective on the strategies used to date. The VCCS workforce development leaders are constantly challenged to create strong partnerships, move beyond traditional methods and strategies, and provide training

and services that develop regionally and globally competitive employees and employers (Friedman, 2005).

The literature review chronicles the background and history of the relationship between workforce training and economic development (Cohen & Brawer, 2001). It considers changes that have occurred so as to stimulate thoughtful deliberation by workforce development leaders regarding continuing strategic evolutionary practices that meet current and future needs (Mangum, 2008). Collaborative and individual efforts must take into consideration the occupational growth and decline areas, the most productive industry and collegial partnerships, and economically efficient training provisions leading to skilled employment (Kirsch, Braun, Yamamoto, & Sum, 2007). By 2014 the Educational Testing Service research shows that 47% of the jobs will require advanced skills and that focus must increase on learning and skill development in order to improve economic stability (Kirsch et al., 2007). Goals set by the VCCS in 2003 targeted an 80 percent increase in numbers served in the Commonwealth between 2003 and 2009 and must be re-evaluated (Virginia Community College System, 2003). The literature to date advocates for new and higher objectives that include embracing the creation of programs that deal with the diversity of population, skills, advanced technical processes, and workforce composition in a regionally and globally competitive economic environment (Friedman, 2005).

Review of the literature concentrates on the advanced training techniques, learning infrastructure, and a multitude of customized collaborative services needed for employees in the VCCS regions, not just in terms of numbers served, but in relationship to emerging trends and issues (Friedman, 2005). The challenges defined are those

inherent in providing technical training strategies with the supportive resources and services necessary to all who need access to them (National Center on Education and the Economy, 2006). Federal government initiatives focus on the need for strong collaborative efforts in an increasingly diverse workforce and market (National Center on Education and the Economy, 2006), an unparalleled and insatiable need for state-of-the-art training tools and methods, and an economically volatile environment (Mosier et al., 2006).

The findings leading to recommendations that emerged from both the literature review and the actual survey research were geared toward those recommendations that were immediately transferable to real-world goals and strategy-setting approaches. The literature used in this research indicates the necessity of workforce development programs and services that contribute to the creation of learning technology resources and strongly interfaced knowledge transfer services using the latest technology to provide broad access both regionally and globally (Friedman, 2005). The VCCS leaders must expand their vision to include flexibility in allowing for the anticipation and incorporation of fast-paced technological changes so as to strengthen their mission of nurturing and developing highly qualified workers with significant contributions to economically competitive results (Wagner, 2006).

Workforce Training and Economic Development Emergence

The literature review begins with the evolution of the relationship between workforce training and economic development. The literature is rich with the historical background and its significance in the foundations of the building of community college systems. From the basic foundations community colleges became influential in workforce

education growth through the war years, through subsequent legislation providing funding sources, through increased and diverse population and cultural demands, and through progressive systems, strategies, and partnerships (Mosier et al., 2006). Moving into the twentieth century, the community college systems became further intertwined with economic development strategies to provide training and development in areas of high-valued occupations. In today's twenty-first century environment community college workforce development leaders face even greater challenges to prepare employees and employers in an economic environment that is both volatile and in rapid transition due to ever-changing technological advances (Mosier et al., 2006). The first section of this literature review follows the evolution of the relationship between the development of an educated workforce and its impact on the economy.

Background and Significance of Workforce Education

History shows that the community college educational commitment and focus strongly impacts and is impacted by political, legal, cultural, and economic events and is the primary educational institution that responds to the needs dictated by those events (Kasper, 2002; MacAllum, Yoder, & Poliakoff, 2004). Prior to the formal institution of community colleges, the earliest forms of workforce education in America at the time of the American Revolution were threefold: (a) structured apprenticeships, (b) parental training in family trades, and (c) learning by imitating - all of which endured until the early 1900s (Monacott, 2003). In the twenty-first century, workforce development is defined primarily as noncredit education and training that provides access to programs and services for employers and employees to increase their competitive strength and economic viability (Virginia Community College System, 2007).

The community college system was founded on the need for educational access and occupational preparation (Cohen & Brawer, 2003). It is necessary to look at the system's total evolution from the origins of the community college to the system it is today in order to understand the importance and significance of the workforce development services growth within the system as the cornerstone of the original mission (Kaine, 2006). The first public American two year college, Joliet Junior College, was founded in Illinois in 1901. Women were allowed access and were offered tuition-free courses necessary for teacher certification (Boggs, 2009). One additional focus was on providing courses that developed responsible citizens through access to lifelong learning opportunities (Cohen & Brawer, 2003).

In 1909, during a time of great economic and cultural change, David Snedden, an outspoken educational reformer, became the first Commissioner of Education for Massachusettes. He hired a former student, Charles Prosser, as Deputy Commissioner for Industrial Education and they set out to create legislation that would provide the first federal funds for vocational education (Monacott, 2003). The focus of vocational education was "dominated by preparation for economic roles" (Grubb & Lazerson, 2004, p. 3). The goal was for employees to capture jobs that would develop into lifelong careers (Kaine, 2006). A few years later their efforts resulted in the Smith-Hughes Act of 1917. This act provided federal funds for teachers and students in vocational programs for specific occupations such as agriculture, home economics, trades, and industries (Labaree, 2008). The United States Constitution does not specifically mention education and the United States Supreme Court does not acknowledge education as a "fundamental right" (Mayers, 2006). This was a milestone both in terms of funding and in the

controversial separation of vocational and academic curricula (Monacott, 2003). It was a return to the original concept of structured workforce education that would have the development of employability skills in specific occupational areas as its purpose, along with the cultivation of "a vision of lifelong learning" (Grubb & Lazerson, 2004, p. 92).

Community College Workforce Education Growth

The community colleges slowly began to increase their potential and influence throughout the 1920s and 1930s as the Great Depression caused major unemployment. The colleges adapted their mission and responded with programs to develop the workforce and increase their employment opportunities (Cohen & Brawer, 2003). Following World War II, the community colleges grew in size and number, largely due to funding that provided the returning servicemen free educational opportunities. The funds also provided others within the colleges' regional boundaries the first array of diverse adult continuing education courses, validating the importance of lifelong education for both employment skills and quality of life (Grubb & Lazerson, 2004; Kasper, 2002). It was during the post World War II period that the community colleges within each state began to form state systems to provide governance over state financial resources delegated to the colleges to ensure a "mature system developed as a central element of American education" (Cohen & Brawer, 2003, p. 31). One such system was founded as the Maine Vocational and Technical Institute (Maine Community College System, 2003) under the federal Servicemen's Readjustment Act known as the "G.I. Bill" (United States Department of Veteran Affairs, 2009). Signed into law after much contention on June 22, 1944, by President Franklin Delano Roosevelt, its purpose was to "help the veterans returning from World War II to prepare for reentry into the workforce" (United States

Department of Veteran Affairs, 2009). The seven community colleges in Maine, plus nine off-campus centers, grew in strength and offerings until they were officially established in 2002 as the Maine Community College System. To this day they have a decided emphasis on their workforce development mission and actively promote economic development through strong partnerships that provide funding to offer "free classes to new and expanding companies" (Maine Community College System, 2003). This type of system, unique in its financial approach, contributes strongly to the community college commitment to workforce education and economic development.

By the 1960s the *baby boomers* entered the college arena with increased and varied demands which again taxed the community colleges to adapt to a new *generational shift* (Kasper, 2002; Lucas, 1994) with a revised cultural approach to workforce preparation. Consolidation of state efforts to provide for both cultural and economic needs drove the creation of the third largest community college system in the nation, the North Carolina Community College System. It was created in 1963 with funding and direction from the State Board of Education and grew to a total of fifty-eight colleges throughout the state (North Carolina Community Colleges, 2009). Across the state line to the north, it was also very obvious during this period that a comprehensive system was needed to provide opportunities for learning that would lead to economic strength for the state of Virginia and its diverse regional needs (Virginia's Community Colleges, 2008). In 1966 Virginia's General Assembly created the Virginia Community College System. Throughout the state, twenty-three strategic sites (Appendix A) were selected, developed, and built. For over 40 years in the state of Virginia, 23 colleges, over 22 workforce development regions (J. Sargeant Reynolds and John Tyler Community

Colleges were combined in 2003) on 40 campuses have used their collective and shared strengths to provide workforce development training across the entire Virginia Community College System (Mangum, 2008). Growth has been a product of the strong system response to the need for many innovative credit and noncredit courses in alignment with the VCCS's mission. The mission has been consistent throughout the years: to provide training and services that prepare Virginia's cititzens for current and future jobs, thus contributing to the economic strength of the Commonwealth (Virginia's Community Colleges, 2008).

Across the Commonwealth many partnerships have evolved in order to meet the needs of communities and employers (Virginia's Community Colleges, 2008). Research on the partnerships shows many startups in response to the obvious needs in each of the colleges' regions (Wright, 2006). Though this study is specifically centered on the VCCS, it is noteworthy that the largest community college system, not just in the nation, but in the world, was created in California in 1967 (California Community Colleges, 2009). The California Community College system has a total of 110 colleges on 72 campuses and is directed by the Board of Governors under the California Education Code to "supply workforce training and basic skills education, and offer opportunities for personal enrichment and lifelong learning" (California Community Colleges, 2009). There are many things the VCCS workforce development leaders can share with and learn from the community college systems across the nation because some state systems have been closer to the emerging technologies and have had greater opportunities and state support to try new strategies and form productive partnerships. The evolution of workforce education from apprenticeships, family trades, and learning by imitating, has

progressed to the current organization of programs and services whose leadership has not forgotten its origins, while expanding its mission, to deliver a strong response to economic and competitive challenges (Colburn, Avery, McArdle, & Wood, 2006).

Community College Workforce Education in the Twentieth Century Economy

The community college systems grew and developed in the 1970s with increases in enrollments due to draft deferment incentives during the Vietnam War (Kasper, 2002). Further development of mission and potential was created in 1988 when the Nationwide Commission on the Future of Community Colleges directed the colleges to provide workforce training through partnerships with the employers in their locale (Kasper, 2002). At that time community college workforce development services were tasked specifically and formally at the federal level with the goal that had always been their primary mission: prepare students for employment that would positively influence local economic development opportunities (Kasper, 2002). The partnerships that began with businesses, researchers, economic development organizations, and other institutes of learning precipitated a fast-paced ascent into new realms of potential and influence in the development and delivery of workforce development services that "reflected changing values and attitudes" (Cohen & Brawer, 2003, p. 229). These changes toward occupational programs gave access to available and high-valued jobs (Mangum, 2008).

The late twentieth century introduced vastly new and innovative technology that demanded customization and adaptability on the part of those involved in preparing the population to work and communicate using highly technical methods and equipment (Mangum, 2008). Between 1989 and 1995 Microsoft introduced its operating system and Netscape went public bringing in the Internet and the ability to store and retrieve massive

amounts of information in a very short period of time (Friedman, 2005). By the beginning of the twenty-first century the enormous investments in technology allowed for cheaper computers, underwater cables, and world-wide communication on demand (Friedman, 2005). As history has shown, there is a strong relationship between workforce training and economic development that must be considered (Cohen & Brawer, 2003). All of the technological changes that occurred so rapidly continue to profoundly impact the delivery methods, services, and resources necessary to meet the needs of the current and future workforce (Kirsch et al., 2007).

Community College Workforce Education in the Twenty-first Century

Today's workforce development leaders must face emerging trends and issues and determine how best to serve the increasing need of the workforce for upgraded skills and advanced technology training in an economy that has scaled back the workforce and has very little funding for training efforts (Mangum, 2008). The infusion of funding for retraining efforts partially come from the enhanced version of the "G.I. Bill" (United States Department of Veteran Affairs, 2009) that gives education benefits to those, including their families, who are and have been active duty military following the September 11, 2001, terrorist activities (United States Department of Veteran Affairs, 2009). Funding is also found in the economic stimulus plan in the form of tax credits and inkind matches of hours of community service in exchange for tuition funding (Lederman, 2009). President Barack Obama's first address to Congress on February 24, 2009, included the request for commitment to "higher education or career training...from a...community college, four year college, vocational training, or apprenticeship" (The White House, 2009). The community college is once again at the crossroads of shifting

needs in providing flexible responses to demographic, economic, political, and cultural events. Since their origins, community college workforce development services have grown in stature, enrollments, and innovative program delivery as a positive working arm of colleges (Mangum, 2008).

The nation's community college workforce development leaders, including those of the VCCS, now find themselves at a monumental intersection facing major economic and technological challenges (Mangum, 2008). They must lead the Commonwealth through primarily networked communication as a largely virtual leadership team (Robbins & Judge, 2009). This is a challenge, not only for their own leadership team but for the leaders they are serving in the Commonwealth, with needs for additional and extensive study in this and future research (Robbins & Judge, 2009). The goals they make now must not only reach the VCCS workforce development teams but must impact the larger and more diverse number of employees and employers they serve in non-traditional settings (Mangum, 2008). The resources and services they provide must inherently contain flexible growth components that prepare workers to compete within critical occupational areas both regionally and around the world today and in the future (Mangum, 2008). The Commonwealth's employers and employees must be appropriately prepared to compete in a climate that is no longer stationery, office-bound, or regionally defined (MacAllum, Yoder, & Poliakoff, 2004). The community college workforce development focus is evolving from that of a structured regional approach to one of global scope as a "21st century engine of workforce and economic development" (MacAllum, Yoder, & Poliakoff, 2004, p. 18).

Emerging High Growth and Demand Occupational Skill Needs

Questions that guide this study seek to break through the broad statements of need for education and skill training and discover the actual skills needed for a successful, competitive workforce. The Occupational Information Network (O*NET) database contains a rich source of information to assist in identifying occupations and their characteristics and requirements. The O*NET Content Model (Occupational Information Network, 2009) focuses on realistic worker experiences and requirements in preparing training and development services. It has been used in research that developed job characteristics showing the strengths most likely to grow the U. S. economy and those most vulnerable and likely to be offshored in the 21st century workplace (Uhalde & Strohl, 2006).

A report prepared for the New Commission on the Skills of the American Workplace (National Center on Education and the Economy, 2006) lends credibility to the principles of innovation and competition found in the American Recovery and Reinvestment Plan that propose areas of strength for the growth of the middle class. The research shows that there are an estimated "14 million jobs at risk of being outsourced by 2015" (Uhalde & Strohl, 2006, p. 34; Bardham, Jaffee, & Kroll, 2004). While this appears to be a risk, it is also a challenge to find, and capitalize, on the opportunities in the global economy while minimizing the downside by focusing on the competencies and skills employers in the 21st century need in their workforce (Uhalde & Strohl, 2006). Looking at current measures of past performance from *Dateline 2009* strategic goals and adding the job characteristics from the O*NET model will assist the VCCS workforce development leaders to set goals that will provide successful transitions in a workplace

that requires a higher level of skill training in a changing demographic environment (Kirsch et al., 2007). (See Figure 2)

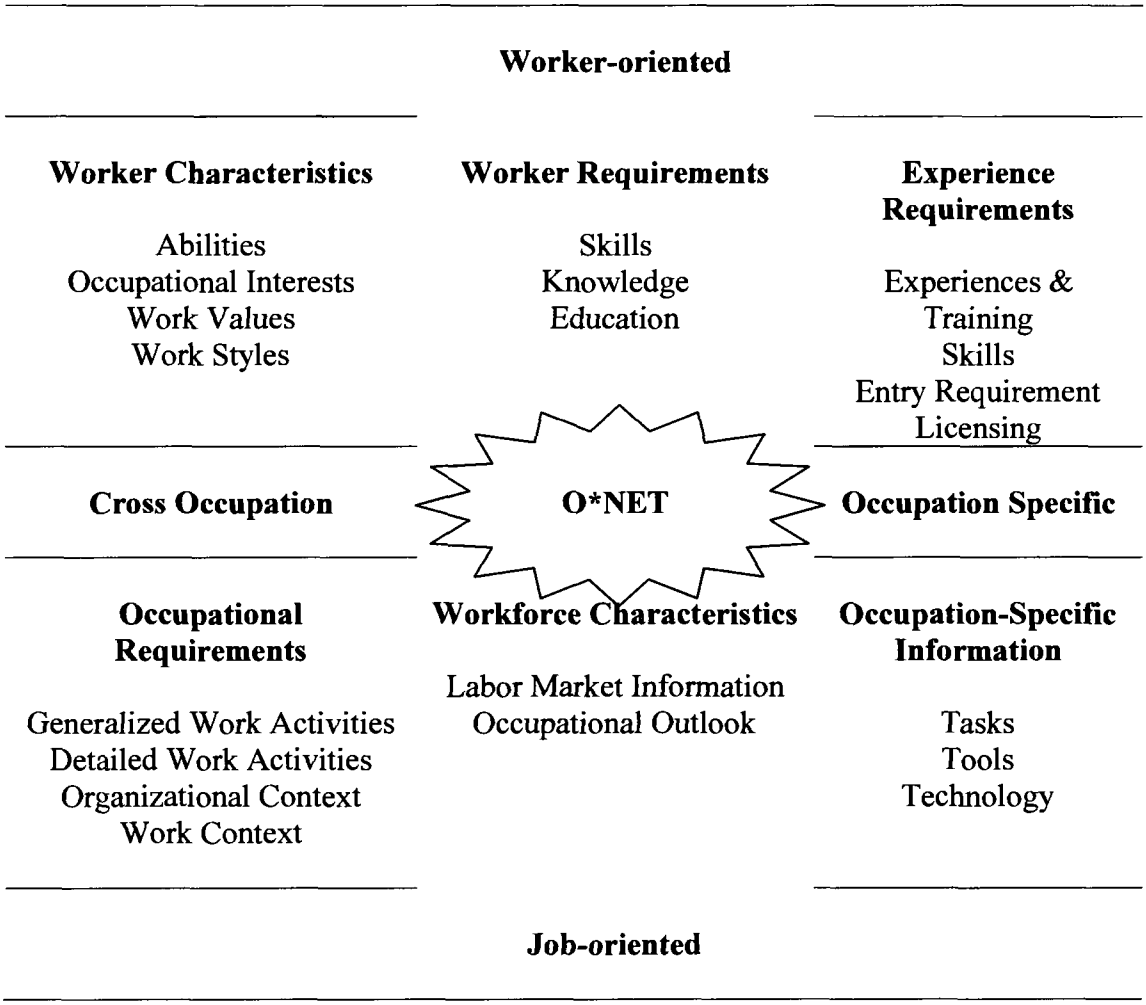

*Figure 2. The O*NET Content Model.* Provides an overview of "job-oriented descriptors and worker-oriented descriptors" (Occupational Information Network, 2009, p. 1). This model provides the structure for planning training and services that translate to workplace solutions that prepare workers for success in the 21st century global environment.

Using O*NET Data the National Center on Education and the Economy made some predictions for occupational attributes with the highest significance of strength: customer and personal service, decision making, problem solving, thinking creatively, and physical skills. These best support healthcare, marketing and sales, engineering, and technical and management analysis. Though the electronics and computer industry has a high probability of being offshored in many cases, this vulnerability can have a counteracting effect of regional innovation that pulls businesses together, and globalization that allows for production all over the world (Bardham, Jaffee, & Kroll, 2004). The negative threat of offshoring and putting jobs at risk can be countermanded by the strength of innovation and education if the community college workforce development leaders strategically plan for the next five to ten years, in collaboration with research institutions, industry partners, and funding sources, to include a national focus on: alternative energy and efficiency; updates to healthcare, education, and interconnectivity resources; and investments in science, research, and technology that lead to economic growth (Uhalde & Strohl, 2006; Mann, 2006; The White House, 2009).

The changes in the needs of the current and future workforce present challenges to workforce development divisions that need innovative practices that are far beyond merely counting individuals served (VanNoy, Jacobs, Korey, Bailey, & Hughes, 2008). The literature supports the need to identify creative opportunities together with strong partners for development and delivery of training and services based on well-researched technological advances and processes (National Center on Education and the Economy, 2006). These new progressive operational processes and findings will create new jobs, support current jobs, and increase "tradability of ideas and transfer of innovation" (Mann,

2006, p. 160). This catalyst for productivity growth will be a positive outcome as long as the "full scope of the challenge is realized" (National Center on Education and the Economy, 2007, p. 46). Employers and employees will be well prepared to succeed and compete in their local community and in the emerging global economy (Karoly & Panis, 2004).

Emerging Economic Challenges

With the economic slowdown it is critical that workforce development leaders in the community colleges maintain focus on the changes in occupational hiring patterns so as to direct training and service programs toward high growth, high demand occupations (Hockfield, 2009; National Center on Education and the Economy, 2007; The White House, 2009; United States Department of Labor, 2008). Purposeful plans leading to skill development, certification, and licensures in the projected job growth areas of professional and service-oriented occupational clusters will give the highest return on investment for employees, employers, and the workforce development leaders. As an example, over the next three years, the Department of Labor anticipates the largest growth in the professional groups of "computer and mathematical occupations, health care practitioners and technical occupations, education, training, and library occupations" (United States Department of Labor, 2008, p. 5; Occupational Information Network, 2009). This prediction allows workforce development leaders to evaluate their current offerings in context with future growth; collaborate with those organizations that are part of the professional growth areas; and determine the necessary skill needs. Declines in many facets of production and farming have already occurred and will continue as technology changes the way business is conducted (United States Department of Labor,

2008). The *Occupational Outlook Handbook* (2008-09) projects increases and decreases in the major occupational groups for 2006 through 2016. Matching the characteristics and requirements found in the Occupational Information Network (O*NET) with the Department of Labor employment predictions will allow workforce development leaders to more clearly identify gaps in current training and service offerings. Workforce development leaders must guide the development of programs and services that meet the needs of employment projections seen in Table 1.

Table 1

Percent change in total employment by major occupational group projected 2006-16

Occupational groups	Percent change
Professional and related	+16.7%
Service	+16.7%
Management, business, and financial	+10.4%
Construction and extraction	+ 9.5%
Installation, maintenance, and repair	+ 9.3%
Sales and related	+ 7.6%
Office and administrative support	+ 7.2%
Transportation and material moving	+ 4.5%
Farming, fishing, and forestry	- 2.8%
Production	- 4.9%

Note. Adapted from "Tomorrow's Jobs." United States Department of Labor. 2008-09. *Occupational Handbook,* Bulletin 2700, pp. 4-7. Washington, DC: United States Government Printing Office. *Public Domain.*

The top two occupational groups are somewhat broad and require more definition. By 2016 the largest group, professional and related occupations, will include a wide range of jobs in education, business, and government that are related to computer, mathematics, healthcare, and technical jobs adding up to a projected "3.5 million jobs" (United States Department of Labor, 2008-09, p. 5). Within the service occupations the range will also be very broad by 2016, from firefighters to food service to healthcare support, with the latter adding "2.1 million jobs" (United States Department of Labor, 2008-09, p. 5). The literature shows increased needs for both credit and noncredit skill training for employees and their employers due to the advanced technological processes in the major employment groups.

Based on the advanced nature of the education and training needed, goal setting recommendations also involve providing increased opportunities for workforce instructor development, facility and equipment purchases, and preparedness to create customized offerings using the best technology available (Kasper, 2002). The efficiency with which course development and scheduling is approached is important in this economic climate. It is no longer sensible to offer a multitude of courses that do not relate to the current and forecasted job market opportunities (VanNoy, Jacobs, Korey, Bailey, & Hughes, 2008). Instructors will be better able to sharpen their skills in the specific areas needed and not squander time and talent on multiple, broad-based training services.

The major occupational groups also show an increase in replacement workers needed due to large predicted retirements, movement to higher paying jobs, changing familial responsibilities, or return to school (United States Department of Labor, 2008-09). Overall increases in projected job openings are seen in Table 2.

Table 2

Number of jobs (millions) due to growth and replacement needs projected 2006-16

Occupational groups	Growth	Replacement	Total Openings
Service	4.88	7.32	12.2
Professional and related	5	6	11
Office and administrative support	2	4.9	6.9
Sales and related	1.5	4.5	6
Management, business, and financial	1.9	2.6	4.5
Transportation and material moving	.5	2.5	3
Production	1	1.3	2.3
Construction and extraction	0	2.3	2.3
Installation, maintenance, and repair	.8	1	1.8
Farming, fishing, and forestry	0	.4	.4

Note. Adapted from "Tomorrow's Jobs." United States Department of Labor. (2008-09). *Occupational Handbook,* Bulletin 2700, pp. 7-8. Washington, DC: United States Government Printing Office. *Public Domain.*

The VCCS Workforce Development Services, like the nationwide community college system, provide the most workforce training and services in each of their locales by nature of their location and affordable cost structure (National Center on Education and the Economy, 2006). At this juncture in their mission and planning efforts, the choices the VCCS workforce development leaders make must be based on the

occupational research that shows the high demand job clusters and the emerging techonological skills needed to successfully perform those jobs. A globally competitive environment and a positive economic base in the Commonwealth of Virginia will be the result of training and services provided through the "skilled, strategic leadership and coordination with regional economic development efforts" (National Center on Education and the Economy, 2006).

Virginia Community College Training and Development Programs and Services

Virginia's Community College workforce development leaders currently provide courses, training, programs, and services for the communities in their regions. They provide flexible customized training opportunities, skill training, certifications, and credentials to employees and employers in the Commonwealth (Virginia Community College System, 2007). Currently the programs offered throughout the VCCS fall under the general categories of:

- Apprenticeship related instruction
- Career readiness certification
- Customized programs and services
- WorkKeys® profiling and testing
- Career Pathways
- Job skills training program
- Occupation specific certification testing
- High tech testing, e.g., Prometric, Pearson Vue, etc.
- Tech Prep
- Government and military programs

- Maritime programs and taskforces
- Tradesmen continuing education
- Healthcare continuing education
- Grants to provide high end technology training and to provide corporate partners with a means to compete and emerge from the economic downturn
- VCCS sponsored *Virginia Education Wizard* web space

(Arnold, Betz, McGinty, Terrell, Wesley, & Fast, 2009; Virginia Community College System, 2008)

The foundation for VCCS workforce training programs and strategies has been *Dateline 2009,* a guide that was developed in 2003 by the State Board for Community Colleges, the 23 Presidents and 22 workforce development leaders, the Chancellor, and the Vice Chancellor for the VCCS (Virginia Community College System, 2003).

Dateline 2009

It is important to look at the current VCCS strategic plan, *Dateline 2009*, which includes seven major strategic goals whose outcomes have been measured and updated each June and July at the end of the fiscal year. The *Dateline 2009* goals were:

1. Enrollment
   The VCCS must serve at least 16,000 new students by 2009.

2. Workforce Training
   The VCCS will provide workforce training programs for 225,000 individuals annually, an increase of nearly 80 percent – from 125,000 to 225,000.

3. Graduation, Retention and Placement Rates
   To expand its capacity and provide greater economic opportunity, the VCCS will rank in the top 10 percent in the nation with respect to graduation, retention and job placement rates.

4. Transfer to 4-Year Colleges and Universities

The VCCS will triple the number of graduates who successfully transfer to four-year colleges and universities.

5. Affordable Tuition
   VCCS tuition will not exceed half of the average cost to attend a public four-year institution in the Commonwealth.

6. Dual Enrollment with High Schools
   The VCCS will triple the number of high school students who take college courses and receive college credits, raising the number from 14,000 to 45,000.

7. Private Funding
   The VCCS will become more proactive in securing private support to ensure its capacity to respond to the needs of the Commonwealth. Collectively, the VCCS foundations will double their holdings, moving from $75 million to $150 million. (Virginia Community College System, 2003)

The importance of noting the current *Dateline 2009* VCCS strategic plan as part of the literature in this study is that it is largely statistical and bottom-line oriented in specific categories with workforce training being slotted into one of those categories. The details and strategies to reach those goals were left to each college's workforce development department (Virginia Community College System, 2003).

In measuring VCCS success, it is crucial to take seriously the cautions issued by the Educational Testing Service (Kirsch, Braun, Yamamoto, & Sum, 2007) from a recent national survey concerning the factors by which performance is measured. The measurement factors are changing due to demographics, illiteracy, and the need for additional higher level skill training (Kirsch et al., 2007). Feedback from the Rand survey commissioned by the Department of Labor in 2004 also depicts the reality of the current situation as one in which traditional measurements are becoming blurred and merged and the implications of key changing factors must be identified by workforce development leaders (Colburn, Avery, McArdle, & Wood, 2006; Karoly & Panis, 2004). In the *Dateline 2009* (Virginia Community College System, 2003) strategic plan, workforce

training is a separate line item with separate service goals. The reality is workforce training is evolving into a major contributor in each of the overall VCCS goal areas. Leaders of the VCCS workforce development services must be concerned with the "varied needs noncredit workforce education must meet, the extent to which the organizational approaches of community colleges have kept pace with this growth, and the ability of noncredit programs to provide students with a valuable recorded outcome" (VanNoy, Jacobs, Korey, Bailey, & Hughes, 2008, p. 5). Currently, many workforce development programs and services in each of the colleges in the Commonwealth contribute to the success of the *Dateline 2009* strategic goals. These contributions include, but are not limited to:

1. Enrollment
   Many workforce development divisions broker academic credit classes to military, government, and corporate clients (Tidewater Community College, 2008).

2. Workforce Training
   The VCCS workforce development division not only exceeded the goal of 225,000 by "serving 234,000" (Virginia Community College System, 2008), but they also provided new programs, increased partnerships, and created new apprenticeship opportunities (Virginia Community College System, 2008).

3. Graduation, Retention and Placement Rates
   Workforce development divisions across Virginia contributed to the numbers of students served along with a percentage of earnings to the academic division (Mangum, 2008) and provided stepping stones to both academic and occupational opportunities (Grubb & Lazerson, 2004).

4. Transfer to 4-Year Colleges and Universities
   Workforce development instructors assisted students with transfer opportunities to colleges and universities in a variety of ways including SAT (Scholastic Aptitude Test) preparation courses (New River Community College, 2008), ESL (English as a Second Language), and TOEFL (Test of English as a Foreign Language) programs (Northern Virginia Community College, 2008; Tidewater Community College, 2008; Virginia Western: The Community's College, 2008).

5. Affordable Tuition

Each workforce development division is an earning arm of the college and provides support over and above operating costs. This increases access and assists the college in maintaining affordable tuition rates (Mangum, 2008) even when state funding is cut.

6. Dual Enrollment with High Schools
   Workforce development directors work with their regions' high school superintendents and counselors to set up programs for assessing high school students and assisting them in passing the SOLs (Standards of Learning) needed to graduate by using the Governor's Career Readiness Certificate initiative (Kaine, 2006) as a preparation tool. Workforce development instructors work closely with the schools to provide follow-up training to students who score low in practice tests (Virginia Community College System, 2009).

7. Private Funding
   Workforce development division leaders forge strong relationships with corporate partners and gain access to training facilities and resources (Virginia Community College System, 2009) that are vital to employee development. Those partnerships often evolve into donor opportunities for the college's foundation (Tidewater Community College, 2006), use of valuable equipment, or access to subject matter experts within the company (Automotive Technology@TCC, 2008).

This survey research provides feedback on additional and increasingly vital contributions of the VCCS workforce development divisions as an integral part of the VCCS goal setting process, in all areas, for the next five year strategic plan. Goals and objectives must be set that measure more than numbers served. They must include strategic efforts that are based on technological advances and processes that support employment and an increase in productivity and economic growth (National Center on Education and the Economy, 2007).

The VCCS workforce development leaders recently provided feedback to the Vice Chancellor on FY09 customized training highlights. They were required to answer three questions:

1. What are some of the creative ways you have customized programs and services to meet business needs?

2. In what ways have you served high demand, high growth, and high wage jobs and businesses in your service area?
3. How have you partnered with local government and community groups to improve the workforce in your community?

The aggregate results from the 22 VCCS workforce development leaders in the 23 community colleges in this additional survey from the Workforce Advisory Council program committee contributed to this research as a benchmark for current training and development services provided by the VCCS Workforce Development Division (Arnold, Betz, McGinty, Terrell, Wesley, & Fast, 2009).

The VCCS workforce development leaders sent out a three question electronic survey to their corporate partners between June, 2008, and March 2009, to determine satisfaction with the services their department provides in the area of customized training. The questions were:

1. Please rate your satisfaction level with Community College's customized training and/or services used within the past year.
2. Overall, please rate your satisfaction of how well the training met your objectives.
3. Would you use Community College's customized training and/or services again?

The results were compiled by the VCCS Workforce Services Office to reflect the overall satisfaction with customized training across the Commonwealth. The survey was a Likert scale survey with ratings of satisfaction from five (very satisfied) to 0 (Very Dissatisfied). The VCCS customized training and/or services within the past year were rated as follows: 72.9% very satisfied, 24.3 satisfied, 1.7% neutral, and 1.1% dissatisfied. The overall satisfaction with meeting objectives was rated as: 66.7% very satisfied, 27.8%

satisfied, 4.4% neutral, and 1.1% dissatisfied. In response to the third question 97.8% said they would use the community colleges' customized training and/or services again. Though the numbers do not reveal the specific content relevance, the level of satisfaction and random comments allowed evaluation of the colleges' current positioning in dealing with corporate training needs.

Another community college five year strategic planning process was preceded by a request to corporate partners to join ten different industry clusters identified in the research as having high demand workforce needs. They were invited to community college focus group meetings to discuss emerging trends, changes in skill needs, and changing workforce composition and worker skill needs. The aggregate results of these industry cluster group meetings provided additional insight to this researcher's workforce development leaders' survey results as it became clear that each of the groups was depending on the community colleges to provide affordable training and testing services that allow them to hire and retain employees that will add to their image of competitive excellence (Bryant, Landon, & Summers, 2009).

The programs and services currently being offered at each of the VCCS community colleges, along with the level of satisfaction reported by their business and industry partners provided a more comprehensive view of the current status of services in the VCCS Workforce Development Services. The Workforce Advisory Council program committee report along with the literature suggests that all programs need to be enhanced by the use of an appropriate technological component that positions the increasingly diverse student body to be able to provide added value in their regional workplace that will allow them to interconnect and compete globally (Mann, 2006).

Shifting and Changing Trends and Issues in Workforce Development

The primary issues that create immense challenges in developing tomorrow's workforce are competition, innovation, and the funding to meet those demands (National Center on Education and the Economy, 2006). The literature defines innovation as a constant focus on new and unique creative process and product opportunities that translate into action and education as the "key to long-term success in global competition" (Uhalde & Strohl, 2006, p. 11). Economic growth is dependent on creatively tailoring the use of current resources to produce improved or new ideas, services, or products that can be applied locally and globally (Romer, 2007). The president of the Massachusetts Institute of Technology (MIT), Susan Hockfield, provides a positive perspective on the emerging workplace trends and issues in stating, "We stand poised for a revolution in the creation of new technologies" (Hockfield, 2009, p. 1).

Economics and Innovation

Given the current state of the economy and the highly political and economic debates surrounding President Barack Obama's stimulus plan, the community colleges find themselves poised, once again, as the bridge of access for delivery of customized and flexible programs and services that provide skilled application (Hoyt & Wickwire, 1999). These resources provide training using the most current research technology leading to long term successful competitive advantage for the Commonwealth's employees and employers. The two primary challenging issues - innovation and competition for today's workforce - are found repeatedly in some of the general principles of the President's "American Recovery and Reinvestment Plan" (The White House, 2009). These include:

1. Doubling the production of alternative energy in the next three years.

2. Modernizing more than 75% of federal buildings and improving the energy efficiency of two million American homes, saving consumers and taxpayers billions on our energy bills.
3. Making the immediate investments necessary to ensure that within five years, all of America's medical records are computerized.
4. Equipping tens of thousands of schools, community colleges, and public universities with 21st century classrooms, labs, and libraries.
5. Expanding broadband across America, so that a small business in a rural town can connect and compete with its counterparts anywhere in the world.
6. Investing in science, research, and technology that will lead to new medical breakthroughs, new discoveries, and entire new industries.

All of these goals will require innovative research and processes across broad constituencies followed by experimental and pilot programs (MacAllum, Yoder, & Poliakoff, 2004). Funding and innovation, along with strong partnerships, will lead to program development and delivery resources that provide education and skill training for real world competitive advantages in the workplace.

Competition

To be operationally, economically, and competitively successful the research and process findings must lead to education and skill training that transfers to real world workplace solutions (The White House, 2009; Kaine, 2006; Kirsch, Braun, Yamamoto, & Sum, 2007). While political and economic analysts propose education and training as a means to successful regional and global competition, this remains a theoretical proposal until the joint forces of university research, investor networks, industry partnerships, and

college academic and training programs "create the critical mass necessary to stimulate economic activity" (Uhalde & Strohl, 2006, p. 48). The results of this innovation lead to real world applications. Community college workforce leaders must look at the knowledge, skills, and applications necessary to educate and train workers to take advantage of the opportunities that exist and meet the challenges in an economy that is increasingly "interconnected and globally competitive" (Uhalde & Strohl, 2006, p. 47).

Beyond *Dateline 2009*

In striving to create goals for the next five years, creativity in process, delivery, and assessment is critical to preparing today's diverse population for the workplace (Mangum, 2008). It is necessary to cross traditional boundaries for the emerging population which may or may not have a high school or college degree and may or may not be inclined to seek a degree (Cohen & Brawer, 2003). Incumbent, dislocated, return-to-work employees have a very diverse set of training and development needs (Grubb & Lazerson, 2004) for specific skills, specific occupations, or positions that may then be available to them. There are also those who are disabled, non-English speaking, under-prepared, and semi-literate that are part of the service population (Beebe & Walleri, 2005).

The literature indicates that goals must be set for workforce training that range from brokering credit courses to developing many new corporate partners in order to reach the outer limits of diversity, advancing technology, and the changing job market (Mangum, 2008; Mosier et al., 2006). The literature also reports the need for collaboration with high school programs that lead to a "career talent pipeline" (Batelle Memorial Institute, 2005, p. 5). It also stresses the importance of programs that lead to

transfer to college, while partnering with corporations and other educational institutions for financial and instructional resources (Wright, 2006).

Community colleges have a wide-ranging role in their workforce development mission to provide job-specific training and certificate programs customized to meet the needs of employees and employers in their locale (United States Department of Labor, 2008-09). As *Dateline 2009* (Virginia Community College System, 2003) approaches its final accounting, new goals must be set with a vision toward the future, and new strategies must evolve that include collaborative roles, methods, and accountability beyond present offerings and numbers served. The literature continually refers to the test that workforce leaders now face in moving forward from this point to the next shift (Kasper, 2002). The issue of linking education to innovation and growth involves educating the consumers and businesses, partnering with those in the financial sector willing to take risks on new ideas, working with partners in the industry to pilot new methods, and using all the acquired information and resources to train the workers of the 21st century (Mann, 2006). All of this must be part of the community college workforce development leaders' process of planning forward to bring employees in the Commonwealth to the high level of expertise needed to be locally and globally competitive.

There is a gap in most of the literature in dealing with the concept of bringing the trainers in on the ground floor of research and development, so they are infused with the purpose, processes, and benefits that come from their ability to give real world access to the skills needed in the workplace. Mangum (2008) refers to this as a return on the VCCS investment when funding is allocated for providing education and training services for

those delivering training for fast growing or new occupations. In the past, workforce development instructors have usually been selected because they are the subject matter experts in their field. The challenge in moving beyond the strategic goals of *Dateline 2009* is to contribute to Virginia's economic growth by aligning these professionals, who will be tasked with delivering the next generation of workforce development goals and action plans, with the expectations, needs, and demands of the region's corporate partners, academic counterparts, and noncredit students so as to remain a flexible and responsive provider of highly valued programs and outcomes (Freeburg & Hall, 2008; Mangum, 2008; VanNoy, Jacobs, Korey, Bailey, & Hughes, 2008).

Community College Partnerships in Workforce Training

The ability of the community college workforce development divisions to provide training tailored to current and future workforce needs is only possible through strong partnerships with the educational institutions, investor networks, and businesses and industries in their regions (Mann, 2006; United States Department of Labor, 2008). True partnerships involve multiple levels within organizations and collaboration to achieve mutual objectives in response to specific market and industry needs (Wright, 2006). To initiate productive partnerships the workforce development leaders must be: (a) active members of their own VCCS leadership team, (b) bridge-builders between their workforce development division and initiatives within the Commonwealth, and (c) well known participants with regional and national education, economic development, and industry counterparts. Understanding the inner workings and strengths of partnerships today is the first challenge to creating successful, strong, and working cohorts that will be instrumental in achieving the workforce development mission and goals (Wright, 2006).

Partnerships within the VCCS Workforce Development Leadership Cohort

The VCCS workforce development leadership cohort is both a virtual and a physical network. Members work together constantly via their communication networks and face-to-face meetings on a consistent quarterly basis. The extent to which they support and respond to their division needs using all communication options is the crucial key to their success in fulfilling their mission and goals. In order to strengthen and align their relationships and resources, they share the results of grant awarded projects such as the Institutes of Excellence.

> As recommended by the House Joint Resolution, HJR 622, the Joint Subcommittee to Study Noncredit Education for Workforce Training in the Commonwealth, the Virginia Community College System is directed to establish one or more Institutes of Excellence responsible for development of statewide training programs to meet current, high demand workforce needs of the Commonwealth. (Virginia Community College System, 2007)

The group avoids duplication and each college works with other colleges within close proximity in the development and piloting of the programs and courses funded by the initiative. The Virginia Community College System goal (2008) is to use the funds (over $700,000 each year) to prepare employees for high-demand, high-wage occupations that are relatively stable and will add to future economic growth. Once the grant funded projects have been completed and have proven successful they are shared with all 23 colleges so the concept, materials, and resources are available to all without wasteful spending on duplication of time, efforts, and materials.

The VCCS community college workforce development leaders use their internal network to resolve issues, get answers, and expand access to initiatives that further their mission (Mangum, 2008). The challenge at this point is to engage and focus on pro-active leadership in a "new economy that requires a new strategic approach" (Penn State University, 2005). In the recent past, economic developers have supported a primary focus on K-12 education and suggested that adult education was a "nice thing to do but certainly not an economic imperative" (Gershwin, 2005, p. 7). Now, more than ever, it is important for community college leaders to effectively engage in their region's economic development plans and display their expertise by anticipating and responding to the need for support of "adult preparation as a tool that produces results" (Gershwin, 2005, p. 7). They must work to gain real workplace information on the challenges, technological changes, and skill demands that must be met to drive economic growth (Gershwin, 2005). The VCCS workforce development leadership cohort must now use the strength and synergy of their internal partnerships to successfully "maximize their labor market responsiveness" (MacAllum, Yoder, & Poliakoff, 2004, p. 5).

The essence of partnering for economic development results was studied by the Academy for Educational Development (AED) in 2004. Two of the colleges in the VCCS were chosen to be part of a group of 30 exemplary community colleges across the nation by the Community College Labor Market Responsiveness Initiative team. They were Mountain Empire Community College, a rural college in Big Stone Gap, Virginia, and Northern Virginia Community College, the largest in Virginia and the second largest in the nation (MacAllum, Yoder, & Poliakoff, 2004). They were chosen by a study of the features that appeared to be related to labor market responsiveness, some of which were:

(a) the conditions in which the college operates such as the community demographics and the perception of the community toward the college; (b) the conditions that exist within the college and over which it has the greatest control such as leadership and organizational structure; and (c) the conditions that exist based on the college's interactions with partners creating formal and informal relationships (MacAllum, Yoder, & Poliakoff, 2004). The importance and the value of being responsive to the needs of the labor market in each college's region is not just about being awarded a distinction; it is about the rewards to the employers and employees in their region by improving their ability to compete locally and globally (MacAllum, Yoder, & Poliakoff, 2004).

Partnerships in the Commonwealth

It is important to look at the current partnerships in the VCCS that are working to respond to the Commonwealth's labor market needs. In each of the partnerships the community colleges and the partnering entity focus on providing training and development services that lead to greater employment opportunities. The VCCS workforce development leaders consistently work to provide resources and direction to the partnership initiatives so as to create synergy, gain collective access to funding opportunities, and avoid duplication of efforts.

PlugGED In

The importance of partnerships is apparent in every aspect of the advancing technologies, the political focus, and the funding opportunities available today. Examples of current partnerships in the Commonwealth are numerous. Governor Timothy Kaine announced a Technology Jobs Training Program for GED candidates on February 17, 2009, called *PlugGED In* (Commonwealth of Virginia, 2009). Virginia's high school

drop-out rates between 2001 and 2006 in percentages seem low at first glance. However the 2001 – 2002 percentage of 2.02% actually equates to 10,505 individuals that are predicted to have less employment opportunities and a higher poverty rate (see Figure 3).

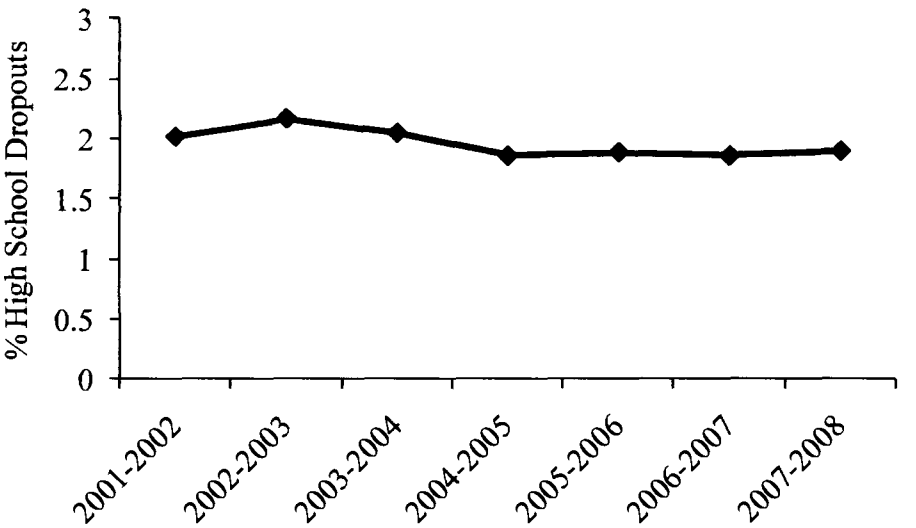

Figure 3. Percentage of Virginia High School Dropouts between 2001 and 2006. (Virginia Department of Education, 2008)

The partners in this initiative - Southwest Virginia Community College, University of Virginia, Russell County Public Schols, Northrup Grumman, CGI Inc., and Microsoft - have aligned to meet the challenge in southwestern Virginia of enabling "people and businesses . . . to realize their full potential" (Commonwealth of Virginia, 2009, ¶10). The *PlugGED In* initiative prepares high schoolers who have not completed their degree for entry level technology jobs at Northrup Grumman and CGI Inc., while they study to take their GED test (Commonwealth of Virginia, 2009).

SEVA-PORT

Another partnership that takes an active approach to bridging the gap between high tech research discoveries and the transfer and application of the required skills needed to make them a reality in the workplace is the Southeastern Virginia Partnership for Regional Transformation (*SEVA-PORT*). This partnership includes very diverse organizations that include economic development, research and education, and all avenues of industry and service, "over 35 senior-level leaders" (Southeastern Virginia Partnership for Regional Transformation, 2008, ¶ 2). This strong regional partnership is changing the paradigm that until recently viewed the "job training community as largely isolated" (National Center on Education and the Economy, 2007, p. 46). It was perceived to be separate from the economic development and growth forces and academic research institutions. This was partly due to underfunding and partly due to a narrow vision of the strength of adult skill training and education for a "large number of people who could be making a much stronger contribution to their personal and community economic well-being" (National Center on Education and the Economy, 2007, p. 46).

One of the goals of this partnership is to provide education and training to fill the need for skilled workers for the Transportation, Warehousing, and Distribution occupations that serve the cargo terminals in Norfolk and Portsmouth, Virginia (Southeastern Virginia Partnership for Regional Transformation, 2008). This partnership promotes economic development and counters some of the effects of the manufacturing and auto industry displacements by providing specific skill and attribute information to the workforce training and development leaders as the industry continues to flex and change.

Virginia Applied Technology and Professional Development Center

The Virginia Applied Technology and Professional Development Center (VATPDC) at Old Dominion University (ODU) is another example of a professional partnership in the Commonwealth that has recently included the Hampton Roads community college workforce leaders in its initiatives to assist students, employees, and employers to gain the developmental requirements necessary to compete locally and globally. The partners include many ODU enterprises such as their Professional Development Center, Technology Applications Center, Hampton Roads Procurement Assistance Center, the Frank Batten College of Engineering & Technology, and Project Lead The Way® for middle and high school students. The market focus is on all aspects of "industry, engineering services, government, and military professional development services" (Virginia Applied Technology and Professional Develpment Center, 2009, ¶ 1). This new partnership, along with others gained through feedback from the VCCS workforce development leaders across the Commonwealth will add many more partnership examples to the current body of literature that exhibit the strength of joining research institutions, community colleges, government organizations, and industry partners as true models of defining innovation (National Center on Education and the Economy, 2007).

Workforce Investment Board

The Workforce Investment Act of 1998 created the Workforce Investment Board (WIB) to "consolidate, coordinate, and improve employment, training, literacy, and vocational rehabilitation programs" (U. S. Department of Labor, 1998, p. 1). The partners that make up the WIB are the Governor, State Legislators, and representatives from

business, city and county, labor, community college workforce development, community-based organizations, the One Stop service centers, economic development, and the Virginia Employment Commission (United States Department of Labor, 1998). Of the 22 VCCS workforce development leaders, 14 serve on the WIB and work closely with the One Stop service centers to provide a coordinated, non-duplicated response to workforce training needs for dislocated workers, emergency assistance, labor and management support, and ongoing training provisions for job seekers and for the staff as needed (Arnold, Betz, McGinty, Terrell, Wesley, & Fast, 2009). Only three of the 22 workforce divisions do not have a presence in the One Stop service centers. The other 19 workforce divisions provide full or part time staff to assist with the assessment and training activities (Arnold, Betz, McGinty, Terrell, Wesley, & Fast, 2009).

The skill training needs for workers that are new, dislocated, or returning to work have been evolving and the WIB partnership is an important consideration in the development of resources that enable the One Stop clients to successfully pursue job opportunities that will improve their economic status. Recently the responsibility for this partnership has been transferred to the Virginia Community College workforce leaders but the already established strength of the partnership allows the workforce services to continue without interruption and seamlessly to those who need them (Virginia Community College System, 2008).

Partnerships in the Nation

The community college workforce development leaders must focus on emerging trends and issues that affect the economy of their region, their entire state, the nation, and the world. To do this they need resources that have access to the politics, finances, and

advocacy partners locally, statewide, and across the nation. These resources are found in the multiple associations that have been organized for the support and growth of the community colleges and their focus on career and technical education that leads to lifelong learning and an economically sustainable and responsible lifestyle.

American Association of Community Colleges

The American Association of Community Colleges (AACC) was founded in 1920 as a communication link for community colleges across the nation. Workforce development leaders have access to best practices by their peers across the country. The organization provides advocacy resources, news from colleges across the nation, and conference opportunities for networking and ongoing professional leadership development (American Association of Community Colleges [AACC], 2009). This partnership is a "national voice for community colleges" (American Association of Community Colleges [AACC], 2009). The community college workforce development leaders have a valuable resource in their partnership with the AACC as they plan for the future.

National Research Center for Career and Technical Education

Another very advantageous partnership for the community college workforce development leaders is the National Research Center for Career and Technical Education (NRCCTE). The center provides professional development opportunities and resources for the instructors and trainers employed by community colleges across the nation. One of the goals of the NRCCTE is to "improve the preparation and professional development" (National Center on Education and the Economy, 2007, p. 3) of those who are delivering workforce development programs. Until the early 21st century,

expectations for workforce development trainer skill development were not clearly defined (National Center on Education and the Economy, 2007).

In 2003 a study was funded by the NRCCTE to meet the new challenges that face both instructors and learners. The study focused on community colleges where five categories of needs were identified: (a) technology leading to globalization, (b) change of design and learning environment, (c) diversity of the workforce composition, (d) fast-paced changes to structure and norms, and (e) the need for flexibility and initiative in the approach to learning (Wolff, 2003). As the workforce development leaders plan for the programs and services they need as a result of the ongoing emerging trends and issues, the NRCCTE study recommends that the deliverers of these programs and services be an integral part of those plans (Wolff, 2003). It also recommends further study by community colleges that will assist in discovery of the emerging high demand workforce needs and ways they can "implement collaborative, project-based learning approaches" (Wolff, 2003, p. 56).

National Council for Continuing Education and Training

The National Council for Continuing Education and Training (NCCET) is an active partner with community colleges across the nation that provides up to date information on new trends, helps maintain a professional network, and gives access to national leading edge programs (National Council for Continuing Education, 2008). The NCCET sponsors certification and credentialing and is actively involved in education and training policy development (National Council for Continuing Education, 2008). The community college partnership with the council can be a source of guidance as resources for evolving work skill needs are developed. As active participants in policy

development, the NCCET can keep community college workforce leaders aware of the changing trends as they make their strategic plans.

Workforce3One

Workforce3One is a web space sponsored by the U. S. Department of Labor/ Employment and Training Administration (ETA) that offers "workforce professionals, employers, economic development, and education professionals a dynamic network featuring innovative workforce solutions" (United States Department of Labor, 2009). The web space offers online learning events, resource information, and tools to develop strategies that enable individuals and businesses to be successful in the 21st century economy.

The web site also serves as a share point for Workforce Innovation in Regional Economic Development (WIRED) initiative approaches (United Stattes Department of Labor, 2009). This initiative, which began in 2006, joins local, state, federal, university, community college, business, and industry leaders in developing globally competitive strategies and processes. It provides an investment of federal and regional funds as a catalyst to support new technological approaches and trends that have emerged in the workforce development arena. The WIRED initiative allows the workforce development leaders to model "demand-driven and regional economic development strategies at work" (United States Department of Labor, 2006).

The Department of Education

The Department of Education (DOE) provides the workforce development leaders with a credible statistical reference base in their planning for programs and services necessary to meet the emerging trends and issues facing the employers and employees

they serve (United States Department of Education, 2009). The resources of the DOE go beyond the statistics to instructional resources, grant funding, and a connection to all of the most relevant information emerging from the latest federal, state, and local initiatives (United States Department of Education, 2009). The literature stresses the importance of an active participative leadership team, commitment to the success of the working initiatives, and efficient use of resources and networks comprised of regional and national educational peers, economic development, and industry counterparts for successful planning for the 21st century's ever-changing learning and working environment (Wright, 2006).

Summary of Current Partnerships

The review of the partnerships within the VCCS, across the state and the nation, and at the overall organizational support level depicts the impact and strength of the community college workforce education process and the core of its growth and strength from the early 1900s through today. At every level the workforce development leaders must continue to maintain, strengthen, and expand their partnerships and cooperative strategies. In this manner they will be able to take full advantage of the resources, funding, and advocacy necessary to their mission and commitment to the success of the employees and employers in the Commonwealth (Wright, 2006).

Summary

The review of literature on the emerging trends and issues facing the workforce has shown that for the past ten years there has been considerable discussion on the evolutionary changes in business and industry. The community college workforce development leaders have planned and set goals to meet the needs of their regional

employees and employers. The history of community college workforce services has been one of access, flexibility, and adaptability to the political, economic, and cultural pressures at each important intersection in workplace shifts. Those same characteristics must be engaged at this shift change to insure training and education strategies are employed to meet the challenges of the present economic environment, the emergence of technology in many occupations, the need for strong college and industry partnerships, and the diversity of needs for skill training (Mangum, 2008).

The literature indicated the need to develop specific, realistic training programs and strategies that built on the predictions and emergence of highly technical advancements. Technical skill training needs for each occupational area must be defined for all workers whether they be marginal or highly skilled workers (Freeburg & Hall, 2008). By nature of their mission, community college workforce development leaders are immersed in their region's business and industry environment. The workforce development leaders maintain mutually beneficial partneships with industry leaders who need their services and who can assist in developing the resources necessary to realistically and dynamically meet those needs (Wagner, 2006).

Due to active industry involvement the VCCS workforce development leaders are the participants chosen to answer the questions that provide depth and a foundation for strategic planning for successful economic activity through innovation and action (Mann, 2006). The answers they provided from their knowledge, experience, and expansive partnerships filled the gap between reflection on the emerging trends and issues and the actions needed to add real-world, specific, innovative training and development resources to present offerings so as to strategically place their regional workforce in an

economically viable position. Historically, community colleges have been the first responders in meeting workforce needs and providing innovative opportunities for learning that have propelled economic growth (Mangum, 2008). Given the 2009 economic environment the community college workforce development leaders must direct their response to providing programs and services that lead to skill development in the occupational areas that show promise and growth due to consumer needs and funding (Hoyt & Wickwire, 1999). Their survey feedback is an important indication of the trends and issues facing the employers and employees in the Commonwealth of Virginia (Hoyt & Wickwire, 1999).

Chapter III describes the survey process and the analysis that leads to answering the questions of this research. The workforce development leader feedback is categorized according to the research goals and questions. Trends and issues that emerge from this study add value to strategic planning and realism and depth to the programs and services developed.

CHAPTER III

METHODS AND PROCEDURES

This chapter describes the methods and procedures used to identify the emerging workforce trends and issues impacting the VCCS Workforce Development Services. The population targeted for this research is the Virginia Community College workforce development leaders. Each of the participants is considered the best source to predict changes encountered in each of the VCCS regions. The survey was piloted and examined to insure efficiency, credibility, and a high rate of participation. The method of disseminating and then collecting the survey data from the workforce development leaders is presented in this chapter.

Population

The population chosen for this research was from the Virginia Community College System. The Workforce Development Services leadership group was selected by purposeful sampling from the 22 community college workforce development regions in the Commonwealth. This targeted population in the VCCS was important to the data collection so as to involve those most actively serving as an "advisory body to the Vice Chancellor of Workforce Development Services" (Virginia Community College System, 2007). This group of leaders most closely leads the process of providing programs and services necessary to meet the demands for "retraining and lifelong learning as the U. S. workforce tries to stay competitive" (Kasper, 2002). The interesting dynamics within this leadership group were the multiple programs and services they directed and the varying titles and positions they held in each of their colleges. The established reporting authority in each region "indicates a certain degree of influence and authority" (Arnold, Betz,

McGinty, Terrell, Wesley, & Fast, 2009, p. 3) within each of their colleges. The total number of workforce development leaders was 22 due to the partnership of two of the colleges – J. Sargeant Reynolds and John Tyler – that combine their operation under the Community College Workforce Alliance (CCWA). Of those 22 leaders 17 reported directly to the President and five of the leaders reported to a Vice President level administrator (Arnold, et.al., 2009). The goal was to receive 100% returns so as to obtain a complete view of the emerging trends and issues across the entire Commonwealth of Virginia from those actively involved in strategic planning.

Instrument Design

A survey was developed to answer the research questions to gather information on the emerging trends and issues impacting the VCCS Workforce Development Services and the employers and employees in the Commonwealth. The research goals were set to discover evolving high growth, high demand workplace skill needs, changing trends in current training and development services, emerging training and development trends and issues, and the necessary partnerships to develop resources and create regional advantages in emerging industries and technologies.

The survey was a combination of questions that were open-ended and formatted in the close-ended Likert-type scale (which is the most widely used and tested method in survey research [Dillman, 2000]). Opportunities for comments and specifics were given to clarify answers and give substance, depth, and consistency (Dillman, 2000) to the scaled survey items and to add the "opportunity to learn the unexpected" (Fowler, 1995, p. 59) where appropriate. The survey was structured to determine both the impact on workforce services and each college's ability to impact basic work trends (Freeburg &

Hall, 2008) already emerging, such as technology, global competition, and the many changes in workforce composition (Freeburg & Hall, 2008). The *Standards for Technological Literacy* (International Technology Education Association, 2007) were used as a basis for the impact survey points in Section III, Part B, on the shifting trends due to technology. The survey (Appendix C) was created in such a manner as to gain current, firsthand experience through clear questions with specific information that led to measurable detailed responses (Fowler, 1995) and to give the researcher a sense of perspective in reporting the workforce development leaders' feedback (Dillman, 2000).

The survey was pilot tested for clarity and ease of completion (Dillman, 2000) by an expert panel consisting of a Vice President of Community Education at Lonestar College in Tomball, Texas, Dr. Katherine C. Miller; a Dean of Community Education at Mira Costa College in Oceanside, California, Lynda Lee; and a Dean of Enterprise and Economic Development at Tacoma Community College in Tacoma, Washington, Dr. Lisa Edwards.

The group was asked to fill in a survey rating form found in Appendix D that provided critique through the following five questions:

1. Does the survey fulfill the data collection needs of the study as defined in the statement of the problem and the research goals?
2. Were the directions for completing the overall survey clear?
3. Was the layout of the survey easy to read?
4. Were the statements clear?
5. Were there any grammatical or spelling errors?

The feedback from the pilot test group provided valuable insight into clarity of content and the visual "symmetry across questions" (Dillman, 2000, p. 112). The organization of the survey, directions, and format suggested allowed for ease and efficiency in completion by a small knowledgeable group (Dillman, 2000; Miller & Salkind, 2002) with experience beyond the Virginia state boundaries. The survey was revised based on the feedback from the expert panel so as to remove any ambiguity (Miller & Salkind, 2002). Instructions, questions, and the format of Section II were edited based on the pilot test group's feedback to add clarity and avoid redundancy. Suggestions for questions and rewording were added to increase the strength and breadth of the actual survey feedback.

Data Collection Methods

Once the survey was tested and edited based on feedback from the pilot group, the survey was both emailed and mailed via U. S. mail, with a pre-paid, pre-addressed return envelope, to increase the percentage of returns (Miller & Salkind, 2002) to all 22 VCCS workforce development leaders. A cover letter (Appendix E) was enclosed to explain the research goals and the benefits of the survey feedback (Dillman, 2000) to both this researcher and to the VCCS workforce development leaders. Data were collected from the workforce development leaders in the VCCS with the promise to report back to them the aggregate results so as to benefit both this research and the leaders' specific goal-setting processes beyond *Dateline 2009* (Virginia Community College System, 2003). The leaders were given the option to return the survey electronically to a specific email address, to fax it, or to mail it back. To get a 100% return rate a phone call, and several email reminders were sent to those who did not return the survey within two weeks. The return date was then extended to get a 100% return rate (Dillman, 2000; Miller &

Salkind, 2002). By August 21, 2009, all 22 surveys were returned to meet the goal. This was very important to the reliability of the results based on the purposeful sampling of all 22 VCCS workforce development leaders.

Statistical Analysis

The information received from the rank-ordered, open-ended, and Likert scale questions was reported showing the number, mean, or frequency of impact of responses for the closed-ended scaled items. The responses were grouped (Dillman, 2000) within the research goal categories: emerging high growth, high demand skill needs, shifting and changing trends, emerging training and development trends and issues, and workforce partnerships necessary to the development of resources and opportunities for emerging industries and technologies. Tables and figures representing response rates from the VCCS workforce development leaders were used to present the information graphically (Fowler, 1995) and to identify the emerging trends and issues impacting the VCCS Workforce Development Services.

Summary

This chapter described the methods of data collection that were used in surveying the research participants, the VCCS workforce development leaders. They direct the processes and collaborate on setting the goals for providing programs and services that meet the needs of their region and that contribute to the economic strength of the Commonwealth.

The survey provided answers to the research questions that sought to identify the workplace trends revolving around the fast paced advances in technology (International Technology Education Association (ITEA), 2007), the increasingly competitive global

economy, and the very diverse workforce complexion (Freeburg & Hall, 2008). The survey combined closed-ended Likert-type scaled questions with opportunities for open-ended comments to provide support, reinforcement, and clarity to the findings.

Data gained from the closed scaled responses are documented and presented graphically for clarity and efficiency of understanding in Chapter IV. Tables and figures support the comments and are grouped in relevance to the research goals.

CHAPTER IV

FINDINGS

Chapter IV identifies the emerging trends and issues impacting the Workforce Development Services within the Virginia Community College System (VCCS) as reported by the workforce development leaders that make up the advisory board to the Vice Chancellor. The challenges and impacts on the development and delivery of training and services to Virginia's workforce were reported based on the research goals addressed in this study: emerging high growth, high demand occupational workforce skill needs; trends in training and development services currently provided; emerging training and development trends and issues facing the VCCS workforce development leaders based on technology trends, competition, and the changing composition of the workforce. The study's design and procedures are described in support of the validity of the findings. The demographics, background, and experience of the workforce development leaders were contributed by the leaders and collected from information reported by the VCCS. The responses were categorized according to the four research goals including the scale of impact the leaders identified in relationship to the workforce services needed in each of their regions.

Study Overview and Design

The workforce development leaders in the VCCS were sent a survey (Appendix C) that had been piloted and edited (Appendix D) in collaboration with three workforce development leaders outside Virginia. A cover letter (Appendix E) with a stamped return envelope was sent with the survey describing the purpose of the research and the importance of their feedback in the data collection process. Once the initial fifty percent

of the surveys were received the remaining workforce development leaders were contacted via email (Appendix F) with an electronic copy of the survey attached as a reminder and follow-up request for their participation. The surveys were coded to track returns and the survey feedback was kept confidential and reported only in aggregate form. By August 21, 2009, all 22 surveys were returned and a 100% return rate was achieved.

The survey was divided into three sections to cover all the research questions addressed in this study. Section I of the survey was designed to gather background demographic information related to each college's region and the experience of the 22 workforce development leaders in the VCCS. The section also addressed the first research question concerning the emerging high growth, high demand occupational workforce skill needs. Section II addressed the second research question and asked for the current in-demand programs, courses, and certifications offered in each college including a unique program or service they offered. Section III was the core of the survey and related to the third and fourth research questions dealing with the emerging training and development trends and issues and the shifts and changes due to technology, competition, and the changing workforce composition. It was divided into four categories, each referring to the impact of items relative to trends reported in the literature review on the workforce services currently being offered or under development. The workforce leaders were asked to rate the impact of listed items on a scale of one to five with one meaning the lowest possible impact and five being the highest possible impact on their workforce service planning and delivery.

Section III, Part A, had 15 emerging training and development trends reported in the literature to be rated according to impact on workforce services in Virginia. Section III, Part B, had nine shifting trends in technological literacy shaping skill development for future careers categorized according to the *Standards for Technological Literacy* (International Technology Education Association, 2007). The leaders were asked to rate the impact of partnerships needed to maintain and develop resources and professional development opportunities in Section III, Part C. Finally, based on the literature review that reported the changing face of the labor force, Section III, Part D, asked the leaders about the impact of five areas of service on training and development strategies in everything from language and culture to generational differences. Each section of the survey ended with the opportunity for the leaders to give open-ended, additional comments. The leaders did not add comments specific to the items rated, but each asked for a copy of the aggregate results to use in their planning efforts.

Background and Participant Demographics

The feedback in Section I of the survey provided a demographic overview of the community colleges serving Virginia's diverse regions. The 23 Virginia community colleges, divided into 22 regions, were strategically placed in rural, suburban, and urban areas, with the majority serving rural areas. Two of the colleges cover all three types of geographical areas: Blue Ridge and Danville. Therefore there were 24 responses from 22 workforce development college leaders. The strategic placement of the college regions illustrates the original intent of the Virginia Assembly in 1966, to provide access to services for a diverse population across Virginia from small local communities to large cities (Mangum, 2008). The demographics of the regions served by the Virginia

Community College System make the study one that has opportunities for replication across the nation (Mangum, 2008). It provides a basis for discovery of national and global emerging trends and issues that challenge the development and delivery of workforce training needs. Data collected from the workforce development leaders showed 27.3% served the urban population, 13.6% served the suburban population, and 68.2% served those in the rural areas of Virginia as seen in Figure 4.

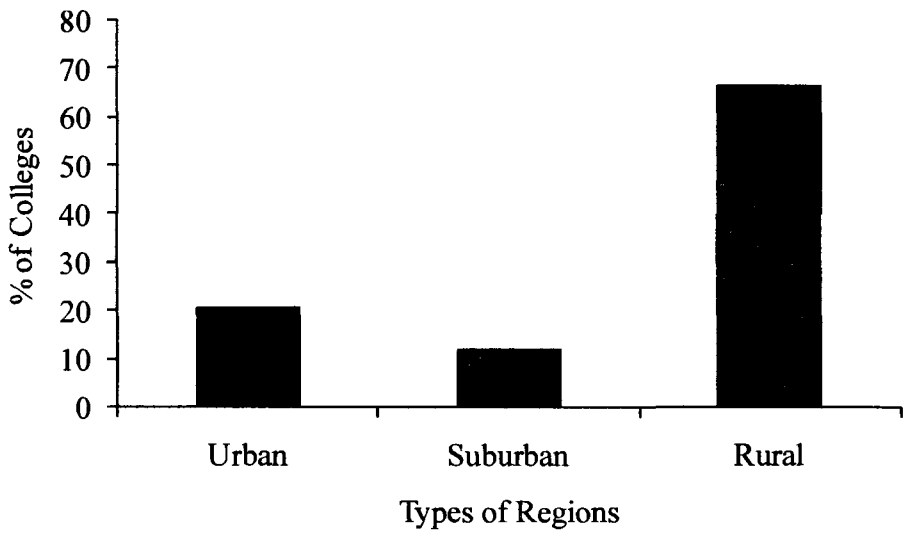

Figure 4. Demographics of the regions served by the Virginia Community College Workforce Development Services

The respondents identified their personal experience levels as workforce development leaders by the number of years served in their current positions and the number of years served overall in workforce development leadership positions. Some leaders reported experience in other states or other colleges within the state.

In the one to five year category, 12 of the 22 workforce development leaders (55%) worked in their current positions. Three of the 22 leaders (13%) reported working in any/all workforce development leadership positions. In the six to ten year category, six of the 22 leaders (27%) worked in their local positions. Seven of the 22 leaders (32%) reported working in any/all workforce positions. None of the 22 leaders had been in their current position 11 to 19 years, but five (23%) reported experience in similar positions. Three of the leaders reported working in their current position 20 or more years, while seven (32%) had 20 or more years experience in workforce development as seen in Figure 5.

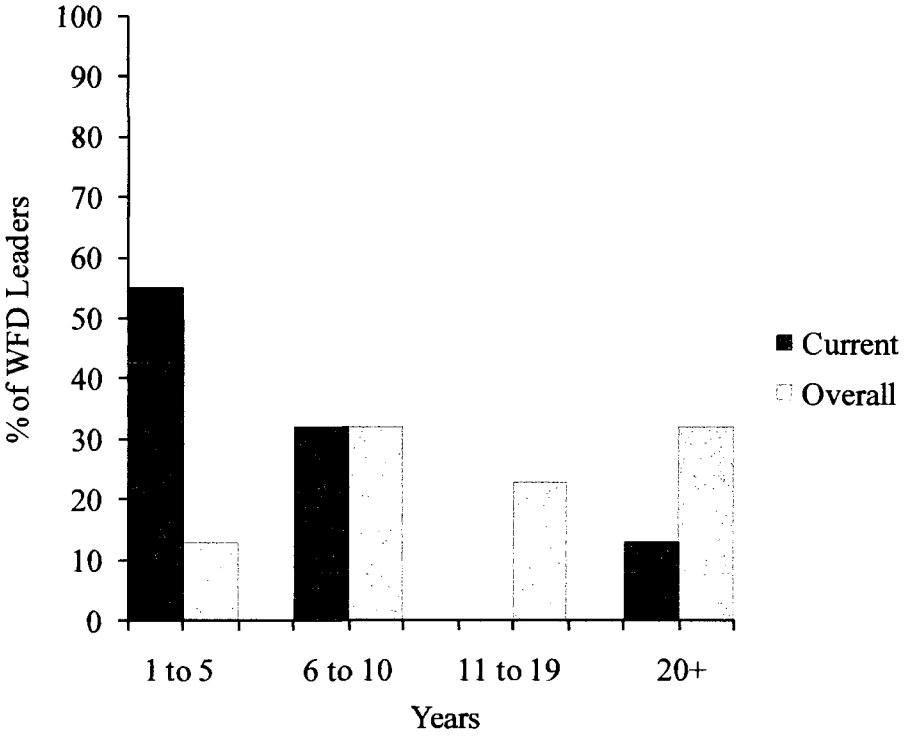

Figure 5. The percentage of years in each category the Virginia Community College workforce development leaders (WFD) have been in their current position and in workforce development leadership positions overall

In addition to the number of years in workforce development leadership, the leaders were asked to report the number of years of experience they had in education. Workforce development services are often a mix of credit and noncredit courses so educational experience is beneficial in developing services that link to both further education and viable career skill sets. The workforce development leaders bring a significant number of years of academic experience to their leadership positions. Four of the 22 leaders (18%) reported six to ten years of experience in education. Five of the 22 leaders (23%) had between 11 and 19 years in education. More than half, 13 of the 22 leaders (59%) have 20 years of educational experience as seen in Figure 6.

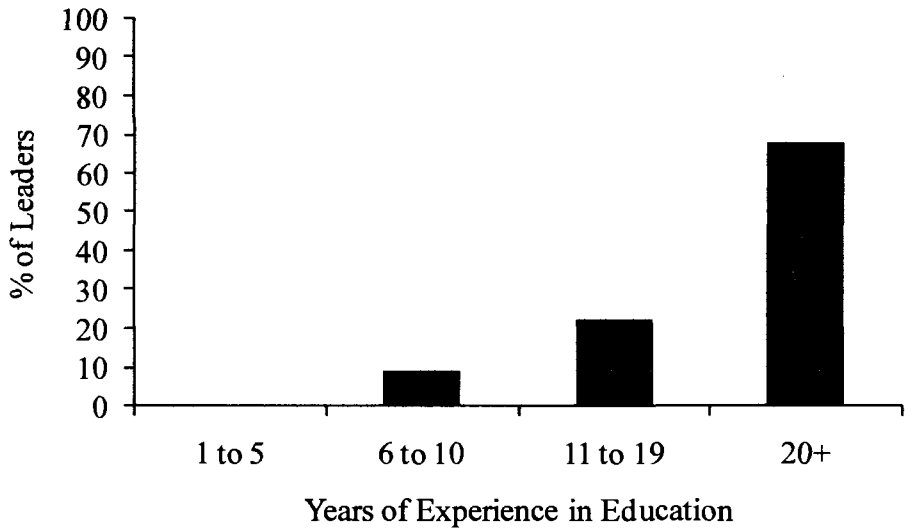

Figure 6. The percentage of workforce development leaders grouped by the number of years they have served in education prior to working in their current position

An important experiential component in presenting the background of the participants in this study was their exposure to, and understanding of, business outside the field of education. The survey asked the workforce development leaders for the

number of years of experience they had working in business outside of the college environment. Data recorded showed five of the 22 leaders, 23%, of the group had no business experience. On the other hand, the rest of the group brought a variety of years of business experience to the workforce development leadership position. In the one to five year category, eight of the 22 leaders, 36%, had experience working in business. Five of the 22 leaders, 36%, had six to ten years of working business experience. Two of the 22 leaders, 9%, worked in business for 11 to 15 years, as did two others for 20+ years as seen in Figure 7.

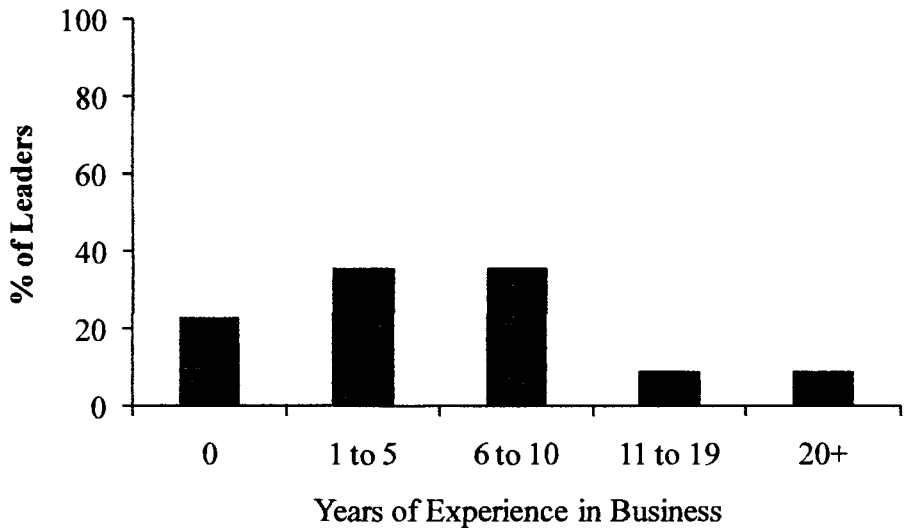

Figure 7. Percentage of workforce development leaders grouped by the number of years they have worked in business outside the college environment

Overall the experience of the workforce development leaders was not limited to their current leadership position. Each reported a variety of levels of experience and service in workforce development both inside and outside the Commonwealth of Virginia and inside and outside the college environment. The background and experience of the

workforce development leaders who participated in this research, like the regions they lead throughout the state of Virginia, portrayed a very diverse group.

High Demand Occupations in Virginia

Following the background information in Section I of the survey, the workforce leaders answered the first research question: "What are the emerging high growth, high demand occupational workforce skill needs (United States Department of Labor, 2009) in economically vital sectors of the economy in the Virginia Community College System Workforce Development Services areas?" The highest demand was in healthcare-related occupations and was consistent with the projections found in Bulletin 2700 in the United States Department of Labor *Occupational Handbook* (United States Department of Labor, 2008-09). There were a total of 70 responses with multiple responses in some areas. Healthcare was reported by 19 of the 22 leaders as having the highest demand for skilled workers (United States Department of Labor, 2006). Both the occupational areas of technology and construction were reported as high-demand occupations by seven of the 22 leaders. Manufacturing and Small Business Retail Service had a response from six of the 22 leaders as high-demand occupations in their regions. Transportation had four responses and Government, Warehousing & Distribution, and Welding each had three responses. Five occupations had two responses: Banking, Education, Maritime, Tourism, and Engineering. There were two outliers in Corrections and Mining with only one response each showing the responsiveness of the community colleges to their regions' unique needs as seen in Table 3.

Table 3

Frequency of high-demand occupations reported by the workforce development leaders

Occupational Groups	Response Frequency	Relative Frequency
Healthcare	19	.27
Technology	7	.10
Construction/Trades	7	.10
Manufacturing	6	.09
Retail/Service/Small Business	6	.09
Transportation	4	.06
Government	3	.04
Warehousing & Distribution	3	.04
Welding	3	.04
Banking	2	.03
Education	2	.03
Maritime/Port related	2	.03
Tourism	2	.03
Engineering	2	.03
Corrections	1	.01
Mining	1	.01
Total	n = 70	1.00

Note: The high-demand occupation total is based on the frequency of responses collected from 22 leaders and a relative frequency to the combined 70 responses in Section I of the Virginia Community College System Workforce Development Survey (August, 2009).

A Department of Labor bulletin projects a 16.7 percent increase in professional and related occupations between 2006 and 2016 and this category encompasses healthcare, business, technology, government, and education (U.S. Department of Labor, 2008-09). The 22 workforce development leaders' responses were consistent with the Department of Labor projections. Data collected in this study reflected the impact of similar workforce trends reported by the Department of Labor (2008-09), the Occupational Information Network (2009), and by the workforce development leaders in relationship to their planned offerings of programs, courses, and certifications.

Current Programs, Courses, and Certifications

Section II of the survey dealt with Programs, Courses, and Certifications. The 22 workforce development leaders were asked to list their current top five in-demand services in each of the areas. The responses in this section answered the second research question: "What are the trends in training and development services that have been consistently provided?" The service areas were defined so as to provide a structure for the open-ended listing requested. The responses in each area provided a detailed overview of current offerings in rich detail.

Programs

The first area in Section II of the survey was *Programs*, defined as a set of structured courses in a specialized area (Encarta, 2009). The 22 leaders provided a list of 32 programs with 68 total responses. The top two in-demand programs listed were consistent with the most in-demand occupations reported in Section I. Healthcare had the most frequent responses from nine of the 22 leaders. The second top in-demand program was Information Technology reported by eight of the 22 leaders. The two top in-demand

programs, Healthcare and Technology reflected the high-demand occupations recorded by the workforce development leaders and the Department of Labor.

The Tradesmen programs were third with five responses and were most likely a result of the state mandate for continued licensure by the Department of Professional and Occupational Regulation (Virginia.gov, 2008). Welding and Truck Driving were reported in demand at four of the colleges. Data collected also showed Employee Performance and Construction Technology as top in demand programs at three of the 22 colleges. Two of the colleges offered Administration of Justice and two offered an Autism Certificate Program based on the occupational demands in their regions. The variety of top in demand programs at each of the colleges demonstrated the commitment of community college workforce development services to meet the needs of business and industry in each of their regions. Outlier programs were offered at only one of each of 17 of the 22 colleges. Those programs were: Academy for Nonprofit Excellence, Apprenticeship-Related Instruction, Corrections, Customer Service, Early College, Engineering, Entrepreneurship, Fire Science, Government Contract Programs, Leadership, Living Plus Program, Marine Trades Certification, Nuclear Studies, Safety, Viticulture, and Waste Water Operator. Each of the colleges offered programs in their regions in response to the demands which may not always be prevalent throughout the Commonwealth of Virginia but do prepare workers for viable occupations that exist within each region as seen in Table 4.

Table 4

The top in-demand programs identified by the workforce development leaders

Programs	Response Frequency	Relative Frequency
Healthcare	9	.13
Information Technology	8	.12
Tradesmen	5	.07
Intensive Welder Program	4	.06
Truck Driving	4	.06
Employee Performance Development	3	.04
Construction Technology	3	.04
Administration of Justice	2	.03
Autism (Encarta, 2009)Certificate	2	.03
Early Childhood Certificate	2	.03
Educational Consortium	2	.03
Machine Technology	2	.03
Police Science	2	.03
Sign Language	2	.03
WorkKeys Assessments	2	.03
Individual Programs at 17 Single Colleges	1 each	.015 each
Total	n = 68	1.015

Note: The top in-demand programs are ranked based on the frequency of responses collected from 22 leaders who gave a combined 68 responses in Section II of the Virginia Community College System Workforce Development Survey (August, 2009).

Courses

The second area in Section II of the survey was *Courses* and was defined as a prescribed instruction in a particular subject (Encarta, 2009). The 22 leaders gave 40 responses and showed a wide variety of specific courses in high demand. Seven of the 22 participants listed soft skills for business as the largest in-demand subject matter area for single course offerings. Six of the 22 leaders reported basic computer software courses as the next highest in demand. Project Management was offered based on demand in three of the 22 colleges, and Pharmacy Tech and Construction each are in high demand in two of the 22 colleges. Following the top five courses, the list then quickly diversified into single course offerings needed in the individual colleges but not presently replicated in the state overall based on that region's occupational opportunities. The single course offerings were provided either in an open enrollment format or by contract to specific business partners to increase their employee skills and increase their competitive edge through better service. The individual courses are: Active Board Member Skills, AutoCAD, Army/Vocational/Technical (AVOTEC) courses, Backflow Prevention, Basic Contractor, Certified Nursing Assistant, Cosmetology, Cardiopulmonary Resuscitation (CPR), Dental Radiation, Entrepreneurship, Geometric Dimensions & Tolerances, Lean Six Sigma, Maintenance for Farm Managers, Mechanical Maintenance, Occupational Safety and Health Administration (OSHA 10), Parenting, Teacher Recertification, Water/Wastewater, Warehousing & Distribution, and Welding. The literature review referred to the need for workforce development services that enable companies to be competitive both in their specific skill sets and their ability to project an image of excellence in a globally competitive economic environment (Mangum, 2008). The single

course offerings provide in-demand services that meet diverse regional needs, one example being, Maintenance for Farm Managers in a rural area of the state (see Table 5).

Table 5

Top in-demand courses identified by each of the workforce development leaders

Courses	Absolute Frequency	Relative Frequency
Soft Skills for Business	7	.175
Basic Computer Software	6	.15
Project Management	3	.075
Pharmacy Tech	2	.05
Construction	2	.05
Individual Courses at 20 Single Colleges	1 each	.025 each
Total	n = 40	1.000

Note: The total of the most in-demand courses is based on the frequency of responses collected from 22 leaders who gave a combined 40 responses in Section II of the Virginia Community College System Workforce Development Survey (August, 2009).

Certifications

The third area in Section II was *Certifications*, and it was defined as a set of courses leading to a credential demonstrating proficiency based on professional standards (Encarta, 2009). The 22 leaders responded with 38 certifications over a diverse area of preparatory training for a wide variety of industry certifications in high-demand occupations in each of their regions. As in the Programs and Courses the top in demand certification was healthcare identified by three of the 22 leaders. Computer Networking

and CPR each were noted by two of the leaders. The responses were consistent with the programs and courses ratings and also the occupational in-demand ratings of the leaders and the Department of Labor. During 2008 and 2009 Governor Tim Kaine promoted the Career Readiness Certificate (Commonwealth of Virginia, 2009) as an assessment tool to uniformly measure key workplace skills. This certificate is reported as in-demand at two of the 22 colleges. The Occupational Safety and Health Administration (OSHA) and the Tradesmen certificates were mandated for specific areas of work, and they were each reported as in-demand by two of the 22 leaders. Many individual certifications were presently not in-demand statewide but provided skills needed in specific regional occupational areas. Those presently offered at only one of each of the colleges in 23 different areas are: American Boat and Yacht Council (ABYC) Marine Trades, Academy for Nonprofit Excellence, Autism, Basic Contractor, CISCO®, Concealed Carry, Cosmetology, Dental Radiologist, Diesel Mechanic, Emergency Medical Technician/Paramedic, Environmental Protection Agency, Job Skills Training Program, Microsoft Certified Application Specialist, Nuclear Radiation, Nursing, Private Investigation, Project Management, Public Manager, Radar, Ship's Captain Licensure, Society for Human Resource Management, Teacher's License Renewal, and Welding. They each received one response and as in the Programs and Courses sections of the survey were created in response to regional requirements for workers employed or seeking employment in specific high growth, high demand occupations as shown in Table 6.

Table 6. Certifications

Top in-demand certifications identified by each of the workforce development leaders

Certifications	Absolute Frequency	Relative Frequency
C N A (Certified Nursing Assistant)	3	.078
Computer Networking	2	.053
C P R	2	.053
Career Readiness Certificate	2	.053
O S H A	2	.053
Tradesmen	2	.053
Truck driver	2	.053
Individual Certifications (23)	1 each	.026 each
Total	n = 38	1.00

Note: The total in-demand certifications is based on the frequency of responses collected from 22 leaders who gave a combined 38 responses in Section II of the Virginia Community College System Workforce Development Survey (August, 2009).

In answer to the research question, "What are the trends in training and development services that have been consistently provided?" the workforce development leaders consistently reported healthcare and technology as the top in-demand services they are providing. This is concurrent with their feedback on the top occupations in their regions and the top occupations reported by the Department of Labor. The feedback also reflected a great variety of services offered across the 22 community college regions and

portrayed the VCCS workforce development commitment to preparing the emerging workforce by providing greater access to career options through skill training.

Unique Programs and Services

An additional item in Section II asked for programs and/or services that were unique to each workforce development region. Out of 22 participants, two did not list any that were unique to them. The other 20 workforce development leaders each listed one they considered distinctive to their region. The list is presented in alphabetical order and included: Apprenticeship, Business Process Consulting, Computer Aided Design & Drafting, Diesel Mechanic, Educational Consortium, Government (Navy) Contracts, Heavy Equipment Operator, Hospitality, Hampton Roads Maritime Training Program, Job Skills Training Program, Juvenile Advocacy, Leadership Academy, Living Plus, Marine Trades, Non Profit, Nuclear Studies, Quick-Connect Advanced Manufacturing, Viticulture & Enology, and Waste Water. The programs listed were often programs or services that originated in their region, driven by the specific regional needs, e.g., Viticulture (the art of growing grapes for wine) and Enology (the art of wine making). These unique programs displayed the diversity of needs in the regions served by the Virginia Community College System, and they were often shared in whole or in part with the others in the Virginia Community College workforce development leadership group as needed. The leaders' responses provided insight into the current in-demand Programs, Courses, and Certifications offered in the 22 regions in Virginia. The details provided on the current offerings provided the foundation to study the impact of emerging trends on strategic planning of future services.

Shifting and Changing Workforce Services

Section III of the survey was *Current and Future Workforce Services,* and the workforce development leaders were asked to rank items in each of four trends defined in the literature, according to the impact it had on the workforce services currently being offered or under development. The responses answered the third research question: "What are the emerging training and development trends and issues facing the Virginia Community College workforce development leaders as they guide their divisions toward services and partnerships that contribute to the economic strength of their regions based on those trends that are shifting and changing due to the role of technology in the workplace, the competitive climate, and the changing composition of the labor force?"

The four impact items based on the goals of this research were: (a) emerging training and development trends; (b) shifting trends due to technology; (c) partnerships needed to maintain and further develop resources; and (d) the changing workforce composition (Freeburg & Hall, 2008). The leaders were asked to respond to the Likert scale items using an impact scale of one through five (1 = No Impact; 2 = Low; 3 = Medium; 4 = Very High; 5 = Extremely High). The impact items listed in the survey were re-ordered in each of the four trend tables to display the leaders' impact responses from highest to lowest. The statements in each of the impact areas were based on the emerging trends described in the literature and the high demand occupational areas reported by the Department of Labor.

Emerging Training and Development Trends

Section III, Item A, included 15 *Emerging Training and Development Trends* reported in the literature as having the highest impact on workforce services. The

responses to the 15 trends focused on one part of research question three concerning the emerging training and development trends and issues facing the workforce development leaders. The range of impact was reported on a Likert scale of one to five with a response of one denoting no impact, and five signifying the highest impact. The highest impact area reported was course development for dislocated workers with a mean impact response value of 3.45. This was followed closely by a 3.41 mean impact response value for basic technology training and the same for changing technological literacy needs. The rankings showed that the colleges' planning activities were impacted by the need to provide skill training that would allow workers, whether presently employed or unemployed, to develop competitive skills to meet today's occupational challenges (Mangum, 2008). The dislocated worker training differs from region to region, while the basic technology training is consistent in format but adapted to the Microsoft version (2003 or 2007) used by the employers and accessible to the employed or unemployed. This impact response is consistent with a later one in the area of partnerships that reported the number one partnership impact is customization and flexibility in development and delivery. Certification preparation courses and courses developed in collaboration with local workforce investment boards had the next highest mean response each recording an impact value of 3.27. Following those trends were the challenges of dealing with stimulus funds used to train dislocated workers, training to prepare employees for a highly competitive climate, and developing customized training for employees currently in the workplace. These three items each received a mean impact response value of 3.23 from the 22 workforce development leaders. Consistent with the workforce development leaders' responses, the same first eight emerging training and

development trends found in the literature review (Hoyt & Wickwire, 1999; Mangum, 2008; Uhalde & Strohl, 2006) reported a medium to extremely high impact response. The impact of the current economic challenges on the leaders' planning efforts was evident in their high responses to the items in this section.

The next five trends were reported in the low to medium impact range. The delivery of continuing education online courses had a mean response of 2.91. Following the online courses, were the emerging and current apprenticeship programs with a mean response of 2.77. The development and delivery of hybrid courses had a mean impact response of 2.68 followed by instructor-led Blackboard course management software at 2.45. The delivery of small business owner training had a low to medium impact of 2.36 on the workforce development services offered by the leaders in each of their regions.

At the lower end of impact were the services related directly to the new GI Bill funding that was effective August 1, 2009, with a rate of 2.32. This research was conducted as the GI Bill was just beginning to impact the workforce development services and merits further study. The set up of certification testing locations on site at the colleges showed an impact of 2.09 mean response value. There are often multiple resources for certification testing with very competitive pricing. The set up of such sites is a lengthy process in the Virginia Community College System so many leaders choose to partner with local testing vendors or combine efforts for joint regional sites. In this way they are able to reduce the impact on time, personnel, and financial resources that would be better spent in the higher demand areas consistently reported by them, the Department of Labor, and in the literature as seen in Table 7.

Table 7.

Impact of Emerging Training and Development Trends on Workforce Services Planning

Section III.A	Emerging Training and Development Trends	Mean Response
III. A. 2.	Course development for dislocated workers	3.45
III.A.13.	Basic technology training	3.41
III.A.15.	Changing technological literacy needs	3.41
III. A. 8.	Certification preparation courses	3.27
III. A. 3.	Collaboration with local investment boards	3.27
III. A. 4.	Use of stimulus funds for dislocated workers	3.23
III.A.14.	Training for a globally competitive climate	3.23
III. A. 5.	Customized courses for incumbent workers	3.23
III.A.10.	Continuing education online course delivery	2.91
III. A. 7.	Emerging and current Apprenticeship programs	2.77
III.A.11.	Hybrid course delivery	2.68
III.A.12.	Instructor-led Blackboard continuing ed courses	2.45
III. A. 6.	Small business owner training	2.36
III. A. 1.	GI Bill funding effective August 1, 2009	2.32
III. A. 9.	Certification testing location set up	2.09

Note: The survey items were repositioned to show the highest to lowest ranked responses.

Shifting Trends Due to Technology

Section III, Item B, of the survey was *Shifting Trends Due to Technology*. The responses in this area also answered the third research question by specifically addressing the technology trends. The nine items included in this section were taken from the categories developed by the International Technology Education Association (International Technology Education Association, 2007). One additional item, port-related technology, was added to the survey by one of the leaders. This was included in the area of transportation technology based on the standards defined for technological literacy in this category (International Technology Education Association, 2007). The 22 Virginia Community College System workforce development leaders reported a medium to very high impact response to the shifting technology trends in six of the nine items developed by the International Technology Education Association. The highest impact trend was Information and Communication Technology with a 3.59 mean response value. The second was Medical Technology which was reported as having a 3.45 mean response value. The first two high impact responses based on the shifting trends due to technology are consistent with the literature that points to technology and healthcare as the highest in-demand occupations (United States Department of Labor, 2009) and the highest in-demand training needs (Wagner, 2006). The third highest impact on workforce development services was Instructional Technology with a 3.32 mean response value. Following that was Energy and Power Technology with a 3.23. mean response value. Instructor training on the emerging techniques and equipment ranked fifth with a 3.14 mean response value. Manufacturing technology had an impact of 3.09 mean response value. The last three technology trends were Construction with a 2.91 mean response,

Transportation with a 2.77 mean response, and Agricultural and Related Biotechnologies with a 2.36 mean response as seen in Table 8.

Table 8.

Impact of the Shifting Trends Due to Technology on Workforce Services Planning

Section III.B	Shifting trends due to technology	Mean response value
III.B.21.	Information and Communication Technology	3.59
III.B.22.	Medical Technology	3.45
III.B.16.	Instructional Technology	3.32
III.B.20.	Energy & Power Technology	3.23
III.B.17.	Instructor Training in Emerging Techniques/Equipment	3.14
III.B.23.	Manufacturing Technology	3.09
III.B.19.	Construction Technologies	2.91
III.B.24.	Transportation Technology *(incl port-related)*	2.77
III.B.18.	Agricultural & Related Biotechnologies	2.36

Note: The survey items were repositioned to show the highest to lowest ranked responses.

All of the technology trends based on the *Standards for Technological Literacy* defined by the International Technology Education Association (2007) received impact ratings from a mean response of 2.36 to 3.59. The low to very high impact reported in

this area by the workforce development leaders displays their awareness of the crucial role of technology overall in their planning efforts.

Partnerships

Section III, Item C, was the topic of *Partnerships* which focused on the fourth research question: "What partnerships are needed to maintain and further develop resources and professional development opportunities for emerging industries and technologies?" The leaders were asked to rank the partnership impact items that affected their training and development services from highest to lowest. The highest impact, with a mean response of 3.95, was the need for partnerships which allowed for customized, flexible training specifically targeted to business partners, offered onsite, with the least operational impact. The second highest impact, with a mean response of 3.86, dealt with each college leader's interaction with regional partner networks to maintain a high awareness of current and emerging trends and to employ the best subject matter experts. Following these, the leaders reported a very high need to partner for financial support, with a 3.59 mean response, high school outreach with a 3.55 mean response, and equipment resources with a 3.45 mean response. Equipment resource support was rated at a 3.45 mean response value. This was followed closely by partnerships with the regional workforce investment boards at a 3.41 mean response value. Though the literature showed a need to create national and academic partnerships and address succession planning with business and industry, not all workforce development leaders reported this as a highly impactful area. The need to maintain and further develop resources through collaboration and partnerships, based on the workforce development leaders' feedback, is a trend that requires further research. This study simply asked the question, whereas

further study would add depth to the current literature and to the workforce development leaders' responses shown in Table 9.

Table 9

Impact of the Partnerships needed to maintain and further develop resources

Section III.C	Partnership Impacts	Mean Response Value
III.C.33	Customized, Flexible Contract Training	3.95
III.C.26	Regional Partnership Networks	3.86
III.C.28.c	Subject Matter Expert Resource Support	3.86
III.C.28.a	Financial Resource Support	3.59
III.C.30	High School Partnerships	3.55
III.C.28.b	Equipment Resource Support	3.45
III.C.32	Partnerships with OPP Inc/WIB/VEC	3.41
III.C.27	National Partnership Networks	2.91
III.C.29	Academic Partnerships	2.82
III.C.31	Succession Planning	2.55

Note: The survey items were repositioned to show the highest to lowest ranked responses.

The literature showed that the leaders have national access to best practices through the American Association of Community Colleges (AACC) and the National Council for Continuing Education (NCCET). Use of these resources and growth and maintenance of partnerships impacts community college workforce development services

and allows leaders to strategically plan and develop diverse resources according to technological advancements, demographics, and the economy of each region.

Workforce Composition

Section III, Item D, of the survey dealt with the *Diversity of the Workforce* and gave feedback to the part of the third research question that dealt with the impact of the changing composition of the labor force. The five statements in the survey dealt with the impact of everything from language and cultural issues to generational differences. The leaders were asked to rank the impact of the changing complexion of the workforce on their training and development services from highest to lowest. The responses in this section showed a low impact in all areas. The one that showed a somewhat higher impact and rated low to medium was the diverse participant population that included references to age, gender, and culture, with a 2.86 mean response value. Spanish in the workplace rated 2.68, and the increased use of the Career Readiness Certificate promoted by Governor Tim Kaine rated a 2.50 mean response value. Most of the colleges had already been using the Career Readiness Certificate, so it was not highly impacting. English as a Second Language test preparation courses had a low impact rating of 2.23 and assessments and assistance for low-performing high school students taking the Standards of Learning tests were rated the lowest at 2.05. The leaders have always dealt with a very diverse group when providing services in the past because of the nature of business and industry skill training. They have provided assessment and testing services on a consistent basis so their responses indicated a low to medium impact on their present service planning efforts. Their ongoing training efforts have always included participant populations with age, gender, and cultural differences along with developmental training

needs, so this trend had been and will continue to be a common factor in their development and delivery methods as shown in Table 10.

Table 10

Workforce Composition

Section III.D	Workforce Composition Impacts	Mean Response Value
III.D.36	Diverse participant population (age, gender, culture)	2.86
III.D.35	Spanish in the workplace continuing education courses	2.68
III.D.38	Increased use of the Career Readiness Certificate program	2.50
III.D.34	English as a Second Language (ESL) test preparation courses	2.23
III.D.37	Assessments and assistance for low-performing high school students taking Standards of Learning (SOL) tests	2.05

Note: The survey items were repositioned to show the highest to lowest ranked responses.

There were no specific comments provided in the open-ended comment section of the survey. Ten of the 22 workforce development leaders simply stated that the survey covered all the challenges and issues they were facing at the moment. They were all working on the workforce development strategies for the next five years. All 22 stated

that they looked forward to receiving the aggregate results at their 2009 Peer Conference and the three members of the pilot test group also asked to receive the final results.

Summary

A total of twenty-two surveys were returned for an overall response rate of 100%. The survey was divided into three sections: Background; Programs, Courses, and Certifications; and Current and Future Workforce Services based on the research goals. The items were rank-ordered, open-ended, and Likert-scaled.

Section I reported the geography of the regions served and the respondents' background and experience. The colleges collectively served very diverse regions in Virginia of which 68% were in rural areas. The leaders, like the regions, had very diverse demographics. More than half had been in their current leadership position for five years or less. All of them reported additional workforce development experience in other positions both in the state and in other states. More than half the workforce development leaders brought educational leadership experience to their present position, which enabled them to create a bridge between credit and noncredit offerings for their clients. In addition to the academic community the leaders dealt largely with business and industry so it was important to note that 17 of the 22 leaders had worked in business outside the college environment from one to more than 20 years. Overall the workforce development leaders brought a variety of levels of experience to their present workforce development leadership position in the Virginia Community College System. Section I also provided information on the high growth, high demand occupational workforce skills in answer to the first research question in this study. The top two high-demand occupations reported

by the leaders were healthcare and technology, which was identical with the Department of Labor statistics for 2006 to 2016 (United States Department of Labor, 2009).

Section II asked the respondents to list their top five in-demand programs, courses, and certifications to answer the second research question on the services that have been provided consistently to date. Given the diverse nature of each region the responses consistently listed programs unique to each of their occupational opportunities. However the top in-demand programs were healthcare and technology, the top in-demand courses were technology-related, and the top in-demand certifications were in healthcare and technology. These responses were consistent with the Department of Labor statistics (United States Department of Labor, 2009), the literature (Mangum, 2008; Monacott, 2003; Hoyt & Wickwire, 1999), and the top occupational areas reported by each of the workforce development leaders.

Section III had items in four categories related to the third and fourth research questions and asked respondents to rate their impact on workforce services currently being offered or under consideration or development. Those items were the core of the survey and directly related to: (a) emerging training and development trends; (b) shifting trends due to technology; (c) partnerships; and (d) workforce composition.

The emerging training and development trends were impacting in two ways. First, the highest impact they needed to consider were their services to dislocated workers due to the economic trends and the resulting needs for re-training. Following this closely with responses that were mostly medium to very high was the impacting need for basic technology, technology resources in the workplace, and the changing technological literacy impacts of creating advanced technological instructional strategies.

The leaders' responses showed an acute awareness of the need for partnerships to maintain and further develop resources. They rated seven of the ten categories medium to very high in impact on their ability to provide services. They were aware of the need to partner with business and industry to provide customized training using subject matter experts, to gain financial and equipment resources necessary for the training, and to work with high schools and their regional workforce investment boards. The fast paced changes in today's workforce environment required workforce development leaders and industry partners to join forces for access to resources for strategic planning that meet the needs of high growth and high demand occupational skill requirements.

The changing workforce composition was the lowest impact item recorded with low mean response values in all five categories. The leaders did not perceive this as a high impact item because they traditionally dealt with very diverse populations. The workforce development mission was such that the regions have consistently provided training and services for varied populations and very diverse levels of needs.

The most commonly identified emerging trends and issues that challenged the workforce development leaders were found to be in healthcare and multiple areas of technology including basic courses, advanced courses, professional development for instructors, and technology resources. The issues reported by the workforce development leaders were consistent with the challenges reported in the literature to date in all areas except the changing composition of the workforce which had long been an area of service for the workforce development group. Summary, conclusions, and suggestions for future research based on the feedback from the 22 Virginia Community College Workforce Development Services leaders are presented in Chapter V.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter V summarizes the findings of this study based on the defined research goals that included: emerging high growth occupational workforce skill needs; the trends in training and development services that have been consistently provided; the emerging training and development trends and issues based on the shifting and changing roles of technology in the workplace, competition, and the diversity of the workforce; and the partnerships needed to maintain and further develop resources and professional development opportunities for emerging industries and technologies. It also presents conclusions based on the findings and recommendations for future goals and actions to identify the training needs of the employers and employees served by the Virginia Community College System (VCCS).

Summary

This study included the 22 Virginia Community College System workforce development leaders from the 23 regions in the Commonwealth of Virginia. Surveys were sent to each of the 22 leaders and all responded to the survey for a 100% return rate.

The problem addressed by this study was the identification of training needs for employers and employees serviced by the Virginia Community College System. The researcher studied the emerging trends facing Virginia's diverse workforce population and the issues and challenges facing the state's community colleges, employers, and employees. The results from the surveys were reinforced by the literature, by the projections of the Department of Labor for 2006 through 2016, and by the International Technology Education Association and the National Research Center for Career and

Technical Education. Data gained from the Virginia Community College workforce development leaders can be used to help them implement strategies that support economic growth and meet the changing workforce training needs in their regions.

The research questions that formed the basis for this study focused on: discovery of the emerging high growth occupational workforce skill needs; identification of the trends in training and development that have been consistently provided; and emergence of shifting and changing training and development trends and issues based on technology, competition, workforce composition, and the need for partnerships. These questions guided the survey design, data analysis, and its relevance to the planning efforts of the Virginia Community College System workforce development leaders.

As with all research there are limitations that need to be considered when reporting, analyzing, and generalizing the results. The four limitations in this study were: the sampling method, time commitments of the participants, economic instability, and the researcher's personal involvement in the workforce development area. Typically a random sampling of a large group of participants is surveyed. In this research, a purposeful sampling of the 22 Virginia Community College workforce development leaders was utilized. The process netted a 100% response to offset the limitation.

Another limitation was the time commitment involved in answering the survey by a leadership group. The researcher extended the research time so as to gain 100% participation. The current economic instability made it difficult for many of the leaders to answer questions on services that require both equipment and financial support. This was reflected in the low to very high impact response to the section on the necessity of partnerships to survive.

One last limitation was the researcher's personal involvement in workforce development services that could have skewed interpretation of the data. This was overcome by piloting the survey instrument and its objective nature using Likert scale ratings and open-ended questions formatted to provide categorical answers. Each limitation was offset by a positive strategy that broadened the results of the research.

A survey was used to answer the research questions. It included a combination of open-ended responses to specific categories and items using the Likert-type scale concept. The survey was based on trends reported in the research including: technology in every workplace, the competitive global economy, and changes in workforce composition (Freeburg & Hall, 2008; Mangum, 2008). The simple design measured the impact of the emerging trends on workforce development training services, resources, partnerships, and goals. The survey was pilot-tested for clarity and ease by workforce development leaders outside the state and their suggestions added depth and strength to the instrument.

Conclusions

This research identified the emerging workforce trends and issues from the literature, from Department of Labor predictions, and from the frontline view of the community college workforce development leaders in Virginia. The 22 regional workforce development leaders experience the impact of the needs of employers and employees in each of their regions. These challenges require funding, resources, and responses to fast-paced technological changes in a very unique and prohibitive economic environment. This research gained feedback on the major impacts the leaders were experiencing, and issues that needed to be part of their planning efforts to establish sound

action plans going forward beyond their *Dateline 2009* (Virginia Community College System, 2003) strategic plan.

The need for innovation in providing content and services is great. The Department of Labor predicted changes in the major occupational groups through 2016 (U.S. Department of Labor, 2008-09), and this demands attention and feedback from those leading the planning for training and development beyond the *Dateline 2009* strategic plan in the state of Virginia. This research was designed to acquire feedback from the Virginia Community College System workforce development leaders to increase their ability to work individually, and collectively, to meet the challenges inherent in the fast paced workplace changes they are preparing their regions to address.

The participants in this study, and the regions involved, are a microcosm of the nation's makeup in terms of demographics and diversity of backgrounds, experience, and workforce needs. Data received from the Virginia Community College System Workforce Development Services leadership team showed a multitude of training and development efforts in place, and in planning stages, to meet the emerging challenges through partnerships that support economic growth. This goes beyond political, economic, and educational analysis, to a focus on realistic worker training, experiential learning, and preparation for high demand occupations in Virginia. This research was a representation of data that could be studied for applications to the larger community of the nation in future research projects.

The literature review reported that emerging workforce trends evolved so quickly that community college workforce development leaders needed to invest in planning that met the changing workforce needs (VanNoy et al., 2008). Providing services to meet job

skill needs was integral to the historical mission of the Virginia Community College System. It is imperative that the Virginia Community College System workforce development leaders remain true to their role by developing strong working initiatives and partnerships that lead to well thought out action plans instrumental in strengthening their regions' economy.

Research Question 1

Research Question 1 addressed through this study was, "What are the emerging high growth, high demand occupational workforce skill needs (U.S. Department of Labor, 2008-09) in economically vital sectors of the economy in the Virginia Community College System Workforce Development Services areas?" Of the 22 workforce development leaders, 19 listed healthcare skill training as the highest in-demand occupation in their regions. Following healthcare, technology and construction were rated second as a high growth, high demand occupational areas by seven of the 22 leaders. Those areas were followed by manufacturing, retail, service, and small business with six of the 22 leaders reporting them as areas of in-demand employment in their regions. The workforce leaders' responses consistently pointed to healthcare and technology as the occupations that were growing and therefore needed the most skilled workers (Uhalde & Strohl, 2006). Their responses indicated awareness and planning directed to providing the knowledge, skills, and tools needed for workers to be successfully employed in the two economically strong areas in the regions within the Virginia Community College System, healthcare and technology (United States Department of Labor, 2009).

Research Question 2

Research Question 2 was, "What are the trends in training and development services that have been consistently provided year after year, using the same content and same delivery methods, by the Virginia Community College System Workforce development services?" In response to the survey questions in this area nine of the 22 workforce development leaders identified the top in-demand program as healthcare with information technology the second in-demand program reported by eight of the 22 leaders. They also listed programs unique and ongoing in each of their regions. Some of their current programs were very distinctive to their geography, demography, and occupational opportunities, such as wine making, marine trades, and nuclear studies and were consistently and successfully a source of real workforce transferable skill development and employability within their regions.

The top in-demand courses identified by seven of the 22 leaders were soft skills for business and six of the 22 reported basic computer software. The customized courses enabled companies to be competitive by projecting an image of excellence through a highly skilled workforce (Mangum, 2008). Certifications prepared workers for more highly skilled employment opportunities and the workforce development leaders rated healthcare and technology certifications as the top in-demand services needed. In each of the categories of programs, courses, and certification programs the workforce development leaders listed many single outliers. The unique programs were offered in response to the diverse occupational skill needs that may not be prevalent throughout the state (Mangum, 2008) but are necessary to prepare their workers for local in-demand occupations.

Research Question 3

Research Question 3 was, "What are the emerging training and development trends and issues facing the VCCS workforce development leaders as they guide their divisions toward services and partnerships that contribute to the economic strength of their region and those trends that are shifting and changing due to the "role of technology in the workplace, the competitive climate, and the changing composition of the labor force" (Freeburg & Hall, 2008, p. 154)? This question dealt with the impacts of two trends: the emerging trends in general and the trends that were shifting due to technology, competition, and the composition of the labor force. In general the community college workforce development leaders were at a crossroads where their strength in providing flexible responses to demographic, economic, political, and cultural events (Mangum, 2008) was in demand. The leaders listed healthcare, technology, and professional services as the highest in-demand programs, courses, and certifications. They identified the highest impact on their services as course development for dislocated workers with an impact response value of 3.45 in a range of one to five. The next two high impact trends were basic technology training and changing technological literacy needs with an impact response of 3.41. Their responses agreed with the literature and the projections of the Department of Labor (2009), identifying healthcare and technology as the highest areas of strong employment both in skills needed and impact on in-demand services. Virginia Governor Tim Kaine's emphasis on education and training in technology was in sync with the occupational projections and community college workforce leaders' challenges to meet the current training needs of employees and employers.

The workforce development leaders responded to the second part of the question by identifying a very high impact on their planning efforts in many of the technology trends categorized by the International Technology Education Association (2007). The challenges they faced were highest in developing programs and services that contributed to the creation of learning technology resources in the categories of Information and Communication Technology with an impact response rate of 3.59 on a scale of one to five, and Medical Technology with a response rate of 3.45. All of the technology standards set up by the International Technology Education Association (2007) received an impact response between low to very high, consistent with the highest in-demand occupations (United States Department of Labor, 2009) and the highest in-demand training needs (Wagner, 2006).

Research Question 4

Research Question 4 was, "What partnerships are needed to maintain and further develop resources and professional development opportunities for emerging industries and technologies?" The literature review reported the need for interaction and support between workforce development leaders and college and university academic leaders. Studies in 2008 and 2009 described a need for coalitions between colleges, universities, and business and industry. There was a need to fill the gaps between research and development and the services needed in both credit and noncredit programs to support employers and employees in successful regional, national, and global competition. Survey responses indicated a very high impact of partnerships on the ability to gain funding, equipment, subject matter experts, and advanced technology resources in order to further develop resources and professional development opportunities.

Currently resources in Virginia, through federal and state stimulus funding programs, required local and regional collaboration, with strong objectives that identify major in-demand occupations, seamless and unduplicated services that develop a "world class pipeline of competitive employees" (Kaine, 2007). Also The American Recovery and Reinvestment Act of 2009 included provisions that required collaboration (The White House, 2009) in order to gain funding to provide advanced skill training in emerging high growth, high demand occupations.

A survey of 850 business leaders by the University of Virginia and Virginia Commonwealth University found that business leaders rated "availability of qualified workers" (Council of Virginia's Future, 2008) as an extremely high impact issue (4.5 out of 5 on a Likert scale rating) for a successful and competitive business and economic environment in Virginia. The VCCS workforce development leaders reported high impact responses to the need for partnerships necessary to develop and deliver programs, courses, and certification opportunities that both meet and anticipate emerging workforce trends and issues impacting Virginia's employers and employees.

A compelling need to develop strongly interfaced training strategies using the latest instructional technology impacts every aspect of the leaders' planning efforts beyond the current *Dateline 2009* strategic goals and action plans. Ultimately the highest impact recorded by the workforce leaders was in the area of technology, technology resources, and the ability to use the latest and most advanced instructional techniques. In the current economic environment funding, partnering, and focusing on areas of employment growth were identified as the best solutions to responding to the highest, most impacting demands.

This research gained feedback on the trends and issues facing the VCCS workforce development leaders and their perspectives on the impact those trends have on their planning beyond the *Dateline 2009* strategic goals. A summary of the top three responses to each of the four research questions is seen in Table 11.

Table 11

Summary of Responses

RQ1	RQ2	RQ3	RQ4
Emerging High Growth Occupational Areas	**Consistent Past Trend Impacts and Responses**	**Emerging Trends in Technology, Competition, Workforce**	**Partnership Impacts**
Healthcare	Geography	Technology	Customized Training
Technology	Demography	Technology Resources	Networks & Subject Matter Experts
Construction/Trades	Occupational Opportunities	Advanced Instructional Technology	Financial and Resource Support

Note: This table shows the summary of the top three responses to the four questions addressed by this study to identify the emerging workforce trends and issues impacting the Workforce Development Services within the Virginia Community College System.

The willingness of the leaders to participate in this study for a 100% return of the surveys, and their requests for the findings to be presented at their 2009 Peer Conference, indicated their individual and collective commitment to their workforce development role

in supporting the economic growth in each of their regions by adding depth and real world applications to the program and service goals they develop for the next five years.

Recommendations

This study of the emerging workforce trends and issues impacting the Workforce Development Services within the Virginia Community College System was grounded in the mission and goals of the Community College Leadership program at Old Dominion University, to provide resources and tools for community college leaders as a means to excellence and success. Some of the unique community college leadership issues addressed in this doctoral program, and generally in this research, were: "the diversity of the student body, the role of the community college in the higher education system of Virginia, the role and expectations of the communities hosting the community college, and the importance of the workforce preparation the community colleges provide for their local" (Old Dominion University, 2009) employers and employees. The findings in this research indicated a need for community college workforce development leaders to create and maintain innovative partnerships with their academic counterparts, business and industry economic drivers, and their local workforce investment boards to successfully target the needs, the resources, and the funding to fulfill their roles in each of their regions.

The Virginia Community College System Workforce Advisory Council recommended further study of "best practices" (Arnold, Betz, McGinty, Terrell, Wesley, & Fast, 2009) across the Virginia Community College System and also other colleges outside Virginia. This researcher recommends broadening this current research to workforce development leaders outside Virginia starting with the 15 other states in the

Southern Regional Education Board (SREB): Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and West Virginia, and changing Research Question 4 to "What are the strategies you use to develop and maintain partnerships that gain necessary resources, professional development opportunities, and insight into emerging industries and technologies". Further research of specific partnering strategies would provide the VCCS workforce development leaders with a broader array of best practices and successful working models. Increasing the leaders' "baseline of information" (Arnold et al., 2009) will create a higher impact on their ability to gain more access to subject matter experts, resources, and financial support necessary to develop and implement customized skill training in the emerging high growth occupational areas of Healthcare, Technology, Construction, and the Trades.

In the 2009 report from the Workforce Advisory Council Committee, the relationship between workforce development leaders and the 15 Regional Workforce Investment Boards in Virginia continued to strengthen with 19 of the 22 colleges involved in a One Stop center. Seven workforce departments have full time employees in the One Stop, thirteen have part-time employees, three manage the One Stop, and fourteen serve on their Workforce Investment Board (Arnold, Betz, McGinty, Terrell, Wesley, & Fast, 2009). Through the strength of these partnerships all workers or dislocated workers gain greater access to funds that allow development of programs using advanced technology in all of the high growth, high demand occupational opportunities. Researching best practices in other states can further enable the Virginia Community

College workforce development leaders to contribute to the economic growth of their regions' employers and employees.

Additional research is recommended in each of the high impact areas of technology as defined by the International Technology Education Association (ITEA). The seven major areas of technological literacy necessary to economic growth are defined by the ITEA as: Medical, Agricultural and Biotechnology, Energy and Power, Communication, Transportation, Manufacturing, and Construction (International Technology Education Association, 2007). The workforce development leaders recommended to the Workforce Advisory Committee further research on professional development opportunities in the area of technology (Arnold, Betz, McGinty, Terrell, Wesley, & Fast, 2009). The ITEA supports professional development in STEM (Science, Technology, Engineering, and Mathematics) education as a source for preparing today's workforce to meet the emerging trends and issues in the workplace (International Technology Education Association, 2007). Professional development in all of the seven major growing technological areas is recommended so the VCCS workforce development leaders may create long range goals and action plans that lead to a technologically literate workforce. Given their participation in this study and their anticipation of the results it appears they were open to feedback from research that provided current and transferable findings that enrich their programs, courses, and certification offerings.

In closing, more research that is done in each of the areas of emerging technologies in a partnership environment that includes workforce development leaders, academic college and university researchers, and business and industry subject matter experts is needed to document emerging trends and issues impacting not only the

Virginia Community College System but also the national and global workforce. The researcher recommends continuous studies using those in the frontline, both employers and employees, along with workforce development leaders, to provide real world impacts and a seamless transition from research to real-world application.

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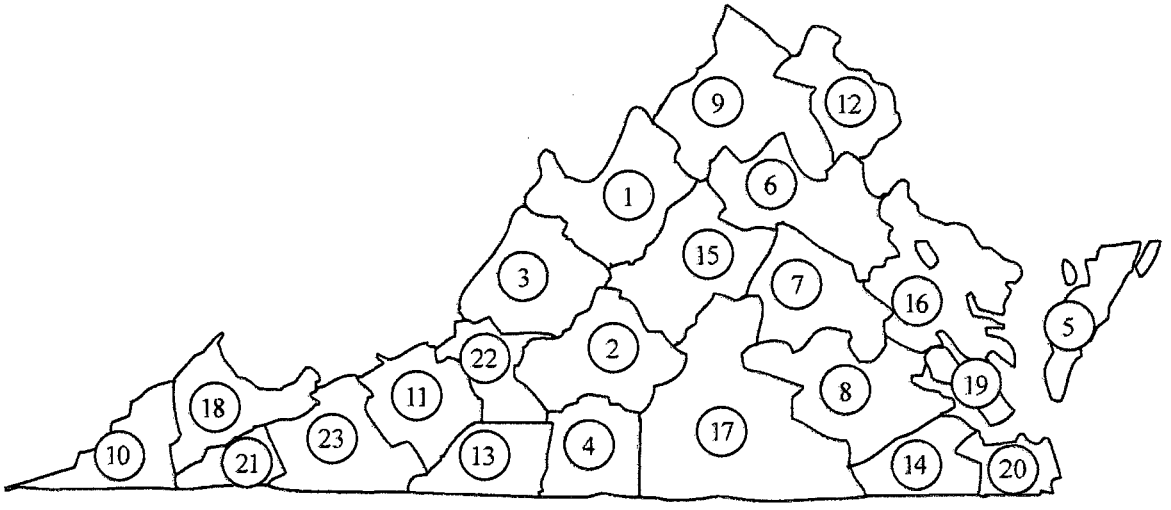
Appendix A

Map of the Virginia Community College System



1	Blue Ridge	9	Lord Fairfax	17	Southside Virginia
2	Central Virginia	10	Mountain Empire	18	Southwest Virgnia
3	Dabney S. Lancaster	11	New River	19	Thomas Nelson
4	Danville	12	Northern Virginia	20	Tidewater
5	Eastern Shore	13	Patrick Henry	21	Virginia Highlands
6	Germanna	14	Paul D. Camp	22	Virginia Western
7	*J. Sargeant Reynolds	15	Piedmont Virginia	23	Wytheville
8	*John Tyler	16	Rappahannck		

**Note*: J. Sargeant Reynolds and John Tyler created the Community College Workforce Alliance (CCWA) in 2003 to provide a collaborative resource for their region. (J. Sargeant Reynolds Community College, 2009)

Appendix B

Virginia Community College Service Regions

Blue Ridge Community College: The cities of Staunton, Harrisonburg, Waynesboro, and the counties of Augusta, Highland, and Rockingham.

Central Virginia Community College: The cities of Lynchburg and Bedford, and the counties of Amherst, Appomattox, Bedford, and Campbell.

Dabney S. Lancaster Community College: The cities of Buena Vista, Clifton Forge, Covington, and Lexington, and the counties of Alleghany, Bath, Botetourt (northern portion), and Rockbridge.

Danville Community College: The cities of Danville and South Boston (shared with Southside Virginia Community College), and Halifax (western portion) and Pittsylvania counties.

Eastern Shore Community College: The counties of Accomack and Northampton.

Germanna Community College: The city of Fredericksburg and the counties of Caroline, Culpeper, King George (shared with Rappahannock Community College), Madison, Orange, Spotsylvania, and Stafford.

***J. Sargeant Reynolds Community College**: The city of Richmond, and the counties of Goochland, Hanover, Henrico, Louisa (shared with Piedmont Virginia Community College), and Powhatan.

***John Tyler Community College**: The cities of Colonial Heights, Hopewell, and Petersburg, and the counties of Amelia, Charles City, Chesterfield, Dinwiddie, Prince George, Surry, and Sussex.

Lord Fairfax Community College: The city of Winchester and the counties of Clarke, Fauquier, Frederick, Page, Rappahannock, Shenandoah, and Warren.

Mountain Empire Community College: The city of Norton and the counties of Dickenson (western portion), Lee, Scott, and Wise.

New River Community College: The city of Radford and the counties of Floyd, Giles, Montgomery, and Pulaski.

Northern Virginia Community College: The cities of Alexandria, Falls Church, Fairfax, Manassas, and Manassas Park, and the counties of Arlington, Fairfax, Loudoun, and Prince William.

Patrick Henry Community College: The city of Martinsville and the counties of Franklin (southern portion), Henry, and Patrick.

Paul D. Camp Community College: The cities of Franklin and Suffolk (south of routes 125 and 337) and the counties of Isle of Wight and Southampton.

Piedmont Virginia Community College: The city of Charlottesville and the counties of Albemarle, Buckingham (northern portion), Fluvanna, Greene, Louisa (shared with J. Sargeant Reynolds Community College), and Nelson.

Rappahannock Community College: The counties of Essex, Gloucester, King and Queen, King George (shared with Germanna Community College), King William, Lancaster, Mathews, Middlesex, New Kent, Northumberland, Richmond, and Westmoreland.

Southside Virginia Community College: The cities of Emporia and South Boston (shared with Danville Community College), and the counties of Brunswick,

Buckingham (southern portion), Charlotte, Cumberland, Greensville, Halifax (eastern portion), Lunenburg, Mecklenburg, Nottoway, and Prince Edward.

Southwest Virginia Community College: The counties of Buchanan, Dickenson (eastern portion), Russell and Tazewell.

Thomas Nelson Community College: The cities of Hampton, Newport News, Poquoson, and Williamsburg, and the counties of James City and York.

Tidewater Community College: The cities of Chesapeake, Norfolk, Virginia Beach, Portsmouth, and Suffolk (north of routes 125 and 337).

Virginia Highlands Community College: The city of Bristol and the counties of Smyth (western portion) and Washington.

Virginia Western Community College: The cities of Roanoke and Salem, and the counties of Botetourt (southern portion), Craig, Franklin (northern portion), and Roanoke.

Wytheville Community College: The city of Galax and the counties of Bland, Carroll, Grayson, Smyth (Marion and eastward), and Wythe.

(State Board for Community Colleges, 2008, pp. 1-3).

**Note*. J. Sargeant Reynolds and John Tyler created the Community College Workforce Alliance (CCWA) in 2003 to provide a collaborative resource for their regions (J. Sargeant Reynolds Community College, 2009).

Appendix C

Virginia Community College System Workforce Development Survey

This survey is designed to identify the workforce trends and issues impacting the VCCS Workforce Development Division. The goal of this survey is to discover emerging training and development trends and issues; changing trends in requests for training and development services based on technology, global competition, and a diverse employee composition; evolving high growth, high demand workplace skill needs; and the partnerships necessary to maintain and develop resources and create regional advantages for opportunities in emerging industries and technologies.

Please answer each of the following sections.

Section I. Background

Please describe your region and your experience by placing a check (✓) on the line or in the box.

Urban ____ Suburban ____ Rural ____

How many companies did you serve in 2007 – 2008?

1 – 99 ____ 100 – 200 ____ 201 – 500 ____ 501 – 1000 ___ 1001 + ____

How many individuals did you serve in 2007-2008?

1 – 499 ____ 500 – 1000 ___ 1001 – 5000 __ 5001 – 10,000 10,001+___

What are the high-demand occupations in your region?

	Years			
Please check (✓) the number of years	1-5	6-10	11-19	20+
Length of time you have served in current VCCS Workforce Development Leader position				
Length of time you have served in any/all Workforce Development Leadership positions				
Years of experience in Education in general				
Years of experience in Business (outside the field of Education)				

Section II. Programs, Courses, and Certifications
Program – A set of structured courses in a specialized area
Course – A prescribed instruction in a particular subject
Certification – Credential demonstrating proficiency based on professional standards

Please list your top 5 in-demand programs, courses, and/or certifications.

Programs

Courses

Certifications

Programs and/or Services you consider unique to your region

Section III. Current and Future Workforce Services

The statements below refer to the impact the listed items have on the workforce services currently being offered or under development in your region.

Please check (✓) the response to the survey statements using a scale of 1 to 5 where 1 means the lowest possible impact and 5 means the highest possible impact on your workforce development department services. Add any not covered and specifics to clarify at the end of section A.

1 No Impact 2 Low 3 Medium 4 Very High 5 Extremely High

A. Emerging training and development trends

High or low impact on your workforce services?	1	2	3	4	5
1. The new GI Bill funding effective August 1, 2009					
2. Course development for dislocated workers					
3. Course development in collaboration with Opportunity Inc. or your local investment board					
4. Use of stimulus funds to provide training for dislocated workers					
5. Development of customized courses for incumbent workers					
6. Delivery of small business owner training					
7. Emerging and current Apprenticeship programs					
8. Preparation courses for state and national certification testing					
9. Set up as certification testing location					
10. Delivery of continuing education online courses					
11. Delivery of hybrid courses					
12. Delivery of instructor-led Blackboard continuing ed courses					
13. Basic technology training					
14. Training to prepare employees to be successful in a globally competitive climate					
15. Changing technological literacy needs					
Comments:					

B. Shifting trends due to technology

(International Technology Education Association, 2007)

High or low impact on your workforce services?	1	2	3	4	5
16. Instructional technology					
17. Instructor training in emerging techniques/equipment					
18. Agricultural and Related Biotechnologies					
19. Construction Technologies					
20. Energy and Power Technologies					
21. Information and Communication Technology					

22. Medical Technologies					
23. Manufacturing Technologies					
24. Transportation Technologies					
25. Other shifting trends you are experiencing due to technology					
Comments:					

C. Partnerships- Which partnerships are needed to maintain and further develop resources and professional development opportunities for emerging industries and technologies?

High or low impact on your workforce services?	1	2	3	4	5
26. Regional partnership networks					
27. National partnership networks					
28. Resource support from partners (check all that apply in list)					
a. Financial					
b. Equipment					
c. Subject Matter Experts					
d. Other partner support (specify and rate impact)					
29. Academic partnerships resulting in brokering credit programs to business and industry partners					
30. High school partnerships providing information and motivation to students to pursue education and/or training beyond K-12					
31. Succession planning with business and industry partners					
32. Partnerships with OPP Inc/ WIB/ VEC to provide workplace readiness training					
33. Customized, flexible contract training for business and industry partners					
Comments:					

D. Workforce Composition – How much impact does the changing workforce have on your training in everything from language and cultural issues to generational differences

High or low impact on your workforce services?	1	2	3	4	5
34. English as a Second Language (ESL) test preparation courses					
35. Spanish in the workplace continuing education courses (or other languages – note in comments)					

36. Diverse participant population (age, gender, culture – note in comments)					
37. Assessments and assistance for low-performing high school students taking Standards of Learning (SOL) tests					
38. Increased use of the Career Readiness Certificate program					
Comments Any additional comments overall					

Please return this survey no later than **July 15, 2009,** in the enclosed pre-addressed and stamped envelope.

Thank you for your time and participation in this research. You will receive a summary of the findings when completed.

Mary Greer Landon
Ph.D. Candidate, Community College Leadership Higher Education Program
Old Dominion University

Appendix D

Expert Panel Survey Rating Form

Please check (✓) the survey rating questions using a scale of 1 to 5 where 1 means poor and 5 means excellent.

1. Poor
2. Fair
3. Good
4. Very Good
5. Excellent

Please add any comments that will add clarity of content, visual symmetry, and ease and efficiency in completing the survey.

	1	2	3	4	5
1. Does the survey fulfill the data collection needs of the study as defined in the Statement of the Problem and the Research Goals (attached)?					
Comments:					
2. Were the directions for completing the overall survey clear?					
Commetns:					
3. Was the layout of the survey easy to read?					
Comments:					
4. Were the statements clear?					
Comments:					
5. Were there any grammatical or spelling errors?					
(Please mark on the document or note here specifically)					
Comments:					

Your feedback is very important to the validity and objectivity of this survey.
Thank you for your time and effort in testing and editing this survey.

Mary Greer Landon
Ph.D. Candidate, Community College Leadership Higher Education Program
Old Dominion University

Appendix E

Survey Cover Letter

June 3, 2009

Name
Institution
Address
City, State, Zip

Dear Title Name,

As workforce development leaders in the Commonwealth of Virginia your position and relationships with the business and industry leaders in each of your regions affords you a front line perspective and an awareness of the trends and issues facing employers and employees in the current economic environment. As a doctoral student in Old Dominion University's Higher Education program in Community College Leadership, I am conducting research for my dissertation seeking to identify the impacts of the emerging trends and issues on the Workforce Development Divisions within the Virginia Community College System.

This research will allow us, collaboratively, to assess the emerging training and development needs. Your feedback will add a current perspective to the research to date on the shifts and changes in workforce needs due to technology, global competition, and growing diversity in the employee composition. Your perspective is important in planning for the emerging high growth, high demand occupational workforce skill needs, while strengthening and further developing the partnerships necessary to developing resources and opportunities to meet those needs.

Please answer the survey as openly and comprehensively as possible. All answers will be aggregated; individual feedback will remain confidential; and you will receive a summary report with the results. Your feedback is extremely important to the completion of my dissertation research and to the future planning of our collective workforce development efforts. For your convenience, I have provided a pre-addressed, stamped return envelope. Please return this survey by July 15, 2009. Thank you very much for your time and interest in completing this survey.

Sincerely,

Mary Greer Landon
Ph.D. Candidate, Community College Leadership Higher Education Program
Old Dominion University

Enc: VCCS Workforce Development Survey
Stamped Return Envelope

Appendix F

Second Mailing Electronically

Date

Name
Institution

Dear Title Name,

You recently received a survey regarding the emerging trends and issues facing the Virginia Community College Workforce Division. If you have not already done so, please take a few minutes to respond to this survey.

I am conducting this research as a portion of my doctoral dissertation requirements from Old Dominion University. Your input is extremely important to the validity and credibility of the research. For your convenience I have attached an electronic copy of this survey to this email. Please return the paper copy or complete the electronic copy and save it and email it back to me July 30, 2009.

Thank you very much for taking the time to complete the survey. You will receive a summary report once all the surveys have been received and analyzed.

Sincerely,

Mary Greer Landon
Ph.D. Candidate, Community College Leadership Higher Education Program
Old Dominion University

VITA

Mary Greer Landon
2704 Shore Drive
Virginia Beach, VA 23451

Academic Degrees:

Ph.D. Program	Community College Leadership Old Dominion University
MS (Business and Industry Training)	Old Dominion University
BS (Aviation Management)	Southern Illinois University
Associates Degree	Community College of Allegheny County, Pittsburgh, PA

Professional Experience:

2006 – Present	Associate Vice President Workforce Development Tidewater Community College (TCC)
2005 - 2006	Assistant to the Provost of the TCC Chesapeake Campus assigned to the SACS accreditation process
2004 - 2006	Graduate Coordinator for the Ph.D. Program - Community College Leadership Intern to the Provost of the Chesapeake Campus - Tidewater Community College (TCC) National Science Foundation Grant Curriculum Development Consultant (TCC)
2000 - 2004	Adjunct Faculty, Occupational and Technical Studies, Old Dominion University • Curriculum Development • Basic Computer Skills - MSWord, Excel, PowerPoint, Publisher • Teaching/Training Techniques

Presentations:

- Begland, J., Landon, M., LeBlanc, D., & Leber, R. (2007, October). Partnerships that Work. US DOL ETA Conference. St. Petersburg, FL.
- Landon, M. (2008, March). NEXCOM 2008 Women's History Month, "Mentoring for Success". Norfolk, VA.
- Landon, M. (2008, November). Workforce Development Marketing Planning Workshop. Norfolk, VA.
- Landon, M. (2008, December). Workforce Development Services in Hampton Roads. Norfolk Redevelopment and Housing Authority, Norfolk, VA.
- Landon, M. (2009, January). Workforce Development Skill Training Contributions to Economic Growth. Rotary Club of Portsmouth. Portsmouth, VA
- Landon, M. (2009, February). Successful Workplace Skills and Attitudes.

Kempsville High School Leadership Group. Virginia Beach, VA.

- Landon, M. (2009, April). Focus Forward Five Years. Hampton Roads Business and Industry Cluster Group Forums. Norfolk, VA.
- Landon, M. (2009, December). Invited to present Dissertation Findings, "Emerging Workforce Trends and Issues Impacting the Virginia Community College System. VCCS – Continuing Education & Workforce Development Peer Conference. Hot Springs, VA.

Grants:

- Virginia Community College System, Tech Prep of Virginia, "Old Dominion Tech Prep, Distance Learning," January – June 2000, $44,500. Assistant to Dr. John Ritz.
- NSF Grant for Development of Competency based curricula for Virginia Beach Public Schools and Tidewater Community College, 2002 – 2004.
- Institutes of Excellence Grant. "Warehousing, Storage, & Distribution Certificate Program", 2007 – 2008, $15,000.
- Institutes of Excellence "Just in Time" Grant, High Tech Corporate Start up Training. 2008 – 2009, $7,500.
- Institutes of Excellence Grant, "Professional Caregiving in an Aging Society", 2009 – 2010, $15,000.
- Applied for Energy Training Partnership Grant with multiple college and industry partners, 2009 – 2011, $300,000.

Awards:

- Outstanding Teaching Assistant, Old Dominion University, 1999.
- Rotarian of the Year, Rotary Club of Northside Norfolk, 1996 - 1997.
- Rotarian Service Above Self Award, Rotary Club of Northside Norfolk, 2002 - 2003.
- Service Award: Exemplary Service to the ODU Doctoral Students in the Community College Leadership Program, June 2006.
- Chancellor's Award for Outstanding Trainer/Instructor, Virginia Community College System. May 26, 2009.
- Certificate of Recognition for exceptional and exemplary contributions to Career and Technical Education in the Commonwealth of Virginia. Virginia Department of Education. August 5, 2009.