Stages of Concern in the Implementation of the Virginia Credentialing Initiative in Rural Southwestern Virginia

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ABSTRACT

The purpose of this study was to describe the needs and concerns regarding the Virginia Credentialing Initiative (VCI) of career and technical education (CTE) stakeholders in rural southwestern Virginia. These stakeholders included central office CTE administrators, high school principals, guidance counselors, and high school CTE teachers. The Stages of Concern Questionnaire (George, Hall, & Stiegelbauer, 2008) was sent to 355 participants with 260 responding for a return rate of 73%. All of the respondents were employed in Superintendents' Region Seven.

There are seven Stages of Concern: 0 Unconcerned, 1 Informational, 2 Personal, 3 Management, 4 Consequence, 5 Collaboration, and 6 Refocusing. Results revealed that when categorized by occupational areas, central office CTE administrators and teachers had primary concerns that ranged from Unconcerned to Personal. Guidance counselors had primary concerns that ranged from Unconcerned to Informational. High school principals had primary concerns that ranged from Unconcerned to Personal. All groups had lowest concern levels at the Consequence and Refocusing stages. Results for each group varied slightly when the number of years of experience was used as a reporting category. The primary level of concern was at the Unconcerned stage for each group when the respondents had 5 or fewer years of experience.

CTE teacher groups were also categorized by subject area as those with long-standing licensing history (cosmetology, nursing, welding) and those newer to credentialing (agriculture, business, family and consumer sciences, marketing). The fields of nursing and welding had primary concerns at the Unconcerned level, while those in the agriculture, business, cosmetology, family and consumer sciences, and marketing subject areas peaked at the Personal level.

Further research is recommended in relation to CTE stakeholder concerns and the implementation and use of the VCI. The implementation of new state legislation will affect CTE stakeholders as they adapt to the new graduation requirements for students pursuing a standard diploma. It is also recommended that qualitative research be conducted to ascertain specific avenues for addressing stakeholder needs and concerns, such as professional development.

Dedication

This dissertation is dedicated to the three most important people in my life, my beautiful wife Lori, my daughter Julia, and my son Max. Without their love and support I would not have accomplished this task. To Lori, for the many days and nights you have had to be a single parent, for the times you had to keep everyone quiet, for the times you let me disappear to the basement and tell little "white lies" that daddy is gone so I could get some work done, for the times you've adjusted your schedule so I could attend class or complete an assignment, this dissertation is for you. I appreciate all the sacrifices you've made and I love you for it.

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thanks for your words of encouragement and your ability to listen patiently while I explain why I’m right on just about every topic or situation.

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CHAPTER ONE
INTRODUCTION

As the global economy experiences one of the worst economic downturns in the last 40 years, educational reform is again brought to the center of national debate. These economic slides often produce calls for reform and change in the way our children are educated and in the types of skills they should possess upon successful completion of a secondary school education. Darling-Hammond (2009, p. 212) noted that President Obama voiced concern of a slipping school system while on the campaign trail as he pointed out that "the bar for education is rising and U.S. performance has fallen further behind other industrialized nations on every measure."

For the U.S. to meet the challenge of rising standards and performance, the system and its teachers must undergo a change process. School change is not a new phenomenon as many school change models have been proposed over the last 40 years with emphasis on student achievement (Cuban, 2008; Glickman, Gordon, & Ross-Gordon, 2004; Hargreaves & Goodson, 2006). Change and reform are a constant in the world of education, for institutions of learning can become stagnant if they do not keep pace with current technologies and researched best practices. As Moore and Trenwith (1997) noted, "the relationship between the education system and the economy and between educational knowledge and the needs of industry has provided one of the most intractable areas of debate in education" (p. 59).

The call for change and reform is necessary at times for schools, but simply voicing a declaration that change is needed is not enough. Painting all educational systems with one reform brush is not adequate or effective at facilitating change. There must be direction and guidance for any reform effort, and that is the same for needed change in math education, science education, and in career and technical education (CTE). Kazis (2005) noted that attention should be paid to movements in the labor market and career-focused education must be redefined in response to emerging trends.

While the calls for change are directed at an entire nation or school division, few seem to realize that change is only accomplished when individuals within a system make a change (Hall, 1975). Fullan (1993) noted that being exposed to change is not enough, implementers must become skilled in the new innovation, not just like it.

"Change or innovation adoption is not accomplished in fact just because a decision maker has announced it" (Hall, Loucks, Rutherford, & Newlove, 1975, p. 52). In fact, in school settings

it is the combination of training, attitudes, politics, and structure that work against improving practices. As Fullan (1993) noted:

> The way that teachers are trained, the way that schools are organized, the way that the educational hierarchy operates, and the way that education is treated by political decision-makers results in a system that is more likely to retain status quo than to change. (p. 3)

Because of the system's resistance to change, it is imperative that as new innovations are suggested and encouraged as innovations for educators to adopt, there also be education and training for the educators prior to implementation. As Guskey (1986) pointed out, quality staff development is a central component for improving education. The contents of this chapter will serve as a brief introduction to CTE reform, the purpose of this study, research questions to be answered, the significance of the study, and some of the terminology used within the study.

Career and Technical Education Reform

There is a global need for workers with CTE skills. Employers in six of the ten largest economies ranked specialized skills as their top hiring challenge (Manpower, 2010). The Center for Workplace Preparation (2002) reported that nearly 73% of employers surveyed reported difficult conditions when trying to hire qualified workers. Public school systems must ensure that graduating students are equipped with skills for both employment and continued learning. Personnel in schools and universities must push students to a higher level of learning to meet the demands of local and global economies. Employers must continue to bridge education with job skills and encourage continued learning. Students and workers must embrace education as a life-long endeavor (National Commission on Excellence, 1983). To compete in this global economy students will need some form of postsecondary education even if it is non-degree company training (Barton, 2007; Lynch, 2000a).

Because the economic standing of the United States is currently experiencing an unstable period, the training of our future workforce should be of utmost importance. Governmental policy debates at the local, state, and federal levels seek to use education initiatives as a means of improving the quality of American workers with hopes of stimulating our economy. While education reform and change does have great consequence to the economic health of a nation, Bracey (1994) pointed out that it was also especially important to the economic health of the

individual learner. Lynch (2000a) identified several forces as underscoring reform of high school CTE programs in the United States, including changes in the national economy and public expectations for secondary school programs.

Skinner, Witte, and Witte (2010) stated that "unlike some academic areas, CTE must be in a constant state of change to serve all the stakeholders" (p. 198). Reform efforts in CTE have the potential to affect a large percentage of students as nearly half of all high school students are involved in these programs as a major part of their studies, with 96.6% of all graduates having taken at least one CTE course (Silverberg, Warner, Fong, & Goodwin, 2004). Offenstein, Moore, and Shulock (2009) noted that "vocational education has been transformed from training students for relatively low-skilled occupations to educating students for higher-skilled careers that have greater opportunities for advancement" (p. 2). CTE has evolved into a vessel that transports students to potentially higher levels of education and employment. "Vocational education teaches students marketable skills and attitudes that can help them find skilled jobs and reduce their risk of unemployment or employment as low-paid unskilled workers" (Arum & Shavit, 1995, p. 188).

As the push for higher skills has influenced CTE coursework, a pleasant consequence is the preparation for employment and higher education within the same curriculum. Lynch (2000a) noted that this type of training does not focus on one specific job skill, but rather teaching all aspects of an industry. This change to industry training versus specific job training is the opposite of the thinking that had dominated training in an earlier era. Prosser and Quigley (1950) advocated for job specific skill acquisition that could be mastered through repetition. Prosser was a proponent of separate or dual education that kept vocational and academic learning separate. Lynch (2000b) proposed that vocational education adapt "more integration of academics…more work-based learning, more collaboration with business and industry, …and more accountability for results" (p. 53). This collaboration with business and industry would also entail adopting rigorous industry standards within the curricular goals of CTE coursework (Lynch, 2000a).

Credentialing, which includes licensure and certification, provides some authority for the holder and provides a guarantee that the recipient has met pre-established standards of quality (Foster & Pritz, 2006). Programs that allow for credential acquisition are appealing to personnel in both industry and schools because they provide accountability for program relevance (Wilcox, 2006).

Through the use of competency-based education (CBE), CTE students are required to demonstrate mastery of rigorous industry standards. This mastery is then put to the test by use of an independent credentialing organization. The acquisition of industry recognized credentials can be an asset to both the student and to industry employers. By earning these credentials, students can place themselves ahead of other applicants for positions in a chosen industry (Castellano, Stone III, & Stringfield, 2005). While skill acquisition takes place within the high school setting, the measurement via a credential examination is measured by external organizations (Castellano, et al.). The arena of authentic, work-related assessments will provide valuable information to potential employers about student potential but also about program rigor and relevance to the industry. Through CTE programs and skill acquisition, students can avail themselves of higher skill jobs, which will in turn contribute to a state's economic development (Krueger, 2004).

Educators in the Virginia Department of Education began recognizing industry credentials in 2002 (Virginia Department of Education, 2009), but it was not until the reauthorization of the Perkins Act that these educators began to mandate industry credential testing for all CTE students in 2007.

> In Virginia's credentialing initiative a "credential" is any industry certification examination, licensure, or occupational competency assessment that is passed (achieved) by a student which is eligible for student-selected verified credit option as approved by the Virginia Department of Education. (Virginia Department of Education, 2008a, p. 1)

Introducing a new innovation or change to a school system includes asking the key stakeholders, including teachers, principals, guidance counselors, and central office personnel, to take ownership in the innovation and serve as key players in the implementation. As noted by Cunningham, Hillison, and Horne (1985), if an innovation in career and technical education is to be adopted, participation of classroom teachers is crucial. For an innovation to be implemented, the needs and concerns of the stockholders must be met and resolved. Before any concerns can be addressed, the concerns must first be identified. The use of the Concerns Based Adoption Model (CBAM) will serve as the conceptual framework for this study of user concerns. "CBAM is about the parallel process of change, the natural and developmental process that each of us goes through whenever we engage in something new or different" (Horsley & Loucks-Horsley, 1998, p. 17). The Stages of Concerns Questionnaire (SoCQ) will serve as the instrument of identification for the study.

Purpose of the Study

The purpose of this study was to describe the needs and concerns of central office CTE administrators, high school principals, guidance counselors, and CTE teachers in rural southwestern Virginia as they implement the Virginia Credentialing Initiative. The Concerns Based Adoption Model (CBAM) (George, Hall, & Stiegelbauer, 2008) and instrumentation was used to profile the Stages of Concern (SoC) (George et al.) of these individuals involved in the adoption of this educational innovation. This information could assist implementers in improving implementation of the innovation. As practitioners have their concerns and needs met, they will be better able to implement the initiative and increase the effectiveness of the Virginia Credentialing Initiative.

Research Questions

The researcher will address three issues related to the implementation of the Virginia Credentialing Initiative in Superintendents' Region Seven in Virginia:

1. What are the Stages of Concern profiles of central office CTE administrators, high school principals, guidance counselors, and CTE teachers involved in the implementation of the Virginia Credentialing Initiative?
2. What are the Stages of Concerns profiles of teachers in subject areas with long standing licensing requirements (e.g., nursing, cosmetology, welding) and the profiles of teachers in subject areas that are relatively new to credentialing (e.g., agriculture, business, family and consumer sciences, marketing)?
3. What are the Stages of Concerns profiles of central office CTE administrators, high school principals and assistant principals, guidance counselors, and CTE teachers with different amounts of experience in their current educational role?

Significance of the Study

Senger (1999) stated that many "curricular reforms may be fragile and transient" (p. 201) and because this may be true, a planned program of training would be most beneficial to stimulating acceptance and successful implementation. In order to develop a plan and devise training, one must ascertain the level of training needed and in what form this training must evolve. To ensure effective change and innovation adoption, knowledge of the Stages of Concern

of the individuals involved in the implementation would be the cornerstone of staff development. The Concerns-Based Adoption Model is based on the premise that change is an ongoing, personal experience, of which the effectiveness is contingent to the level and appropriateness of training provided to the users (Hall & Loucks, 1978b). Any training, such as staff development, would need to match the needs and concerns voiced by the trainees in order to enact effective change and implementation of the innovation.

To have useful and effective change and reform, it is beneficial to understand the needs of the people responsible for the innovation implementation. The more effectively their needs are met, their questions are answered, and their fears set aside, the more effective and useful the innovation will become. Fullan (2007) noted that to have better implementation of programs it requires having better implementers. By meeting the needs of the implementers through education and training, the implementation of the Virginia Credentialing Initiative can be more successful and be maintained by the CTE community.

Delimitations

The researcher focused only on Superintendents' Region Seven in Virginia, which consists of mostly rural communities and school populations. The researcher is employed in a school division located in this region. This study may not lead to generalizations about other regions of the Commonwealth.

Definition of Terms

Career and technical education (CTE): "Organized educational activities that offer a sequence of courses that provides individuals with coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in current or emerging professions; provides technical skills proficiency, an industry-recognized credential, a certificate or an associate degree; and may include prerequisite courses that meet the requirements of this subparagraph; and include competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and

knowledge of all aspects of an industry, including entrepreneurship, of an individual" (Carl D. Perkins Act of 2006, p. 4).

Carl D. Perkins Career and Technical Education Act of 2006: Provides funding for career and technical education focusing on the academic achievement of CTE students while strengthening the connections between secondary and post-secondary education and increasing accountability of local and state programs (United States Department of Education, 2007).

Career and technical education teachers: Individuals employed as teachers in a CTE funded instructional program at secondary schools or CTE training centers where industry credentialing occurs.

Central office CTE administrators: Individuals employed by school divisions in the central office as directors or supervisors with CTE program management duties for the entire division.

Concerns: A term Hall (1979) used to "…represent a composite description of the various motivations, perceptions, attitudes, feelings, and mental gyrations experienced by a person in relation to an innovation" (p. 203).

Concerns-Based Adoption Model (CBAM): Rutherford, Hall, and Huling (1983) stated that this model is designed for "…the development of knowledge about and new understandings of the change process and the provisions of tools and assistance for practitioners involved with the implementation of change in schools" (p. 133).

Credential: "Any industry certification examination, licensure, or occupational competency assessment that is passed (achieved) by a student which is eligible for the student-selected verified credit option as approved by the Virginia Board of Education" (Virginia Department of Education, 2008a).

Guidance counselors: Individuals involved in career counseling and course scheduling for students in secondary schools and CTE training centers where industry credentialing occurs.

High school principals: Individuals employed as either principals or assistant principals at the high school level. These individuals have duties and responsibilities related to the function of CTE classes within their respective schools.

Implementation: As defined by Dennison (1993), "…all of the events, actions, and decisions involved in putting an innovation to use" (p. 11).

Virginia Credentialing Initiative: Designed by the Virginia Department of Education (VDOE, 2008a) to serve students by accomplishing the following objectives:

- To serve as an accountability component for Career and Technical Education results and to meet requirements as related to the Carl D. Perkins Career and Technical Education Improvement Act of 2006 (passed as Public Law 109-270) to cover the period 2008-2013.
- To provide continuing program and instructional improvement options.
- To provide opportunity for students to achieve industry certification and licensure which serve as "stepping stones" for students' progress in specific career pathways and/or post-secondary education.
- To provide students an opportunity to demonstrate competence in job-related skills and knowledge that are considered industry standard.
- To offer an option for students to achieve the CTE diploma seal upon graduation.
- To offer students an opportunity to earn student-selected verified credits for graduation. (p. 2)

Chapter Summary

The contents of this chapter were focused on the efforts to implement change in CTE in an effort to enhance the nation's economy and to improve our standing in relation to global markets. Through the authorization of legislation such as the Perkins Acts, the members of the United States Congress have sought to fund CTE and to direct it's mission through the use of initiatives such as the Virginia Credentialing Initiative. The expectations are clear: by training our students with more rigor and providing more relevance, the students of today will be better equipped to find employment and provide a boost to a weakened economy.

Organization of the Document

The contents of chapter one provides an introduction to the concept of educational reform in CTE, the significance and purpose of this study, research questions, and definitions applicable to this study. The researcher used chapter two of this dissertation to provide a review of the

literature pertinent to the study and a brief description of educational reform as related to both academic education and career and technical education. Perkins legislation is introduced as the background for the requirements of student expectations and the development of credential expectations for Virginia students enrolled in CTE courses. The change process is a key section of this chapter and the barriers to be overcome to enact successful change and innovation adoption. Each level of the Concerns Based Adoption Model is described in this chapter.

Chapter Three contains a description of the research design, participants, the research instrument, reliability and validity of the research instrument, data collection, and data analysis procedures of the study. Chapter Four contains the data collected through the use of the CBAM survey with statistical representation of participate responses to answer research questions one, two, and three. Chapter Five contains a summary of the research findings, conclusions, and recommendations for future study and research.

CHAPTER TWO
LITERATURE REVIEW

The contents of chapter two contains a review of the literature on educational reform, specifically focusing on career and technical education (CTE) reform. The other major topics included are credentialing and certification, regional employment sectors, change in education, leadership in the change process, and the Concerns Based Adoption Model (CBAM).

Educational Reform

There are many different definitions of what educational reform means. Reform is usually a response to a call for change in the manner in which an organization is operating. Sambs and Schenkat (1990) defined reform as the purposeful and systematic altering of a range of beliefs, conditions, practices, and traditions to attain a specific end. Soltis stated that "reforms are ordinarily proposed to repair, improve, or redirect an institution, not to change them in radical ways" (1988, p. 241).

The public education system is usually a target for those looking to place blame for the United States' economic trials and tribulations, and this has been especially true over the past 30 years. As problems are experienced in the economy, the relationship between education and our workforce are highlighted through "a complex but direct path from ineffective schools to…loss of international competitive advantage, and high unemployment of youth" (Hartley, Mantle-Bromley, & Cobb, 1996, p. 24). Borschee (1989) stated that "as in the past, the nation's elementary and secondary schools are used as a catchall for the problem social issues and as whipping boys for the current US economic standing in the world" (p. 78). While this statement was made over 20 years ago, it is still an appropriate stance for our current reform climate.

While the climate for reform may be relevant and current, it is by no means a new phenomenon. Even at the turn of the twentieth century, leaders were questioning the effectiveness of education as Dewey (1900) questioned how the basic skills were taught. The call for reform is an old one, however for the purposes of this paper I have focused on reform efforts beginning in the year 1983.

The Two Waves

There have basically been two separate "waves" of educational reform since 1980 (Asche, 1994; Gordon, 2003; Hall & Hord, 2001, Rojewski, 2002). The early 1980s were a time of great consternation for the American public regarding the standing of the US education and economy in relation to other world powers. As usual, much of the focus was placed upon the public education system. Hanushek (1986) noted that during a two month period in 1983 there were five reports on the nation's schools, which included National Commission on Excellence in Education, Aerospace Research Center, Business-Higher Education Forum, Education Commission of the States, and the Twentieth Century Fund. According to Timar and Kirp (1989), in the United States "more than 700 state statutes affecting some aspect of education were enacted between 1984 and 1986" (p. 506).

The main thrust for educational reform in 1983 began with the publication of *A Nation at Risk.* The publication was explicit in summarizing the United States' risky footing as it's "once unchallenged preeminence in commerce, industry, service, and technological innovation is being overtaken by competitors throughout the world" was being evidenced by a "rising tide of mediocrity" in the American school system (National Commission on Excellence in Education, 1983, p. 7).

"The first wave, sometimes characterized as academic reform, called for increased effort from the current education system: more academic course requirements and more stringent college entrance requirements" (Gordon, 2003, p. 87). "Demands for academic excellence were translated into more required subjects, a longer school year, more homework, and higher test scores. More students took chemistry, geometry, and foreign languages; fewer students registered for vocational courses" (Cuban, 1990, p. 5). These graduation requirements made it increasingly difficult for students interested in vocational education to "take all the required courses plus a vocational program that typically involves six credits" (Gray, 1991, p. 440). Gordon (2003) and Daggett (2003) noted that school reform efforts in the early 1980s focused on secondary education because of complaints from the business community about the low skill level found in the nation's graduates.

This era of reform is noted for its push for a return to the basics. School systems across the country placed a greater emphasis on basic subjects such as math, science, history, and English. Castellano, Stringfield, and Stone (2001) defined educational reform as school systems

raising standards and increasing the requirements of graduation and that "traditional academic skill improvement was the clear goal" (p. 11). Due to the greater importance placed upon the academic subjects, there was an overall drop of 50% in secondary school CTE course enrollment (Husain, 1999).

As the years passed, the feelings of discontent that many in the US had for the public school system had not dissipated. Cuban (1990) noted that many felt the reform efforts of the early portion of the decade had failed. O'Reilly and Asche (1992) stated that reforms of the "early 1980s advocated primarily increases in what schools were already doing" (p. 23).

During this time of reform, vocational education was not seen as a viable avenue for educational change (Castellano, et al.; 2001, Lynch 2000b; O'Reilly & Asche, 1992). Asche (1994) noted that "while the basis of many of the proposed reforms is economics, most have failed to deal adequately with the role of vocational and technical education in preparing and retraining the nation's workforce" (p. 1). According to Castellano, et al. (2001) and Lynch (2000b), vocational education remained on the outside of the national debate on education. This lack of inclusion of vocational education seemed at odds with the general call for reform. Veum (1993) stated that "improvements in the quality of the American work force through enhanced education and training are often deemed necessary for the United States to compete in the global market" (p. 27). CTE was not included in these reform efforts, although many graduates from CTE programs entered the workforce immediately following secondary school graduation.

The second wave of reform focused on raising standards for not only the students of America's schools, but also the teachers. "The second wave,…moves beyond setting of standards to improving the quality of teaching and learning at the school site" (Center for Policy Research in Education, 1989, p. 3).There were more reports published that specified both the problems and cures for the current educational problems. Some of the reports were the Holmes Group's (1986) *Tomorrow's Teachers,* the Task Force on College Quality's *Time for Results: The Governors' 1991 Report on Education* (1986), and *A Nation Prepared: Teachers for the 21st Century* (1986) by the Carnegie Forum on Education and the Economy.

The Carnegie report placed greater emphasis on the need to improve the quality of teaching and inferred that this was the avenue to improve student learning (Center for Policy Research in Education, 1989). The focus was to not simply improve the abilities of some

teachers but to improve all teachers by building the profession of teaching (Koppich, Humphrey, & Hough, 2007).

With the call for more highly qualified teachers also came calls for higher standards for the schools and the students who inhabited them. These new standards would include content standards goals for students, accountability systems for schools and districts, and autonomy for school systems to make their own decisions over how to improve student performance (Watson & Supovitz, 2001). The No Child Left Behind legislation sponsored by the Bush administration called for increasing accountability both for students and schools and demanded that states design and implement rigorous testing systems to improve the quality of American graduates (No Child Left Behind Act of 2001). President Obama is also pressing for higher standards of U.S. schools and his Race To The Top initiative "encourages and rewards States that are creating the conditions for education innovation and reform" (U.S. Department of Education, 2009, p. 2).

Career and Technical Education Reform

For the purposes of this paper, I have used career and technical education as the term to describe this component of education. Around 1992 (Ries, 1997), school systems began changing from the title vocational education. The Virginia Department of Education currently uses the title career and technical education. Because my research participants are located within the Commonwealth of Virginia, I too will use career and technical education unless quoting from another author who used the term vocational education.

Career and technical education as an area of study in public schools is itself a result of school reform efforts. During the late 1800s and early 1900s, the United States experienced large numbers of immigrants, which coincided with our industrial revolution. There was a great need to meet the needs of industry and to assimilate these new residents into the culture of the country (Benavot, 1983; Gordon, 2003; O'Reilly & Asche, 1992; Skinner, Witte, & Witte, 2010). One way to provide both assimilation and training was to incorporate occupational training into the public schools. "Thus, the earliest vocational programs were grounded primarily in the need to prepare more blue-collar-type students with practical skills for the nation's farms, factories, and homes" (Lynch, 2000a, 4). This reform moved public education away from an elitist enterprise to "transition from a narrow bookish preparation for the few to a comprehensive utilitarian education for the masses" (O'Reilly & Asche, p. 23).

"The federal government has had a long-standing awareness of the importance and relevancy of CTE courses to preparing students for citizenry and for the economic development of the U.S." (Fletcher, 2006, p. 162).The Smith-Hughes Act of 1917 was the first act to establish federal funds for vocational education in secondary schools (Hayward & Benson, 1993; Skinner, Witte, & Witte, 2010; Wenrich & Wenrich, 1974). This act also served to separate vocational education from classical or academic curriculum (Benavot, 1983; Gordon, 2003; Gray, 1991; Hayward & Benson; Hyslop-Margison, 2001; Lynch, 2000b,).The federal government has been a predominant influence in determining the scope and direction of secondary career and technical training since the enactment of the Smith-Hughes Act (Rojewski, 2002). The passage of the Elementary and Secondary Education Act of 1965 brought with it a "dramatic influx of federal funds" (Fullan, 2005, p. 203) that also assisted those entering career and technical education. This new funding allowed states to develop programs to benefit students who were educationally and economically disadvantaged (Sunderman, 2006). The Vocational Education Amendments of 1968 and 1976 took steps toward bringing vocational education in closer proximity to general education by providing federal funds for high school students, those with disabilities, and teacher education, and for the creation of state plans for career and technical education (Gordon, 2003). However, these amendments did not directly call for linkage of the otherwise separate forms of education, career and technical and academic education.

Perkins Legislation

As a part of the 1976 Vocational Amendments, Congress requested that a national assessment of career and technical education be conducted every five years (Hayward & Benson, 1993). The National Assessment of Vocational Education (NAVE) reported several areas for improvement such as lack of funding and the underrepresentation of disadvantaged populations (Hayward & Benson). With weaknesses in the legislation listed in the NAVE serving as a roadmap for improvement, the federal government drafted new legislation and created the Carl D. Perkins Vocational Education Act of 1984. The main thrust of this act was to improve the skills of the labor force by preparing adults for job opportunities by allowing for equal opportunities and access to vocational programs for all persons (Gordon, 2003; Hayward & Benson; Lynch 2000b). With equal access as a focus for all persons, vocational programs experienced significant growth in the number of enrollees from special populations (Lynch).

This growth was offset in the total population of secondary vocational program students as more and more dropped these classes to enroll in academic classes to meet new graduation requirements (Hussain, 1999).

Late in 1990, Congress reauthorized the Perkins Act as the Carl D. Perkins Vocational and Applied Technology Education Act of 1990. This act is also known as Perkins II. According to Jennings (1991) this was a challenge to career and technical education to be a participant in reform efforts rather than an observer. The addition of the phrase "Applied Technology" to the title indicated a shift in the thinking, no longer were career and technical education courses to be treated as separate, but were to be assimilated within the academic courses as well (Castellano, Stringfield, & Stone, 2003; Gordon, 2003; Hayward & Benson, 1993,). In the early 1990s, many school systems across the country began to replace the title vocational education with other titles to enhance the assimilation with academics and technology (Ries, 1997; Lynch, 2000b). A major step in this process occurred when the American Vocational Association (AVA) removed the term vocational from its title. "Signifying a shift in the education landscape, the venerable America Vocational Association (AVA), established in 1926, changed its name to the Association for Career and Technical Education (ACTE) in 2000" (Petrina, Brauchle, Gregson, Herschbach , Hoepfl , Johnson, Stern, Walker, & Zuga, 2003, p. 1). The Virginia Department of Education also uses the Career and Technical Education title to address the fields that were previously called vocational education.

The Perkins Act was again reauthorized and restructured in October of 1998 when Congress passed the Carl D. Perkins Vocational and Technical Education Act of 1998. The Perkins Act of 1998, also called Perkins III, continued the emphasis on further integration of CTE courses and academic education. This greater integration was needed to better prepare high school students for increased industry demands prior to their entrance into the modern workforce (Castellano, et al., 2003; Hayward & Benson, 1993). Accountability was a driving force in the authorization of Perkins III. The new act outlined core indicators of performance, which included requirements for "student attainment of challenging state-established academic, vocational, and technical skill proficiencies," students earning a "secondary school diploma or its recognized equivalent," and the attainment of a proficiency credential (Castellano et al., 2003, p. 245).

In July of 2006, President George Bush signed the Carl D. Perkins Career and Technical Education Improvement Act of 2006. Perkins IV, as it is also called, continued with the

accountability mandates of Perkins III including aligning challenging academic education with CTE course work (Carl D. Perkins Career and Technical Education Improvement Act of 2006). Section 113 of the act also specified the need for students to attain "A proficiency credential, certificate, or degree, in conjunction with a secondary school diploma" (Carl D. Perkins Career and Technical Education Improvement Act of 2006, 2006, p. 14). Perkins IV also became the first piece of federal legislation to officially implement the name change of the field to career and technical education (Threeton, 2007, 8).

Credentialing and Certification

As the economy has grown from one of local, state, and national competition to one with global industries all competing for the same customers, the demand for skilled workers to fill the workplace has also grown. This demand for skilled workers has placed greater importance on public education to increase the skill quality of graduates. Lerman (2008) noted that many employers reported "difficulty in recruiting workers with adequate skills" (p. 19) and that over 80% of manufacturing firms did not feel the K-12 school system was doing a good job preparing students for the workplace.

With advancement in technology has come a greater need for skilled workers in most occupations. This advanced skill level does not necessarily mandate that workers in today's industries have a college education. In fact, Gray and Herr (1998) stated that of the 147 million estimated jobs for the year 2005, only 32 million would require a college degree. The need for advanced education has not meant a focus only on degree programs, but industry credentials as well.

The CTE curriculum has evolved over the years to not only prepare students for local industries but also for industries in other regions, states, or even countries. Through the use of competency-based education, CTE has created workers who possess skills, talents, and portable credentials that enable employment outside of the region in which the education was obtained (Castellano, et al., 2005; Grooting, 1994). Because students in competency-based education receive skill validation from local educators and schools, the ratings could be construed as subjective or perhaps biased. The use of authentic work-related assessments have the potential to demonstrate student achievement and skill level (Lynch, 2000a). The use of certification does provide some information about a worker's skills (Lerman, 2008), thus allowing the certificate

owner to give a potential employer a larger picture of the applicant. When workers are hired with reliable credentials, the amount of on-the-job training can be reduced and thus save employers added costs (Carnevale & Desrochers, 2001).

During the 1990s there was an increase in the construction of "industry skill standards considered necessary for entry and success in various industries" (Castellano, et al., 2005, p. 9). "Unlike the old manufacturing based economy where simple productivity--high volume at low cost—was paramount, the new high-tech manufacturing economy and growing services economy demand a more complex set of performance standards" (Carnevale & Desrochers, 2001, p. 65). The use of industry credentials benefits students by allowing potential employers the opportunity to make inferences about the likely suitability and performance of prospective employees (Barber, 1998; Mahlman & Austin, 2002). Credentialing can often predict the productivity of potential employees when limited information is available (Bills & Wacker, 2003). Much like the Scholastic Aptitude Test is used by colleges across the country to estimate the likelihood of future success for applying students, industry credential exams allow employers to gauge the potential for success and advancement of job seekers. With nearly 46% of all employers reporting difficulty in hiring qualified workers in 2001 (Dixon, Storen, & Van Horn, 2002), it is imperative the public education system help meet both industry needs and student needs for the skills for potential employment.

In efforts to both assure industry of skill acquisition and also meet the credential requirements of legislation, students enrolled in CTE courses are now taking industry credential examinations upon completion of their class competencies. These industry exams are designed with industry needs in mind but are standardized and given by independent organizations. "Industry-sponsored credentials are good examples of qualifications that are tailor-made for specific skills required in specific employment settings" (Bartlett, Horwitz, Ipe, & Liu, 2005, p. 52). Lerman (2008) noted that "Task-specific skills in one occupation are often transferable to jobs in another occupation using similar skills" (p. 24). Because of this, students need not feel as though their skills limit them to only one job or one industry but are skills that may be transported from industry to industry.

The right credential can enhance the marketability of any student, and as such it is imperative that secondary schools offer students the opportunity to obtain one that is viable. This is important as secondary school CTE has been recognized as playing a greater role in offering

and delivering industry certifications and credentials (Carnevale & Desrochers, 2001). With federal and state mandates for student credentialing in CTE courses, there has been a growing number of students participating in end-of-year industry certification examinations.

Members of the Virginia Department of Education (VDOE, 2010a) have embraced the notion of industry credentialing in secondary schools and backed up this commitment by allocating $1,065,133 for the student credentialing initiative in the 2009-2010 fiscal year. The initial allocation was $4.79 per student enrolled in CTE classes eligible for industry certification examinations, licensure tests, and occupational competency assessments (VDOE, 2008a). Credentialing exams can be used for awarding student selected verified credits used to meet VDOE graduation requirements (DeMary, 2002). Personnel in the VDOE had also approved 150 credentials to count in the graduation requirements as student-selected verified credits that fulfill graduation standards (Virginia Department of Education, 2008b) for the school year 2009-2010. By 2011 the list (see Appendix A) of approved industry certifications, occupational assessments, and licensures that meet the graduation requirements had grown to 350 (Virginia Department of Education, 2011b). This inclusion of credentials in the graduation requirements gives validity to both the credentialing initiative and to the CTE curriculum.

The number of industry credentials acquired by secondary students serves to validate both student performance and program relevance. This information is reported to the general public via the Virginia School Report Card System. The Virginia School Report Card System reports for each secondary school the total number of industry certifications earned, occupational competency assessments passed, and state licensures achieved by its students (Virginia Department of Education, 2008a). Creasy (2009) noted that the credential initiative allows for opportunities to collect valid information on teachers and students to strengthen funding requests for both program improvement and staff development planning.

The industry credential arena is a large and still growing field. As noted earlier, the Commonwealth now recognizes 350 industry credentials for secondary students. This does not represent all industry credential examinations available, only the credentials that have met state board approval. As such, it is a sizeable task for educators to determine which credentials are representative of the work skills and knowledge students possess and which credentials are desired by industry.

Due to the size of the credential field and the increased accountability placed upon schools, all personnel involved with CTE programs and students need direction and training to meet the requirements of the Virginia Credentialing Initiative. Haimson and VanHoy (2004) noted that teacher professional development is needed to assist with the balancing of certification preparation with other vocational and academic standards. As a result of the increased accountability standards for student success rates, increases in the size of the credential market, and changes in student graduation options, CTE stakeholders have to evaluate and perhaps change the delivery and structure of CTE programs.

Regional Credential Pass Rates

In the Commonwealth of Virginia, CTE and student industry credential acquisition has taken a priority point in school reform. The General Assembly of Virginia has amended the Code of Virginia to mandate credential testing for all students receiving the standard diploma. Following the passage of HB 1061 on February 27, 2012, and enacted on March 30, 2012, the Code of Virginia was amended as follows:

> Beginning with first-time ninth grade students in the 2013-2014 school year, requirements for the standard diploma shall include a requirement to earn a career and technical education credential that has been approved by the Board, that could include, but not limited to, the successful completion of an industry certification, a state licensure examination, a national occupational competency assessment, or the Virginia workplace readiness skills assessment (Virginia's Legislative Information System, 2012, n.p.).

This mandate has served to increase the number of credentials that are earned by graduating students. Because of this, educators will have to increase the number of not only students taking credential examinations but also the number who pass these examinations. Under the current legislation, school divisions are only required to test CTE completers. For Region Seven there was a wide variance in the number of completers who were tested and in the number who earned an industry credential (Virginia Department of Education, 2011a). The percentage of completers tested in this region ranged from a low of 2.59% to a high of 92.77%, and those who earned an industry credential ranged from a low of 0% to a high of 69.27% (Virginia Department of Education, 2011a).

Regional Employment Sectors

The Lenowisco Planning District (LPD), Mount Rogers (MPD), Cumberland Plateau (CPPD), and New River Valley (NRVPD) comprise the economic planning zones of Superintendents' Region VII (Southwest Virginia Economic Development Commission, 2006). There have been changes in the economic development of these areas, but opportunities still exist for high school and college graduates to obtain employment. While there is some diversity between the employment sectors of the counties of Southwest Virginia, many opportunities exist for those with CTE skills. Table 1 contains a list of the most prevalent employment opportunities offered in each planning district by county or city.

Change in Education

"Schools must change if they are to educate a citizenry prepared for the future" (Liberman & Miller, 2005, p. 52). A key component of reform or change in education is to make subjects and tasks relevant for students. Focusing on career opportunities is one way to make education relevant and keep students in school and interested (Castellano et al., 2001). The legislation for student credentialing has been established through the Perkins Acts and the Commonwealth of Virginia has allocated funds to pay for the initiative. However, for any new program or activity to be effective, it cannot simply be a top-down edict and be expected to be both embraced and successful. For student credentialing to be embraced by the teachers in CTE fields, there must be education, training, and support at various stages of inception and implementation.

Change in an educational system does not happen overnight, but rather is a process that takes varying amounts of time. People cannot simply be expected to embrace change without some understanding of the need for change and some ability to take ownership of the change. Hall, et al., (1975) noted that innovation adoption is "…a process rather than a decision-point—a process that each innovation user experiences individually" (p. 52). David (1991) stated that an invitation to change is effective in producing results because "people need both a reason and the opportunity to change what they are doing" (p. 12). According to Dennison (1993), "Successful innovations have been dependent upon the developmental processes of individuals through their feelings, thoughts, and practices" (p. 20). Being told that you must change but not given

opportunity to understand the process nor the impact and need for change will likely result in half-hearted teacher buy in or outright refusal.

Table 1

Southwest Virginia Planning Districts and Leading Employment Sectors

District	County/City	Leading Employment Sectors
Cumberland Plateau		
	Buchanan	Natural Resources & Mining Education & Health Services
	Dickenson	Education & Health Services Natural Resources & Mining
	Russell	Education & Health Services Trade, Transportation, & Utilities
	Tazewell	Education & Health Services Trade, Transportation, & Utilities
Lenowisco District		
	Lee	Education & Health Services Trade, Transportation, & Utilities
	Scott	Education & Health Services Trade, Transportation, & Utilities
	Wise	Education & Health Services Trade, Transportation, & Utilities
	City of Norton	Education & Health Services Trade, Transportation, & Utilities
Mount Rogers		
	Bland	Manufacturing Trade, Transportation, & Utilities
	Carroll	Education & Health Services Trade, Transportation, & Utilities
	Grayson	Education & Health Services Manufacturing
	Smyth	Education & Health Services Manufacturing

(table continued)

Table 1 (continued)

District	County/City	Leading Employment Sectors
	Washington	Trade, Transportation, & Utilities Education & Health Services
	Wythe	Education & Health Services Trade, Transportation, & Utilities
	City of Bristol	Trade, Transportation, & Utilities Professional & Business Services
	City of Galax	Education & Health Services Manufacturing
New River Valley		
	Giles	Education & Health Services Trade, Transportation, & Utilities
	Pulaski	Education & Health Services Trade, Transportation, & Utilities
	City of Radford	Education & Health Services Manufacturing

Note. Regional Data: Southwest Virginia. Virginia Economic Bridge, Inc., 2011.

Little (1993) pointed out that for the teachers involved as the primary implementers of change, it poses "demands on the knowledge, skill, judgment, and imagination of individuals" (p.129). This can be asking much from classroom teachers who may view change as an attempt to monitor or control their teaching practices. An innovation such as credentialing has small meaning to the teacher if that person cannot visualize the advantage of using it. It is the user's view of the relative benefit of the innovation that matters (Rogers, 1962). While teachers have made a career of the education and betterment of student learners, for an innovation to firmly take root the teacher must recognize some benefit from the innovation as well. Because the teacher is usually the individual responsible for classroom implementation of the innovation, this individual must have a clear vision of the benefits for adoption of the change. McLaughlin and Marsh (1978) pointed out that teachers are more apt to be motivated to take on extra work and attempt change if they believe they will become better teachers and their students will benefit.

Barriers to Change

"Rules, regulations, traditions, myths, and even building architecture pose significant barriers to change—but the biggest barrier is the absence of knowledge and skills needed to do one's job differently" (David, 1991, p. 13). The credentialing initiative offers a unique barrier to change because of the solidarity of some teachers involved in the change. For example, in many technical schools there is only one masonry instructor or culinary arts teacher, there is no peer group with which to share ideas, instructional philosophy, or educational techniques. This lack of peer support within some areas of CTE makes the change process stressful for the teachers in the school as well as administrators and guidance counselors. While there may be other teachers in a district or region, the lack of close proximity may hinder the collegial sharing of ideas and best practices. According to Fullan and Hargreaves (1996), many change efforts in schools serve to alienate teachers and hinder their progress in changing instructional practices. It is not difficult to understand teacher resistance or reluctance to change when the change is perceived as being done to them and not with them.

The experience of change for the involved teachers, at least in the beginning stages, can include periods of uncertainty and anxiety (Fullan & Stiegelbauer, 1991). Anderson (1996) pointed out that some barriers to change are the beliefs and values on the part of everyone involved, the lack of teacher preparation in the particular area of reform, and the need to reeducate students to their role in learning to constructively participate. Morimoto (1973) indicated that when change is "advocated or demanded by another person, we feel threatened, defensive, and perhaps rushed. We are then without the freedom and the time to understand and to affirm the new learning as something desirable, and as something of our own choosing" (p. 255). Bishop and Mulford (1999) noted that pressure to change without also giving support can slow the change process and result in resistance and ill feelings among teachers.

It is said that old habits are hard to break which can be especially true in educational institutions. "Change and the tendency to embrace or to resist it seem always to have been a part of the human condition" (Hall, et al., 1975, p. 52). At times it is easier to continue teaching in the same ways rather than working to develop new teaching skills or educational strategies (Greenberg & Baron, 2000). This breaking of habits is also made difficult by the frequency of instructors who do not recognize the need for a change (Greenberg & Baron). Thompson (1992)

noted that many teachers resist change until they are convinced it will benefit themselves and their students.

In any organization that undergoes change, the individual user will be the determining factor in success or failure; however there must be a driving force and leadership directive in order to steer the beginning voyage. Andrews and Rothman (2002) stated that calls for change in educational settings typically land on the shoulders of principals and teachers.

Leadership for Change

In any organization where there is an innovation or change to occur, there must be those within the ranks to enact, embrace, and implement it. School systems are no exception. The process of change in an educational setting requires that many people on different levels of expertise and authority share in the goal of change and take ownership in the overall experience. These people can be called change agents as they act in their capacity within the school setting to direct, enable, and facilitate the desired reform or change. Teachers, guidance counselors, building administrators, and central office administrators are all likely change agents for school-based reform efforts.

All change efforts in any school or organization must have effective leadership if there is to be any real chance of change. As stated earlier, change is a process, not a one-shot attempt. As such, change agents and leaders must attack innovation implementation with a marathon runner's stamina and not that of a sprinter's short burst of speed. Change leaders cannot attempt to enact the change single handedly; to have effective change it will be through collegial association and partnership with others involved in the process. As Kouzes and Posner (1995) noted, true leadership is the art of mobilizing others to have the desire to struggle for shared aspirations.

Principals as Change Agents

For much of the 20th century, schools and principals were not expected to change. In fact, it was the "students who were expected to adapt" to the demands of the school while the principal "maintained the structure" (Conley & Goldman, 1994, p. 2). Over the past 20 years, the role of the principal has evolved to that of a change agent. "Effective school leaders are key to large-scale, sustainable education reform" (Fullan, 2002, p. 16). Because of a principal's daily interactions with stakeholders such as students, teachers, and central office personnel, the

principal can form a deeper understanding of school inter-relationships and needs. The principal must serve as both an administrative agent for daily school operations and as the instructional leader of the school (Leithwood & Montgomery, 1982). It is as the instructional leader that the principal must ensure a positive climate that fosters commitment to school improvement and reform (Caldwell & Wood, 1988, p. 53). The principal must be open and supportive of change. Fullan (1991, p. 145) noted that the principal is the central figure for change to occur in the school setting. "The principal is responsible for maintaining the overall vision for the school and coordinating the resources and work of the school's faculty to accomplish goals in many areas" (Feiler, Heritage, & Gallimore, 2000, p. 68).

While the principal may be the key to spearheading successful change in a school (Barth, 1990; Lewis & Cheng, 2006; McLaughlin & Hyle, 2001; Sarason, 1996), the principal must not attempt to facilitate the change alone. Lambert (2002) noted that "The days of the lone instructional leader are over. We no longer believe that one administrator can serve as the instructional leader for the entire school without the substantial participation of other educators" (p. 37). The principal must make efforts to include teachers in the process and enable them as agents of change by including them in ownership of the change process (Cherry, 1991; Hall, 1988; McLaughlin & Hyle). Firestone (1989) listed six functions that principals must use to facilitate school based change: providing a vision, obtaining resources, providing encouragement to staff, adapting standard operating procedures, monitoring the improvement effort, and handling disturbances to the initiative.

Through effective leadership, the principal can facilitate change initiatives and mandates by fostering a positive attitude toward the change and creating a climate of acceptance for the change (McLaughlin & Hyle, 2001). The change process cannot rely solely on the efforts of the principal; it must include a team of central office administrators, principals, and teachers. It is the proximity of the principal to the front line of the initiative that will propel the change into action. The principal cannot be a spectator to the change, but must be an active participant in the process (Sarason, 1996). By not being seen as an observer to the process, the principal can facilitate faculty acceptance of the innovation. As more educational directives and standards are introduced, the principal must have in-depth knowledge of the new standards as well as an active hand in the implementation of these changes to the school curriculum and classroom practices.

Principals who "ignore their role in monitoring and improving school performance do so at their own risk" (Hallinger, 2005, p. 2).

Guidance Counselors as Change Agents

Guidance counselors have been acknowledged as "change agents and advocates for the removal of barriers that impede student success" (Jackson, Snow, Boes, Phillips, Stanard, Painter, & Wulff, 2002, p. 177). Perkins IV legislation identified teachers, administrators, and counselors as CTE professionals (Carl D. Perkins, 2006). Threeton (2007) indicated that guidance counselors have a major role in the transition process from secondary education to both postsecondary education and careers. While guidance counselors may not have daily interaction with all students, they do have an important function as students contemplate designing a course structure that meets their needs for possible employment or higher education. Green and Keys (2001) pointed out that given the current emphasis on school accountability and student performance, it is worthwhile to note the school counselors' many and unique contributions to student success. A positive relationship between guidance counselors, teachers, and students is important in meeting the intended mission of the Carl D. Perkins CTE Improvement Act of 2006 (Threeton).

With students looking to counselors for direction as to future education and employment, it is imperative that those in the guidance fields have full knowledge of what training opportunities are available within the school system. Walter and Farmer (1999) noted that counselors must be able to present their programs as open-ended career paths with possibilities for future education and employment. Guidance counselors serve as a direct link for students to CTE programs and the licensing and credentialing opportunities within the programs. Through career guidance and course selection, counselors can stimulate student development with the objective of preparing the individual student for further education and careers (Threeton, 2007). By advocating for high achievement for all students, guidance counselors are "at the center of the mission of schooling and educational reform" (House & Sears, 2002, p. 155).

Teachers as Change Agents

Teachers may be reluctant to call themselves change agents (Crawford, Chamblee, & Rowlett, 1998). Fullan (1993) noted that it is essential to the future development of our society

that all teachers be prepared to be effective agents of change. Hoban (2002) stated that "change is in essence, learning to do something differently, involving adjustments to many elements of classroom practice" (p. 39). According to Lane, Lacefield-Parachini, and Isken (2003), it is difficult for some teachers to see themselves a capable of generating substantive change.

Because change involves learning something different, it often takes people, including teachers, out of their comfort zone. Teachers can be creatures of habit, and trying new methods, implementing new skills, or dissolving old practices can be a major barrier, but it is a barrier that must be overcome. For an innovation to not only survive but to flourish, teachers must be on board. A Rand change-agent study found teachers' commitment to an innovation to be important for implementation (Berman & Pauley, 1975). McLaughlin and Marsh (1978) stated the reason that many education reform efforts fail is the underestimation of the importance of teacher involvement in implementing programs and their training needs.

As front line practitioners of the change, it is imperative to meet the needs of teachers. The needs of the individuals will vary, but they all will need some level of training and support as they begin innovation implementation. Elbaz (1981) stated that the teacher plays a role in the "implementation of new curricula, adapting and changing the materials which come his or her way" (p. 43). Cuban (1998) pointed out that what becomes important to teachers is how "they can put their personal signature on the mandated reform and make it work for their students and themselves" (p. 459). By including teachers in the change process and meeting their needs through training and support, classroom teachers can and will be effect agents of change.

The inclusion of teachers in the change process allows for them as individuals to take on leadership roles within the school setting. When teachers assume leadership positions in their schools, it often facilitates improved interactions, school change, and increased student achievement (Barth, 2001; Lieberman & Walker, 2007; Muchmore, Cooley, Marx, & Crowell, 2004).

Concerns-Based Adoption Model

There is much in the literature concerning change and the individuals who undergo the process in schools and universities. "The Concerns Based Adoption Model, better known as CBAM, is arguably the most robust and empirically grounded theoretical model for the implementation of educational innovations to come out of educational change research in the

1970s and 1980s" (Anderson, 1997, p. 331). Through research and investigation of change in educational facilities, Hall and Rutherford created a model that would assist in describing the various levels of concern individuals experience while undergoing an organizational change (Hall & Rutherford, 1975). The CBAM provides a developmental framework for the role of innovation user concerns in the change process (Shotsberger & Crawford, 1999).

One dimension of the model is the Stages of Concern About the Innovation (Hall, George, & Rutherford, 1986). The individual user is first concerned with how an innovation will affect them on a personal level, while later concerns shift to the task-related level (Hall & Loucks, 1978a). There are seven Stages of Concern (SoC): Stage 0—Unconcerned; Stage 1—Informational; Stage 2—Personal; Stage 3—Management; Stage 4—Consequence; Stage 5—Collaboration; Stage 6—Refocusing. The definition for each stage is detailed in Table 2. Concerns are assumed to progress through the sequence of stages described not necessarily going through each stage but in some approximation (George, et al., 2008; Hord, et al., 1987).

Table 2

Stages of Concern About the Innovation

0 Unconcerned	This individual indicates little concern about or involvement with the innovation.
1 Informational	The individual indicates a general awareness of the innovation and interest in learning more details about it. The individual does not seem to be worried about himself or herself in relation to the innovation. Any interest is in impersonal, substantive aspects of the innovation, such as its general characteristics, effects, and requirements for use.
2 Personal	Individual is uncertain about the demands of innovation, her/his adequacy to meet those demands, and his role in relation to the reward structure of the organization, determining his/her part in decision making, and considering potential conflicts with existing structures or personal commitment. Concerns also might involve the financial or status implications of the program for the individual and his colleagues.
3 Management	Attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, and scheduling dominate.
4 Consequence	The individual focuses on the innovation's impact on students in his/her immediate sphere of influence. Considerations include the relevance of the innovation for students; the evaluation of student outcomes, including performance and competencies; and the changes needed to improve student outcomes.
5 Collaboration	The individual focuses on coordination and cooperation with others regarding use of the innovation.
6 Refocusing	The individual focuses on exploring ways to reap more universal benefits from the innovation, including the possibility of making major changes to it or replacing it with a more powerful alternative.

Note. Adapted from "Measuring Implementation in Schools: The Stages of Concern Questionnaire," by A. A. George, G. E.Hall, and S. M. Stiegelbauer, 2008, p. 8. Copyright 2008 by Southwest Educational Development Laboratory.

While change is important at the organizational level, it is difficult to accomplish without the acceptance and involvement of the individual users (Hall, 1975). Hord, Rutherford, Huling-Austin and Hall (1987) stated the CBAM was used to develop the following assumptions about change:

1. Change is a process, not an event. Change is a process occurring over time, and recognizing this is an essential prerequisite of successful change implementation.
2. Change is accomplished by individuals. Change affects people, and their role in the process is important. Therefore, individuals must be the focus of attention in implementing a new program.
3. Change is a highly personal experience. Individuals are different and do not behave collectively. Each individual reacts differently to change and some will assimilate a new practice more rapidly than others. Change is more successful when it support is geared to the diagnosed needs of the individual users. If change is highly personal, then different responses and interventions are required. By paying attention to each individual's progress one can enhance the implementation process.
4. Change involves developmental growth. Studies indicate that the individuals involved appear to express or demonstrate growth in terms of their feelings and skills. These tend to shift with respect of the new program or practice as individuals pass through a greater degree of experience.
5. Change is best understood in operational terms. Teachers, and others, will naturally relate to change or improvement in terms of what it will mean to them or how it will affect their current classroom practice. Change facilitators can reduce resistance to improvement efforts by addressing questions and communicating with teachers and others involved.
6. The focus of facilitation should be on individuals, innovations, and the context. It is easy to forget that books, materials, equipment, or new programs alone do not make change; only people can make change by altering their behavior. The real meaning of change lies in its human, not its material component. (pp. 5-6)

The SoC may be used various settings for different innovations and practices but the prevailing theory is that movements through the process of change are the same. As noted by Horsley and Loucks-Horsley (1998):

> One of the greatest strengths of the Concerns-Based Adoption Model is that it gives credence to, and supplies a precise language for, the feelings each of us has when we are expected to embark on yet another new program or practice. It's comforting to know that there are discernible patterns in the many different and powerful emotions we feel when adapting to new circumstances. CBAM helps us make sense of this change process. (p. 19)

Development of the Stages of Concern Questionnaire

An important aspect of the CBAM is the Stages of Concern Questionnaire (SoCQ). This tool is used to measure users' concerns about an innovation that is expected to be implemented (Hord & Hall, 2001). The SoCQ "provides the means" (Christou, Eliophotou-Menon, & Philippou, 2004, p.160) for assessing the seven stages of concern.

Hall (1979) explained the seven stages as:

> An individual's concerns can move in a developmental progression from those typical of non-users of an innovation to those associated with fairly sophisticated use. For a non-user of an innovation, concerns are about "what the innovation is" and "what it means for me" are relatively intense, and concerns about the impact of the innovation upon students are relatively low. As implementation of the innovations takes place, management concerns begin to increase. Informational and personal concerns begin to decline. (p. 205)

"CBAM theory idealizes the Stages of Concern as a developmental progression in which teachers implementing a change have concerns of varying intensity across all seven stages at different points in the change process" (Anderson, 1997, p. 334). The SoC presents a possible progression of teacher concerns about a change or innovation but not all teachers will progress to the latter stages (Anderson). While noting that teachers and administrators will move through the stages at different rates, Hord et al. (1987) stated:

> Movement through the stages of concern cannot be forced, but with appropriate support and assistance, it can be aided. At the same time, a lack of assistance or the wrong kind of support can interfere with developmental changes in concerns. (p. 43)

As Hall (1979) noted, one of the major points of strength for the CBAM is that it is virtually impossible to manipulate a person's concerns.

Studies Using the Concerns-Based Adoption Model

The CBAM was designed to accommodate any innovation and has been used to in variety of studies. AL-Rawajfih, Fong, and Idros (2010) utilized the CBAM to examine the SoC of 2,389 teachers in Jordan Discovery schools integrating e-learning into their teaching. Their findings revealed that the dominant concerns of the teachers resided at the Personal level. This concern was prevalent among both male and female teachers with 6 to 20 years of teaching experience.

These findings were similar to those of Schoep (2004). He studied the concerns of faculty members regarding technology integration among university professors on campuses located in Dubai and Abu Dhabi. English language is the medium for instruction in these universities and most faculty members are westerners (p. 67). The results indicated that a majority of the faculty members fell in the Self range at the Personal level. The individuals at this level are uncertain as to the demands of this innovation and their role with the innovation (George, et al., 2008).

Green (1993) did not report any significant differences in SoC between secondary academic and vocational teachers in the southeast while participating in Tech Prep programs. A difference was found, however when subjects were categorized by the amount of time they had been involved with the Tech Prep innovation, regardless of their teaching classification. This follows the theory that all people fall within some area of the SoC, and that over time individuals may move to other levels based on experience and maturity within the innovation.

Rogers (1992) made use of the CBAM while studying the infusion of technology education among industrial arts teachers in a mid-western community. Using the SoCQ to ascertain concerns profiles, Rogers noted that the industrial arts teachers did not accept technology education. There was a peak profile at the Informational level and a secondary peak at the Personal stage. The SoC profile at the Refocusing stage indicated that older more experienced industrial arts teachers were revising or changing the technology education curriculum prior to accepting it.

Rakes and Casey (2002) utilized the SoCQ while working with 659 PK-12 teachers who use instructional technology in some form relating to their teaching. The teachers peaked at Stage 2, indicating an intense personal concern about the instructional technology and its consequences for the respondents on a personal level. While these concerns do represent some apprehension, it does not necessarily indicate a specific resistance to technology. The concerns at

Stage 2 represent ego-oriented questions with regards to status, rewards, or effects of the use of the innovation may have on them (George, et al., 2008).

Cunningham, Hillison, and Horne (1985) used the SoCQ to monitor teacher concerns during the implementation of competency-based education (CBE) in Virginia. Using a sample of 200 CTE teachers in 6 counties in Virginia, the researchers administered the SoCQ three times at 6 month intervals. Among their finds were that males and females did not differ greatly in their concerns nor did age level significantly affect the concern levels of teachers. One key aspect of their findings was that the passage of time did not significantly affect teachers' concerns but the participation in workshops or conferences did have an effect on the level of concerns.

Chapter Summary

The call for change is a steady companion of the educational enterprise in the United States. This review of the literature has presented many such calls for change and the associated results of past change initiatives. While career and technical education was excluded from earlier reform efforts, it is clearly within the framework of the current national reform movements.

Change will not occur without some resistance or hesitation by the stake holders. For the Virginia Credentialing Initiative to be successful, some attention must be paid to the practitioners who are implementing the innovation. The use of research studies on innovation, adoption theory, and the change process can be helpful to change agents involved in implementing a new innovation.

Through the use of the Stages of Concern (SoC) About the Innovation model, researchers may collect data pertinent to the determination of the concerns of the innovation practitioners. It is important to comprehend the SoC so that one can categorize the practitioners concerns in relation to the innovation. After determining the concerns, change agents and facilitators may develop intervention practices to assist with a successful innovation implementation.

CHAPTER THREE
METHODOLOGY

The purpose of this chapter is to describe the methodology of the study. The research design, participants, instrumentation, data collection procedures, and data analyses are presented in this chapter. The purpose of this study was to describe the needs and concerns of central office CTE administrators, high school principals, guidance counselors, and CTE teachers in rural southwestern Virginia as they implement the Virginia Credentialing Initiative.

Research Design

Central office career and technical education (CTE) administrators, high school principals, guidance counselors, and teachers of CTE subjects within Superintendents' Region Seven in Virginia were asked to complete a questionnaire in order to provide information on the Stages of Concern that occur during the implementation of the Virginia Credentialing Initiative. This is a descriptive research study. Issac and Michael (1995) noted that descriptive research is that in which the researcher will systematically describe the facts and characteristics of a given population or area of interest.

Participants

The Commonwealth of Virginia encompasses a broad and diverse population. This diversity is not limited to only the people, but the geographical and political landscapes as well. Because of the wide array of people, cultures, and beliefs within each region of Virginia that may affect the manner and characteristics of the change process, this study will focus only on Superintendents' Region VII. The researcher is employed with a school division located within this region.

Superintendents' Region VII is composed of 19 school divisions in Southwest Virginia. Southwest Virginia is considered a rural locale with borders facing West Virginia, North Carolina, Tennessee, and Kentucky. Using figures derived from school websites in April of 2011, the school divisions employ 175 central office instructional administrators, 320 building level administrators, and 8,841 teachers and guidance counselors. Of these totals, there are 462 CTE teachers, 109 administrators with CTE duties, 114 guidance counselors who schedule

students with CTE offerings, and 39 central office administrators who work with the CTE curriculum and instructional staff.

Instrumentation

The concept of the Stages of Concern (SoC) about an innovation is the primary dimension of the Concerns-Based Adoption Model (CBAM). The SoC describes "the feelings, perspectives, and attitudes of individuals as they consider, approach, and implement use of an innovation" (Hall, 1979, p. 204). The innovation for this study is the Virginia Credentialing Initiative, which serves to meet the mandates of the Carl D. Perkins Career and Technical Education Act of 2006. The SoC stemmed from Hall's research indicating that individuals experience seven stages of concern as they encounter and accept an innovation. The seven levels are: Awareness, Informational, Personal, Management, Consequence, Collaboration, and Refocusing (Hall, George, & Rutherford, 1986).

The 35-item Stages of Concern Questionnaire (SoCQ) represents the seven Stages of Concern. The SoCQ was developed as a means to provide a quick-scoring measure of the seven SoC (George, Hall, & Stiegelbauer, 2008). The respondents approximated the level of their concern for each statement by marking a number next to the statement on a 0 to 7 Likert-type scale. There are five items utilized for each of the seven stages of concern. By totaling the five responses for each stage, the researcher can calculate the raw score for a particular stage (Hall, et al., 1986).

Reliability and Validity of the SoCQ

The development of the original SoCQ lasted three years (George et al., 2008). During this time, the SoCQ was "tested for estimates of reliability, internal consistency, and validity with several samples and eleven innovations" (George et al., 2008, p. 11). The items representing each stage of the SoCQ were selected in order to maximize internal consistency (George, 1977; George et al., 2008).

In the fall of 1974, a sample of teachers and professors (n=830) expressing their concerns about the innovations of team teaching and instructional modules used the 35-item SoCQ (George, 1977; George et al., 2008). To ensure high internal reliability, items on the questionnaire were only included if the responses correlated more highly with responses to items

measuring the same SoC than with responses to items for other stages (George, 1977; George et al., 2008). Following their initial completion of the SoCQ, a sub-sample of teachers (n=171) completed the questionnaire a second time, and a test-retest correlation was computed. The internal consistency (alpha coefficients) ranged from .64 to .83 with six of the seven coefficients being above .70 (George, 1977; George et al., 2008; Hall et al., 1986). "These coefficients reflect the degree of reliability among items on a scale in terms of overlapping variance. The formula is a generalization of the Kuder-Richardson Formula 20 for dichotomous items (George et al., p. 20).

George (1977) and George et al. (2008) stated that a series of validity studies were conducted to examine how scores on the seven SoC related to each other and to other variables as the concerns theory suggested. This strategy was outlined by Cronbach and Meehl (1955). These test studies served as convincing demonstrations of the validity of the SoCQ (George et al., 2008; Hall et al., 1986).

Data Collection Procedures

Prior to conducting any survey research, I accompanied Dr. Brenda Lawson (Superintendent of Tazewell County) to the Region Seven Superintendents' meeting on December 15, 2011. I was allowed to describe my study and alert superintendents that I would be requesting their permission to conduct survey research in their school system in the near future. The Superintendent letter seeking approval to conduct research in school divisions is Appendix B. Upon gaining approval from division superintendents, I requested personnel rosters from human resource directors in each participating school system. Permission to reproduce the SoCQ was granted by the Information Resource Center of the Southwest Educational Development Laboratory, Austin, Texas (see Appendix C).

Prior to the electronic delivery of the survey, I obtained Virginia Tech Institutional Review Board (IRB) permission to conduct this research. The approval letter is Appendix D.

The internet survey was web based and could be accessed using any web browser (see Appendix E). Each participant was emailed an introductory letter that provided a brief description of the study as well as the link to access the web and each participant's individual access code (see Appendix F). Dillman (2000, p. 378) suggested providing each participant a unique access code in order to "limit questionnaire access to sampled individuals."

Dillman (2000, p. 11) listed four sources of survey error. These four errors are sampling error, coverage error, measurement error, and non-response error. Dillman (p. 11) defined sampling error as "the result of surveying only some, and not all, elements of the survey population." I addressed sampling error by including the entire CTE population of Superintendents' Region VII. If an individual was employed in one of the 19 school districts as a CTE teacher, secondary administrator, central office CTE administrator, or secondary school guidance counselor, they were invited to participate in this survey.

Coverage error is defined as "the result of not allowing all members of the survey population to have equal or known nonzero chance of being sampled for participation" (Dillman, 2000, p. 11). By including all members of the population I addressed one part of the coverage error problem. It was assumed that all school employees in the survey population had internet access and had an email address to receive the introductory letter.

Dillman (2000, p. 11) defined measurement error as "the result of poor question wording or questions being presented in such a way that inaccurate or un-interpretable answers are obtained." This error was reduced by using the SoCQ, which had tested and indicated to be both reliable and valid. For this study, the survey was given as prescribed by the SEDL. All questions were given in the order and sequence as suggested by the instrument authors. Changing the order or sequence of items could change the responses (Bradburn & Sudman, 1988). George et al. (2008, p. 25) recommended changing the word "innovation" to a phrase the participants will recognize. For this study, the words Virginia Credentialing Initiative replaced the word innovation.

Non-response error is defined as "the result of people who respond to a survey being different from sampled individuals who did not respond, in a way relevant to the study" (Dillman, 2000, p. 11). By assigning each survey participant a unique access code, this also allowed for identification of each submitted survey and determination of which individuals had responded.

Another potential for error is missing item responses. "The procedure for calculating raw scale scores has been revised to estimate the response to any skipped item as the average of those that were marked for that scale" (George et al., 2008, p. 26). George et al. (p. 26) noted that the raw score for each stage was five times the average of the nonblank responses to the five

corresponding statements for the scale. This was a change for the original scoring method which chose to represent missing questions with a 0 score (George et al.).

Dillman (2000, p. 178) suggested using "three timely follow-up mailings" to increase survey participation. Once individuals were given sufficient time (one week) to complete the survey, the survey population was emailed a follow-up letter which served as a thank you to those who had completed the survey and as a reminder to participants who had yet to submit the survey (see Appendix G). After a two week period, non-respondents were sent a follow-up email (see Appendix H). At week three, a letter was mailed via the postal service (see Appendix I). This mailing also included a hard copy of the SoCQ as well as a stamped addressed envelope for survey remittance.

An Excel spreadsheet was created for the study population. The file contained the code assigned to each participant, the participant name, email address, county of employment, and job field. The file also contained fields for survey completion and for follow-up reminders. This file was stored on a personal laptop and will be deleted at the conclusion of this study to maintain trust and confidentiality of participants.

Data Analysis

The SoCQ consists of 35 statements expressing a concern about an innovation. There are five items for each of the seven SoC (George et al., 2008, Hall et al., 1986). Respondents indicate the degree of concern by marking a Likert-type scale of 0 to 7. High numbers indicate high concern, low numbers indicate low concern, and 0 indicates very low concern or irrelevant items (George, et al.).

Group Profiles

Research Question One: What are the Stages of Concern profiles of central office CTE administrators, high school principals and assistant principals, guidance counselors, and CTE teachers involved in the implementation of the Virginia Credentialing Initiative?

Research Question Two: What are the Stages of Concern profiles of teachers in subject areas with long standing licensing requirements (e.g., nursing, cosmetology, welding) and the profiles of teachers in subject areas that are relatively new to credentialing (e.g., agriculture, business, family and consumer sciences, and marketing)?

Research Question Three: What are the Stages of Concern profiles of central office CTE administrators, high school principals and assistant principals, guidance counselors, and CTE teachers with different amounts of experience in their current educational role?

In this study the sum of the responses to the five items in each scale were calculated. From this data the mean score was calculated for each stage. The raw scores were then converted to percentiles using the *Stages of Concern Raw Score: Percentile Conversion Chart for the Stages of Concern Questionnaire* (Table 3). These percentile scores will then be labeled for the "Peak Stage Score Interpretation" (George et al., 2008, p. 31). From the generated scores, the SoC profiles will be plotted to graph the level of concern for each stage on the concern continuum. Each profile reflects the relative intensity for each SoC and presents a general description of the concerns of the group (George et al., 2008; Hall & Rutherford, 1974; Hall et al., 1986; Hancock, Knezek, & Christensen, 2007).

Chapter Summary

This chapter included a description of the research design and the format for data analysis. The survey instrument is the Stages of Concern Questionnaire (SoCQ), which is based on the Concerns-Based Adoption Model (CBAM). The data were collected by administering a survey to central office CTE administrators, secondary school CTE administrators, guidance counselors, and CTE teachers involved in Virginias' Superintendents' Region VII. The survey instrument was used to explore the concerns these participants are experiencing during the implementation of the Virginia Credentialing Initiative. Group profiles were determined and

examined for concerns/needs of the groups based on role in the implementation and experience level. The study's results are detailed in Chapter Four.

Table 3

Stages of Concern Raw Score: Percentile Conversion Chart for the Stages of Concern Questionnaire

Raw Scale Score	Percentile Scores Stages						
	0	1	2	3	4	5	6
0	0	5	5	2	1	1	1
1	1	12	12	5	1	2	2
2	2	16	14	7	1	3	3
3	4	19	17	9	2	3	5
4	7	23	21	11	2	4	6
5	14	27	25	15	3	5	9
6	22	30	28	18	3	7	11
7	31	34	31	23	4	9	14
8	40	37	35	27	5	10	17
9	48	40	39	30	5	12	20
10	55	43	41	34	7	14	22
11	61	45	45	39	8	16	26
12	69	48	48	43	9	19	30
13	75	51	52	47	11	22	34
14	81	54	55	52	13	25	38
15	87	57	57	56	16	28	42
16	91	60	59	60	19	31	47
17	94	63	63	65	21	36	52
18	96	66	67	69	24	40	57
19	97	69	70	73	27	44	60
20	98	72	72	77	30	48	65
21	99	75	76	80	33	52	69
22	99	80	78	83	38	55	73
23	99	84	80	85	43	59	77
24	99	88	83	88	48	64	81
25	99	90	85	90	54	68	84
26	99	91	87	92	59	72	87
27	99	93	89	94	63	76	90
28	99	95	91	95	66	80	92
29	99	96	92	97	71	84	94
30	99	97	94	97	76	88	96
31	99	98	95	98	82	91	97

(table continued)

Table 3 (continued)

Raw Scale Score	Percentile Scores Stages						
	0	1	2	3	4	5	6
32	99	99	96	98	86	93	98
33	99	99	96	99	90	95	99
34	99	99	97	99	92	97	99
35	99	99	99	99	96	98	99

Note. Adapted from "Measuring Implementation in Schools: The Stages of Concern Questionnaire," by A. A. George, G. E. Hall, and S. M. Stiegelbauer, 2008, p. 29. Copyright 2008 by Southwest Educational Development Laboratory.

CHAPTER FOUR
RESULTS

The purpose of this chapter is to describe the findings of the study. This chapter includes a description of the respondents, analysis of each of the three research questions, and a chapter summary.

Description of the Respondents

The study's potential participants consisted of 355 individuals in Southwest Virginia who were employed in secondary schools and were involved in the Virginia Credentialing Initiative (VCI). A letter was sent to each of the nineteen school superintendents in Region Seven. The letter solicited permission to conduct survey research in the superintendent's respective school division. Thirteen of the nineteen school division superintendents responded and granted permission. All of the central office CTE administrators, high school principals and assistant principals (hereafter referred to generically as principals), high school guidance counselors, and high school career and technical education (CTE) teachers in these school divisions were selected for participation.

The survey was sent to 355 individuals of whom 260 returned the questionnaire, for a response rate of 73%. Table 4 indicates the total number of questionnaires returned by each occupational group. Of the 260 returned surveys, 133 were from male respondents, 124 from female participants, and 3 did not indicate gender. There were 252 participants who indicated they were Caucasian (Non-Hispanic), 2 African American, 1 Asian, 2 who selected other, and 3 who did not indicate ethnicity. All of the surveys were useable, with 3 omitting only the demographic data of race and gender.

There were six school division superintendents that did not respond to requests to conduct survey research. These divisions were located throughout the region. The divisions are similar in population and geographical location to the divisions that did grant permission to survey. The superintendents that did not respond offer CTE programs similar to those school personnel participating in the survey. As such, no discernible differences were detected between the personnel or programs in divisions that did and did not participate in the survey.

For survey analysis, a cohort was created through Southwest Educational Development Laboratory (SEDL), the organization that owns publishing rights for the Concerns Based

Adoption Model (CBAM) and the Stages of Concern Questionnaire (SoCQ). All surveys were entered electronically into the cohort titled Stacy CBAM Survey 2012. After each survey submission, I received an email notifying me of the survey receipt. This receipt listed the numerical response to each survey question as well as the answers to the demographic questions and access code. From these data I was able to update my log file for survey completion.

Table 4

Questionnaire Response by Group

Group	Mailed	Returned	Response Rate
Central office CTE administrators	12	10	83
High school principals	58	41	71
Guidance counselors	36	23	64
CTE teachers	249	186	75
Total	355	260	73

All groups (CTE administrators, principals, guidance counselors, CTE teachers) were asked to identify any training they had participated in related to the VCI. Table 5 indicates the type, if any, of training in which survey respondents reported participating.

Table 5

Virginia Credentialing Initiative Training Received by Respondents

Type of training	N=260
No training	119
In-school	69
Conference	30
VDOE sponsored	19
VDOE webinar	13
Other training	10

Research Question One

What are the Stages of Concern profiles of central office CTE administrators, high school principals, guidance counselors, and CTE teachers involved in the implementation of the Virginia Credentialing Initiative?

To determine these profiles, the mean scores were computed for each Stage of Concern (SoC) by group. Each of the seven SoC is represented by five statements on the Stages of Concern Questionnaire (SoCQ). The raw score for each stage is the sum of the responses to the five statements for that stage. Table 6 presents the statements according to each stage and Table 2 (page 38) indicates the stage definitions. The mean scores were then converted to percentile scores using the scoring instrument provided in the SoC Manual and detailed in Table 3 (page 52).

Table 6

Statements on the Stages of Concern Questionnaire Arranged According to Stage

Item	Statement
Stage 0	Unconcerned
3	I am more concerned about another innovation.
12	I am not concerned about this innovation at this time.
21	I am preoccupied with things other than this innovation.
23	I spend little time thinking about this innovation.
30	Currently, other priorities prevent me from focusing my attention on this innovation.
Stage 1	Informational
6	I have a very limited knowledge of the innovation.
14	I would like to discuss the possibility of using the innovation.
15	I would like to know what resources are available if we decide to adopt this innovation.
26	I would like to know what the use of the innovation will require in the immediate future.
35	I would like to know how the innovation is better than what we have now.

(table continued)

Table 6 (continued)

Item	Statement
Stage 2	Personal
7	I would like to know the effect of the innovation on my professional status.
13	I would like to know who will make the decisions in the new system.
17	I would like to know how my teaching or administration is supposed to change.
28	I would like to have more information on time and energy commitments required by this innovation.
33	I would like to know how my role will change when I am using the innovation.
Stage 3	Management
4	I am concerned about not having enough time to organize myself each day.
8	I am concerned about conflict between my interests and my responsibilities.
16	I am concerned about my inability to manage all the innovation requires.
25	I am concerned about time spent working with nonacademic problems related to this innovation.
34	Coordination of tasks and people is taking too much of my time.
Stage 4	Consequence
1	I am concerned about the students' attitudes toward this innovation.
11	I am concerned about how the innovation affects students.
19	I am concerned about evaluating my impact on students.
24	I would like to excite my students about their part in this approach.
32	I would like to use feedback from students to change the program.
Stage 5	Collaboration
5	I would like to help other faculty in their use of the innovation.
10	I would like to develop working relationships with both our faculty and outside faculty using this innovation.
18	I would like to familiarize other departments or people with the progress of this new approach.
27	I would like to coordinate my effort with others to maximize the innovation's effects.
29	I would like to know what other faculty are doing in this area.

(table continued)

Table 6 (continued)

Item	Statement
Stage 6	Refocusing
2	I now know of some other approaches that might work better.
9	I am concerned about revising my use of the innovation.
20	I would like to revise the innovation's instructional approach.
22	I would like to modify our use of the innovation based on the experiences of our students.
31	I would like to determine how to supplement, enhance, or replace the innovation.

Note. Adapted from "Measuring Implementation in Schools: The Stages of Concern Questionnaire," by A. A. George, G. E. Hall, and S. M. Stiegelbauer, 2008, p. 27. Copyright 2008 by Southwest Educational Development Laboratory.

The following is a description of score findings, as referred to in Table 7, on the seven SoC (Unconcerned Stage, Informational Stage, Personal Stage, Management Stage, Consequence Stage, Collaboration Stage, Refocusing Stage) for each of the study groups.

Individually central office administrators had a range of concerns from the Unconcerned to Collaboration stages. As a group, central office CTE administrators' highest percentile score was 67% for the Personal Stage 2. The second highest percentile (66%) for central office CTE administrators occurred at the Informational Stage 1. The next highest stages were at the Unconcerned, Collaboration, and Management stages. Central office CTE administrator's lowest levels of concern were at the Consequence and Refocusing stages.

High school principals collectively had a highest percentile score of 87% for the Unconcerned Stage 0. The next highest stages for high school principals were in the Personal and Information stages followed by lesser concern levels at the Collaboration and Management Stages. For high school principals, the lowest concern levels were at the Refocusing and Consequence Stages. When examined individually, high school principals had concerns ranging from the Unconcerned stage to the Management stage.

Table 7

Stages of Concern by Occupational Group

Group	Stage	Percentile
CTE Administrators	2 Personal	67
N=10	1 Informational	66
	0 Unconcerned	61
	5 Collaboration	52
	3 Management	47
	4 Consequence	27
	6 Refocusing	22
High School Principals	0 Unconcerned	87
N=41	2 Personal	76
	1 Informational	72
	5 Collaboration	52
	3 Management	47
	6 Refocusing	34
	4 Consequence	30
Guidance Counselors	0 Unconcerned	91
N=23	1 Informational	72
	2 Personal	72
	3 Management	52
	5 Collaboration	36
	6 Refocusing	22
	4 Consequence	21
CTE Teachers	2 Personal	80
N=186	1 Informational	75
	0 Unconcerned	75
	3 Management	56
	5 Collaboration	36
	6 Refocusing	34
	4 Consequence	30

Guidance counselors scored highest as a group at the Unconcerned Stage 0 with 91% peak concern levels. The 91% was the highest concern level for any group in any stage level. Informational and Personal Stages were the next highest for guidance counselors. The guidance counselors had lesser concern levels at Stages 5 (Collaboration), 6 (Refocusing), and 4

(Consequence). As individuals guidance counselors had concerns ranging from Unconcerned to Consequence levels.

Career and technical education (CTE) teachers scored highest (80%) at the Personal Stage 2 as a group. CTE teachers had identical concern levels of 75% for both Informational and Unconcerned Stages as their next highest levels of concern. The CTE teachers scored lowest at the Collaboration (36%), Refocusing (34%), and Consequence (30%) levels. Results indicated that individually teachers had concerns ranging from Unconcerned to the highest stage of Refocusing.

Research Question Two

What are the Stages of Concern profiles of teachers in subject areas with long standing licensing requirements (e.g., nursing, cosmetology, welding) and what are the Stages of Concern profiles of teachers in subject areas that are relatively new to credentialing (e.g., agriculture, family and consumer sciences, and marketing)?

Several areas of career and technical education (CTE) have had long standing testing practices with well defined avenues for achieving licensure or certification. The programs for nursing and cosmetology are governed by state boards that dictate requirements for successful completion of the program and issuance of a license. Welding certification is governed by the American Welding Society (AWS), with applicants having to pass written and skill exams under the supervision of an AWS certified instructor. Members of these boards work in association with personnel of the Virginia Department of Education (VDOE) to develop programs and curricula that afford high school students the opportunity to take and pass board exams and certification examinations.

Other programs may be considered to be less experienced in the realm of credentialing or licensure. Programs such as agriculture, marketing, and family and consumer sciences have long been successful class choices for students in the state, but the issuance of credentials for those successfully completing coursework in these areas is only now becoming more widespread. Advances in office systems and technology have made business classes a viable component of secondary education for students seeking real world work skills. With these advances have come increased skill demands for workers and increased certification opportunities. Business classes may not be as new to the credentialing realm as others but do not have the long standing tradition

of credentialing as cosmetology, nursing, or welding. Table 8 describes the population for each of these groups. The response rate is also shown for those teaching in the technology fields (e.g., inventions and innovations, pre-engineering, technical drawing, video and media technology) and those in other trade and industry fields (e.g., auto body, auto servicing, building trades, carpentry, culinary arts, diesel technology, masonry, small engine technology). Because of the low numbers in some teaching areas of technology and in the category labeled other trade and industry fields, these areas were not reported in the findings. Many of the teaching areas had a size of N=1 for an entire subject area. Each respondent was only able to indicated one teaching area for survey completion. If teachers taught in more than one subject area they were only listed here for the category selected on the survey. Table 9 details concern stages for teacher groups in agriculture, business, cosmetology, family and consumer science, marketing, nursing, and welding.

Table 8

Teacher Groups with Different Testing History

Teacher Group	Survey Mailed	Survey Returned	Percentage Received	Gender
Nursing	17	13	77	Female: 13 Male: 0
Barbering/Cosmetology	13	11	85	Female: 10 Male: 1
Welding	6	5	83	Female: 0 Male: 5
Agriculture/Horticulture	33	31	94	Female: 7 Male: 23 No Gender Response: 1
Family & Consumer Sciences	21	21	100	Female: 19 Male: 2
Marketing	9	9	100	Female: 8 Male: 1

(table continued)

Table 8 (continued)

Teacher Group	Survey Mailed	Survey Returned	Percentage Received	Gender
Business	65	48	74	Female:36 Male:10 No Gender Response: 2
Other Trade & Industry	74	40	54	Female: 2 Male: 38
Technology	11	8	73	Male: 6 Female: 2
Total	249	186	75	

Table 9

Stages of Concern by Teacher Group (N=138)

Group	Stage	Percentile
Agriculture (n=31)	2 Personal	80
	0 Unconcerned	75
	1 Informational	72
	3 Management	60
	6 Refocusing	42
	5 Collaboration	40
	4 Consequence	33
Business (n=48)	2 Personal	80
	1 Informational	75
	0 Unconcerned	69
	3 Management	56
	5 Collaboration	40
	6 Refocusing	34
	4 Consequence	30
Cosmetology (n=11)	2 Personal	76
	1 Informational	69
	0 Unconcerned	69
	5 Collaboration	40
	3 Management	39
	4 Consequence	24
	6 Refocusing	20

(table continued)

Table 9 (continued)

Group	Stage	Percentile
Family and Consumer Sciences (n=21)	2 Personal	78
	1 Informational	72
	0 Unconcerned	69
	3 Management	60
	5 Collaboration	44
	6 Refocusing	42
	4 Consequence	30
Marketing (n=9)	2 Personal	83
	0 Unconcerned	75
	1 Informational	69
	3 Management	52
	4 Consequence	38
	5 Collaboration	31
	6 Refocusing	20
Nursing (n=13)	0 Unconcerned	75
	2 Personal	63
	1 Informational	60
	3 Management	39
	5 Collaboration	19
	6 Refocusing	17
	4 Consequence	13
Welding (n=5)	0 Unconcerned	96
	2 Personal	91
	1 Informational	75
	3 Management	73
	6 Refocusing	65
	5 Collaboration	22
	4 Consequence	19

Both nursing and welding instructor groups scored highest in the Unconcerned stage followed by Personal stage and Informational Stage. Both groups also had Management concerns as their fourth concern stage, although the level was higher for welding (73%) than that of Nursing (39%). For nursing instructors, the lowest three concern levels were Collaboration, Refocusing, and Consequence. Welding instructors had the same three stages as lowest; their order was Refocusing, Collaboration, and Consequence.

Agriculture, business, cosmetology, family and consumer sciences, and marketing teacher groups all scored highest at the Personal Stage. Business, cosmetology, and family and consumer science groups all had the Information Stage as the second highest percentile score. The groups of marketing and agriculture had Stage 0 (Unconcerned) as their second highest concern stage. Agriculture, business, family and consumer sciences, and marketing all had Management as their fourth highest concern level, while cosmetology had Collaboration as fourth highest. Agriculture scored lowest at the Collaboration and Consequence stages. Business and family and consumer sciences each had Refocusing and Consequence as their lowest two stages. Cosmetology had these as their lowest stages as well, although in different order (Consequence/Refocusing). Marketing teacher's lowest concern levels were at the Collaboration and Refocusing stages.

Research Question Three

Research question three: What are the Stages of Concern profiles of central office CTE administrators, high school principals, guidance counselors, and CTE teachers with different amounts of experience in their current educational role?

A detailed breakdown of concern levels by years of experience is presented in Table 10. Central office CTE administrators scored at different stages of the concern continuum based upon their years of experience. Those with 0-5 years of experience scored highest at Stage 0, with a high score also noted in Stage 1. CTE administrators with 6-10 years of experience scored highest at Stage 1 but had closely related scores at Stage 2 and Stage 5. For those with 21-25 years of experience the concerns had shifted to Stages 2, 1, and 5. The CTE administrator in the 26 or more range had highest concerns at Stage 0 followed by Stages 1 and 3. Central office CTE administrators with up to 10 years of experience scored stages 4 (Consequence) and 6 (Refocusing) as their lowest areas of concern. The administrators with 21 or more years of experience scored the same two stages as lowest but in reverse order (Refocusing/Consequence).

Table 10

Population Group Concern Levels by Years of Experience (N=260)

Group	Years of Experience	n	Concern Stage	Percentile Score
CTE central office administrators	0-5	3	0 Unconcerned	96
			1 Informational	90
			2 Personal	85
			3 Management	83
			5 Collaboration	59
			4 Consequence	54
			6 Refocusing	38
	6-10	4	1 Informational	72
			2 Personal	70
			5 Collaboration	68
			3 Management	34
			0 Unconcerned	31
			4 Consequence	30
			6 Refocusing	22
	21-25	2	2 Personal	48
			1 Informational	45
			5 Collaboration	31
			0 Unconcerned	22
			3 Management	15
			6 Refocusing	11
			4 Consequence	9
	26 or more	1	0 Unconcerned	48
			1 Informational	34
			3 Management	30
			5 Collaboration	19
			2 Personal	17
			6 Refocusing	6
			4 Consequence	5

(table continued)

Table 10 (continued)

Group	Years of Experience	n	Concern Stage	Percentile Score
Principals	0-5	13	0 Unconcerned	87
			2 Personal	80
			1 Informational	75
			5 Collaboration	59
			3 Management	56
			4 Consequence	38
			6 Refocusing	38
	6-10	17	0 Unconcerned	81
			2 Personal	76
			1 Informational	75
			5 Collaboration	52
			3 Management	47
			4 Consequence	30
			6 Refocusing	30
	11-15	3	0 Unconcerned	81
			1 Informational	72
			5 Collaboration	64
			2 Personal	59
			6 Refocusing	42
			4 Consequence	27
			3 Management	11
	16-20	1	0 Unconcerned	87
			1 Informational	72
			2 Personal	72
			3 Management	65
			6 Refocusing	38
			5 Collaboration	25
			4 Consequence	21
	21-25	2	0 Unconcerned	87
			1 Informational	72
			3 Management	69
			2 Personal	67
			6 Refocusing	38
			5 Collaboration	36
			4 Consequence	30

(table continued)

Table 10 (continued)

Group	Years of Experience	n	Concern Stage	Percentile Score
Principals	26 or more	5	0 Unconcerned	96
			2 Personal	76
			1 Informational	69
			3 Management	30
			4 Consequence	30
			5 Collaboration	28
			6 Refocusing	20
Guidance counselors	0-5	8	0 Unconcerned	96
			1 Informational	72
			2 Personal	67
			3 Management	43
			5 Collaboration	28
			6 Refocusing	20
			4 Consequence	13
	6-10	6	0 Unconcerned	94
			2 Personal	80
			1 Informational	75
			3 Management	73
			5 Collaboration	52
			6 Refocusing	34
			4 Consequence	27
	16-20	4	0 Unconcerned	75
			1 Informational	63
			2 Personal	57
			3 Management	23
			5 Collaboration	19
			4 Consequence	13
			6 Refocusing	11
	21-25	2	2 Personal	91
			1 Informational	90
			0 Unconcerned	75
			3 Management	65
			4 Consequence	59
			5 Collaboration	55
			6 Refocusing	30

(table continued)

Table 10 (continued)

Group	Years of Experience	n	Concern Stage	Percentile Score
Guidance counselors	26 or more	3	0 Unconcerned	75
			1 Informational	75
			2 Personal	72
			3 Management	56
			5 Collaboration	40
			4 Consequence	33
			6 Refocusing	30
CTE teachers	0-5	47	0 Unconcerned	81
			2 Personal	78
			1 Informational	75
			3 Management	56
			6 Refocusing	38
			5 Collaboration	36
			4 Consequence	27
	6-10	43	1 Informational	88
			2 Personal	87
			0 Unconcerned	75
			3 Management	60
			5 Collaboration	52
			4 Consequence	38
			6 Refocusing	38
	11-15	42	2 Personal	76
			0 Unconcerned	75
			1 Informational	66
			3 Management	52
			6 Refocusing	38
			5 Collaboration	28
			4 Consequence	24
	16-20	14	2 Personal	76
			0 Unconcerned	75
			1 Informational	66
			3 Management	52
			4 Consequence	30
			6 Refocusing	26
			5 Collaboration	25

(table continued)

Table 10 (continued)

Group	Years of Experience	n	Concern Stage	Percentile Score
CTE teachers	21-25	20	2 Personal	72
			1 Informational	63
			0 Unconcerned	61
			3 Management	52
			5 Collaboration	22
			6 Refocusing	22
			4 Consequence	21
	26 or more	20	1 Informational	88
			2 Personal	87
			0 Unconcerned	87
			3 Management	65
			5 Collaboration	48
			6 Refocusing	42
			4 Consequence	33

High school principals at all levels of experience scored highest at Stage 0. Principals with experience ranges of 6 to 25 years also had high concern levels at Stage 1. The high school principals in the 6-10 range had Personal concerns as their second highest SoC. High school principals with 16 to 25 years of experience also had Management concerns highly ranked. Principals with 26 or more years of experience had a second highest concern level at Stage 2, however the intensity was much lower than their primary level at Stage 0. Principals at all levels of experience consistently ranked Stages 4, 5, and 6 (Consequence, Collaboration, Refocusing) as their lowest SoC.

Guidance counselors with up to 20 years of experience all scored highest at Stage 0. Those in the 0 to 5 years had a second highest concern level at Stage 1 but this level was much lower than their primary score at Stage 0. Those with 6 to 10 years of experience also had high concern levels at Stages 2, 1, and 3. Counselors with 21-25 years of experience had peak concern levels at Stage 2 and Stage 1. The counselors with 26 or more years of experience had a high primary scores at Stage 0 and Stage 1, followed closely by concerns at Stage 2.

CTE teachers with 0 to 5 years of experience had highest concerns at Stage 0 with secondary concern levels also at Stage 2 and Stage 1. Teachers with 6 to 10 years of experience had peak concern levels at Stage 1 and Stage 2. Teachers with 11 to 25 years of experience had peak concerns at Stage 2. The teachers with experience levels of 26 years of more had peak

concern scores at Stage 1 followed closely with concerns at Stages 2 and 0. CTE teachers at each experience level consistently ranked Stages 4, 5, and 6 as their lowest SoC.

Chapter Summary

The data analysis was conducted to determine the peak concern levels using the Stages of Concern Questionnaire (SoCQ) for central office career and technical education (CTE) administrators, high school principals, guidance counselors, and CTE teachers. The SoCQ was also used to determine the peak concern levels of teachers in different subject areas based on credential testing history within the subject area. Finally the SoCQ was used to determine the peak concern levels of each occupational group based upon years of experience at current position.

The analysis indicated that central office CTE administrators had the highest concern levels at the Personal Stage. High school principals had primary concerns at the Unconcerned level. Principals also had high concern levels at the Personal and Information Stages. Guidance counselors scored highest at the Unconcerned level. The CTE teachers had the highest concern level at the Personal stage followed by concerns at the Information level.

The SoC profile was also determined for groups with varying histories and experience in credential testing. It was determined that teachers in subject areas of nursing, cosmetology, and welding had long been involved in licensure and certification examinations while teachers in subject areas of agriculture, marketing, and family and consumer sciences have not had the same credential testing history. The teachers in welding and nursing scored highest at Stage 0 or Unconcerned. Teachers in subject areas of agriculture, business, cosmetology, family and consumer sciences, and marketing all had highest concerns at Stage 2 or Personal.

When looking at the levels of experience at their current position of each group (central office CTE administrators, high school principals, guidance counselors, and CTE teachers) it was noted that experience levels did not always indicate a change in concerns. Central office CTE administrators did score at different stages based on experience and the intensity of those concerns was much lower for those with 21 or more years of experience versus those with 10 or less years of experience. Principals at all levels of experience scored highest at Stage 0. The second highest score was either at the Information or Personal stages, but no pattern was established based on years of experience. Guidance counselors with experience levels between 0

and 20 years all scored highest at Stage 0. Those with 21 or more years of experience scored highest at Personal and Information stages. CTE teachers with fewer than 5 years of experience had peak concerns at the Unconcerned stage. The CTE teachers with 6 to 10 years of experience scored highest at the Informational stage. For CTE teachers with experience levels of 11 to 25 years, the peak concern level was at the Personal stage. Stage 1 or Informational held the peak concerns for CTE teachers with more than 26 years of experience.

CHAPTER FIVE
DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

The national economy is currently experiencing a troubling period of slow growth and high unemployment. As in past times of history, many recommendations have been made for restoring the American economy to greatness. Some of these recommendations relate to the education of the populous, and in this case, those in career and technical education (CTE). The review of the literature noted the past reform efforts in academic and CTE as well as the change process in general. The Virginia Credentialing Initiative (VCI) is a reform effort which aims at increasing the number of high school graduates who leave public education with an industry certification or licensure. This chapter contains a summary of the purpose and research questions, methodology, and findings. It also includes conclusions, discussion, recommendations for further research, and a chapter summary.

Purpose and Research Questions

The purpose of this study was to describe the needs and concerns, as described by the Concerns Based Adoption Model (CBAM), of CTE stakeholders in rural southwestern Virginia as they implemented the Virginia Credentialing Initiative (VCI). The specific research questions of the study were:

1. What are the Stages of Concern profiles of central office CTE administrators, high school principals, guidance counselors, and CTE teachers involved in the implementation of the Virginia Credentialing Initiative?
2. What are the Stages of Concern profiles of teachers in subject areas with long standing licensing requirements (e.g., nursing, cosmetology, welding) and what are the Stages of Concern profiles of teachers in subject areas that are relatively new to credentialing (e.g., agriculture, business, family and consumer sciences, and marketing)?
3. What are the Stages of Concern profiles of central office CTE administrators, high school principals, guidance counselors, and CTE teachers with different amounts of experience in their current educational role?

Methodology

The Stages of Concern Questionnaire (SoCQ) was administered in an online format. This allowed for quick access to the survey instrument and easy data entry by the participants. I attended the December 2011 Region Seven Superintendents' meeting to introduce my research project. Following approval from the Virginia Tech Institutional Review Board, I requested permission from the 19 division superintendents to conduct survey research in their respective divisions. Thirteen divisions granted me permission to survey their CTE stakeholders, which included all CTE teachers, central office CTE administrators, high school principals, and guidance counselors. I sent an email invitation letter, which included a link to the survey and individual access code, to 355 CTE stakeholders in the region. Of the 355 sent, 260 were completed within a four week period. Using the methodology described by Dillman (2000) for internet survey research, a response rate of 73% was obtained.

To determine the group profiles of the respondents, the quick scoring device (George et al., 2008) was used to compute raw score totals. These totals were then converted to percentile scores using the Percentile Conversion Chart for the Stages of Concern Questionnaire provided in *Measuring Implementation in Schools: The Stages of Concern Questionnaire* (George et al.). Once percentile scores were determined, concerns were assessed using the Peak Stage Score Interpretation (George et al.).

Discussion, Summary, and Interpretation of Findings

As described in Chapter Two, the Stages of Concern consists of seven stages that individuals may experience when involved in any new innovation. Individuals may not experience all of the stages or move through the stages in numerical order. The stages are Stage 0 Unconcerned, Stage 1 Informational, Stage 2 Personal, Stage 3 Management, Stage 4 Consequence, Stage 5 Collaboration, Stage 6 Refocusing. This section is organized by research questions.

Concerns by Occupational Group

For research question one, the Peak Stage Score was used for the four population groups (central office CTE administrators, high school principals, guidance counselors, and CTE teachers) in determining their highest stage of concern in relation to the VCI.

Central Office Administrators

Central office CTE administrators had the highest stage of concern at Stage 2 or the Personal Stage. Respondents at this stage are involved with the innovation and are experiencing concerns about their own role within the innovation. A peak score in Stage 2 indicates concerns about potential consequences for innovation users. These concerns center on the respondents' personal commitment to the demands of the innovation and their adequacy to meet the demands. High Stage 2 concerns also indicate that individuals are concerned with the decision-making process for the innovation and their role in that process. George et al. (2008) noted that these concerns do not indicate resistance to the innovation. Central office CTE administrators also had high concern levels at Stage 1 or Informational. High scores at the Informational Stage indicate an awareness of the innovation and an interest in learning more about the innovation. The central office CTE administrators scored lowest at the Consequence and Refocusing Stages.

High School Principals

High school principals' primary stage of concern was at Stage 0 or Unconcerned. A high score at the Unconcerned level indicates an individual has little concern about the innovation or has limited involvement with the innovation (George et al., 2008). The next highest stages for high school principals were at the Personal and Informational Stages. A close grouping on these stages may be interpreted as a collection of people who, while limited in their innovation use, are open to receiving information concerning the innovation and its implications for them (Hall, George, & Rutherford, 1986). High school principals scored lowest at the Refocusing and Consequence Stages.

Guidance Counselors

Guidance counselors had primary concern levels at Stage 0 or Unconcerned. As with high school principals, this peak score indicated a lack of involvement with the Virginia Credentialing Initiative. Guidance counselors' high score of 91% was the highest of any group at any level. The next highest scores were at the Informational and Personal Stages. Because the primary Unconcerned score was particularly high and the next highest concern levels were nearly 20 percentile points lower, "…other stage scores may have little significance" (George et al., 2008, p. 53). Guidance counselors scored lowest at the Refocusing and Consequence Stages.

CTE Teachers

CTE teachers scored highest at the Personal Stage with 80%. Individuals at Stage 2 are concerned with demands of the innovation and their ability to meet these demands. Innovation users with high Personal concerns seek to determine their role in the decision-making process within the organization. Personal Stage concerns also include the identification of any potential conflicts with existing organizational structures or procedures. Users at the Personal stage will also seek to determine their commitment to the innovation and its use with the organization. CTE teachers also had concerns at the Informational and Unconcerned levels. These teachers scored higher in the Management Stage than any of the other groups. Concerns at the Management Stage can include concerns with the use of time involved with the innovation as well as needed resources for implementation (George et al.). The teachers scored lowest at the Refocusing and Consequence Stages.

Teacher Concerns by Subject Area Credentialing History

For research question two, teacher concern levels were determined based upon the credentialing history of certain subjects. Subject areas of cosmetology, nursing, and welding were characterized as having established criteria for determining and awarding licensure and certification for a longer period than the CTE subjects of agriculture, business, family and consumer sciences, and marketing. This is not to say that these programs have never certified students or conducted some credentialing examinations, but that there is less history of credentialing.

Nursing and Welding

When determining the highest primary score for the subject areas, both nursing and welding scored highest in Stage 0 or Unconcerned. A high score at Stage 0 could indicate little concern with an innovation or lack of involvement (George et al.). Instructors in the fields of nursing and welding are involved with the innovation as verified by students earning industry licensure. Nursing and welding have been in the practice of preparing students for licensure prior to VDOE mandates for testing. These subject areas have state licensure examinations that have long been a staple of program completion. Because of this testing history, the Virginia Credentialing Initiative is not necessarily introducing new practices into these curriculums. This

is not to say that these program areas will not be affected by the innovation as the initiative has begun to impose regulations requiring certain percentages to be tested each year. For the 2011-2012 school year the Virginia Department of Education is requiring that 52% of all CTE completers participate in credential testing with 72% of those tested required to earn a credential (Virginia Department of Education, 2012). These new requirements could indicate the concern level in Stage 2 or Personal. A high score at Stage 2 is indicative of individuals concerned with program status as well as concerns with demands of the innovation. Both groups had a second highest score in Stage 2 or Personal. While welding programs have long certified students, the new VDOE mandate on passing percentages could indicate the personal concerns for these instructors. Nursing programs have had to maintain certain student passage rates on the state board examination in order to continue operating their program. The rates are determined by the Virginia Board of Nursing.

Agriculture, Business, Cosmetology, FACS, and Marketing

Agriculture, business, cosmetology, faily and consumer sciences, and marketing teacher groups all had the highest concern level at Stage 2 or Personal. These groups showed involvement with the innovation. Stage 2 respondents expressed concerns about their role in fulfilling the requirements of innovation implementation. George et al. (2008) noted that individuals with high Stage 2 scores have intense personal concerns about the innovation and its consequences for them. Respondents at Stage 2 are uncertain of the demands of the innovation and not sure of their adequacy in meeting those demands. Individuals at this stage are concerned with consequences and rewards for their involvement. While there may be intense personal concerns this does not mean that the individuals are resistant to the innovation (George et al.).

Business, cosmetology, and family and consumer science teacher groups all had Stage 1 or Informational as their second highest concern level. Stage 1 respondents seek information relating to the innovation. A high score at Stage 1 is indicative of individuals seeking more information relating to the innovation. Stage 1 concerns are centered on innovation characteristics, requirements, and effects related to use of the innovation. This coincides for these users with high Stage 1 and Stage 2 concerns as they are seeking innovation specifics so they may assess the impact on both their personal and professional lives.

Stakeholder Concerns by Years of Experience

For research question three, the concern levels of the occupational groups (central office CTE administrators, high school principals, guidance counselors, CTE teachers) were determined based upon number of years in current position.

Central Office Administrators

For central office CTE administrators, there were some changes in peak concerns as the number of years of experience changed. For those with 0-5 years of experience, the peak stage of concern was Unconcerned. When the experience increased to 6-10 years of experience, the concerns shifted to Informational followed closely by Personal and Stage 5 (Collaboration). George et al. (2008) noted that respondents with high scores at Stage 1 and Stage 5 show a "desire to learn from what others know and are doing, rather than a concern for leading the collaboration" (p. 54). Central office CTE administrators with 21-25 years of experience scored highest at the Personal level followed by Informational and Collaboration. The intensity of the peak concern levels for those supervisors with 20+ years of experience was notably lower than others with less years of experience.

High School Principals

High school principals scored highest at Stage 0 regardless of the years of experience. This is an indication that high school principals may perceive that they have a limited role in the credential process within CTE courses. While the principals in this study may have limited involvement in implementing the VCI, Sarason (1996) noted that principals must be active in the change process. As the instructional leader (Leithwood & Keith, 1982) the principal works with the entire school faculty to attain curricular goals in all areas (Feiler, Heritage, & Gallimore, 2000). Firestone (1989) indicated that the principals can provide a vision for the innovation, provide encouragement to teachers, and address any issues with the initiative. Those with 10 or fewer years of experience also had high concern levels at Stage 2, which suggested concerns for how this innovation will affect them and what possible consequences could be for individuals. Those with 6-25 years of experience had their second highest concerns at Stage 1 or

Informational. George et al. (2008) noted that individuals at Stage 1 are interested in the innovation and are seeking to learn more details about the innovation.

Guidance Counselors

Guidance counselors with up to 20 years of experience scored highest at Stage 0. Counselors with 21-25 years of experience had concerns highest at Stage 2 or Personal and Stage 1 or Informational. The high concerns at Stages 2 and 3 indicated the personal concerns with "logistics, time, and management" (George et al., 2008, p. 53). Those with 26+ years of experience scored highest at Stage 0. Counselor involvement in the VCI is needed as they can guide students to CTE programs and educate students towards career paths and future education (Walter & Farmer, 1999). Guidance counselors are involved in all school curricular programs and as such are in the middle of all school reform efforts (House & Sears, 2002). For counselors at all levels of experience, the lowest stages of concern were Collaboration, Refocusing, and Consequence. Counselors overall showed a lack of involvement with the VCI.

CTE Teachers

CTE teachers with 5 or fewer years teaching experience scored highest at Stage 0 (Unconcerned), followed closely by Personal and Informational. The close grouping of these concern levels indicated that these beginning teachers are learning about the innovation and are determining how this innovation will affect them within their role as teachers. Hord et al.(1987) noted that teachers relate to change in terms of how it will affect their current classroom practice. CTE teachers in the experience range of 6 to 10 years of experience peak concerns at Stage 1 (Informational) with nearly as high concerns at Stage 2 (Personal). Teachers with 11 to 25 years of experience had peak concerns at the Personal level. George et al. (2008) indicated that high Stage 2 percentile scores were indicative of "ego oriented questions and uncertainties" (p. 33). These respondents are most concerned with status, rewards, and effects of the innovation on them. Cuban (1998) pointed out that teachers find it important to also personalize the innovation and make it work for their students. Teachers with 26 or more years of experience had peak concerns at Stage 1. These teachers had Personal and Unconcerned Stages as their second highest levels. This close grouping indicated that teachers are becoming aware of the innovation and are interested in how this innovation will affect them within their school role. Teachers at all

levels of experience had Management concerns as their 4th highest concern stage. The higher stages of concern (Consequence, Collaboration, Refocusing) were scored lowest by teachers. Berman and Pauley (1975) noted that teacher commitment to an innovation is important to its implementation.

Conclusions

Based on the findings of this study of central office CTE administrators, CTE teachers, guidance counselors, and high school principals involved in the implementation of the Virginia Credentialing Initiative, the following conclusions were drawn.

Indicative of the findings of research question one based on the theory of the Concerns Based Adoption Model and the Stages of Concern, the first conclusion was that there were varied levels of innovation involvement among the population groups. As Hord, Rutherford, Huling-Austin, and Hall (1987) noted individuals are different and do not behave collectively. Central office CTE supervisors and CTE teachers as a whole were deemed to be users of the innovation and involved in the innovation implementation. Guidance counselors and administrators were deemed non-users of the innovation by having peak stage scores at Stage 0. Hord et al. indicated that each individual reacts differently to change and some will assimilate a new practice more quickly than others.

The second conclusion from the research findings was that teacher groups in subject areas deemed to be evolving in the credentialing arena (agriculture, business, family and consumer science, marketing) were involved in the innovation and have concerns based on becoming new users. With Stage 2 concerns, the groups were involved and sought to determine their adequacy in meeting the innovation demands. Hord et al. (1987) noted that teachers will naturally relate change or improvement in terms of what it will mean to them or how it will affect their current classroom practice. The third conclusion was that teacher groups with long standing credentialing history (nursing and welding) had primary concern levels at Stage 0 which indicated little concern with the new innovation. This was indicative of an innovation not changing their curricular goals or objectives. Cosmetology, which has been categorized as having a long standing licensure history, scored highest at the Personal level.

The fourth conclusion was that as experience levels changed, there was some movement of groups along the concerns continuum. Hord et al. (1987) noted that individuals involved in change processes tend to pass through stages as they develop experience in a new arena. For central office CTE administrators and CTE teachers, the level of concerns moved from Stage 0 with less than 5 years of experience to Stages 1 and 2 when years of experience moved past year 5. Guidance counselors scored highest at Stage 0 until year 21, when concerns moved to Stage 2. Counselors with more than 26 years of experience were highest at Stage 1. Experience did not factor into the concern levels of high school principals as at all levels this group had peak scores at Stage 0.

Discussion

Change is often viewed from a large scale perspective with end results as the only indicator of success or failure (Fullan, 2007). However, change is a process and it is individuals who determine the progress and sustainability of any new program or innovation (Hord et al., 1987). As such, innovation implementers would be well served to take into consideration the attitudes and concerns of those individuals when adopting new practices (Hord et al.). By addressing concerns and educating the innovation users, the change process can be successful and innovation adoption can occur faster (George et al., 2008). As these individuals become aware of an innovation and become involved with implementation, their concerns will move through identifiable stages from non-use to more integrated levels of use (Hall, 1979). Hord et al. noted that change involves developmental growth and that experience allowed implementers to demonstrate growth in terms of feelings and skills.

The results for the teacher group in this study closely resemble the teacher studies of AL-Rawajfih, Fong, and Idros (2010), Rakes and Casey (2002), and Schoep (2004). As in each of these studies, the teacher groups all had peak concern levels at the Personal Stage (Stage 2). Central office CTE administrators also had peak concerns at Stage 2, while high school principals and guidance counselors had primary concerns at Stage 0. Hall et al. (1986) noted that through the identification of the Stages of Concern (SoC), assessments can be made which indicate where individuals are in relation to the adoption of an innovation.

George et al. (2008) noted that the SoC can be used as a "means to develop, focus, and support professional development" (p. 61). The need for interaction among the different CTE

stakeholders is evident with two important groups categorized as non-users (administrators and guidance counselors). Because principals are viewed as the instructional leaders of the school (Leithwood & Montgomery, 1982) their concerns or lack of use should be addressed. Caldwell & Wood (1988) indicated that the principal is the one that can ensure a climate that will encourage commitment to school improvement initiatives. While the principal may be the key to leading successful change in school (Lewis & Cheng, 2006; McLaughlin & Hyle, 2001) Lambert (2002) pointed out that the principal does need participation of others in the school building. Guidance counselors could have an impact on the VCI through their role in daily interaction with students. Threeton (2007) noted that counselors could assist students with career guidance by educating students on career options. This career education could include the courses needed for any career as well as credentials needed or desired by industry.

Recommendations for Further Research

This study focused on educational reform in CTE and the implementation of the Virginia Credentialing Initiative, innovation adoption, and the Stages of Concern dimension of the Concerns Based Adoption Model. This study could be replicated in other Superintendents' regions in Virginia. By looking at other regions in the Commonwealth, researchers would determine differences and similarities between CTE population groups throughout all regions. It is also recommended that a longitudinal study be conducted to assess practitioner's concerns as they continue through the process of implementing the ever-increasing requirements of the VCI. A longitudinal study could also describe the impact of the passage of HB 1061 had on testing in both the number of students tested and the number who acquired an industry credential.

Another recommendation is that studies be conducted on specific programs based strictly on surrounding industry opportunities for students. Do areas with strong aspects of industry have greater capacity to facilitate programs with higher percentages of credential acquiring graduates? This study was centered in primarily rural areas with very different economies and void of many of the industries in other parts of Virginia.

Additional research could be conducted to determine the extent to which the Virginia Department of Education has coordinated activities that encourage cooperation between industry and CTE stakeholders at the secondary level or post-secondary level. The results of this study have shown that training or education does appear to relate to movement of individuals along the

concern continuum and that as concerns are met, practitioners do move to greater levels of use and implementation.

A qualitative study could be conducted to discuss with the stakeholder groups their concerns and needs based on the demands and requirements of the VCI. Through interviews researchers could determine if stakeholders were seeking training or professional development activities to address any of their concerns. By having the stakeholders list specific concerns or needs, researchers could begin to suggest and plan avenues to address the concerns.

Further research could also be conducted in larger, more populous areas to include a greater number of participants. By selecting a larger population group, researchers could determine if there are any concerns relating to the gender or race of stakeholder groups. The respondents in this research were primarily Caucasian, with only small numbers of other racial groups.

Chapter Summary

The Virginia Credentialing Initiative is an innovative avenue for preparing students with industry level credentials prior to exiting high school. The implementation of an innovation represents change to the practitioners. Change cannot be effective until those involved with its implementation choose to adopt and use it. By meeting the needs of the practitioners, proponents of educational change can facilitate new programs of increasing rigor and relevance within the school systems.

Communication and collaboration are needed for improvement in the implementation of the VCI. Teachers should be afforded opportunities to seek out others in their subject fields for support and planning. High school principals and guidance counselors should become involved in the VCI as new graduation requirements (HB 1061) make credentialing a total school issue instead of just a CTE issue. Central office CTE administrators should use their position to seek out avenues to educate and train all of the stakeholders. As the scale moves higher, the need to have full buy in from the stakeholders is critical for successfully educating, training, and credentialing our students.

Additional study of the change process and innovation implementation is needed. The needs and concerns of those charged with implementing innovations should be a focal point of further research. Through the training of the practitioners of the innovation, school divisions can

meet the needs and concerns of the stakeholders and move forward with real and sustained change.

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APPENDIX A

BOARD OF EDUCATION APPROVED INDUSTRY CERTIFICATIONS

Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
AGRICULTURAL EDUCATION				
Agricultural Biotechnology Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
Agriculture Mechanics Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Agribusiness Examination	New York State Department of Education	X	X	
Animal Systems Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
Commercial Pesticide Applicator Certification	Virginia Department of Agriculture and Consumer Services	X	X	
Floriculture-Greenhouse Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Floriculture Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Forestry Products & Processing Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Greenhouse Operators Certification	Southeast Greenhouse Growers Association	X	X	
Horticulture-Landscaping Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Horticulture-Olericulture and Pomology Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Natural Resource Systems Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
Outdoor Power Equipment Certifications (Pass any one Outdoor Power Equipment exam)	Equipment and Engine Training Council	X	X	
Power Equipment Technology	**SkillsUSA**	**X**	**X**	
Pet Sitters Certification	National Association Professional Pet Sitters	X	X	
Production Agriculture Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Private Applicator Certification	Virginia Department of Agriculture and Consumer Services	X	X	
Registered Technician Certification	Virginia Department of Agriculture and Consumer Services	X	X	
Small Engine Technology Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	

Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
Small Animal Science Examination	National Occupational Competency Testing Institute (NOCTI)	X	X	
Small Animal Care Examination	New York State Department of Education	X	X	
BUSINESS AND INFORMATION TECHNOLOGY				
Accounting-Basic Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Accounting – Complete Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Administrative Assisting Assessment	National Occupational Competency Testing Institute (NOCTI	X	X	
Administrative Services Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Adobe Certified Associate (Pass any one test in this	Adobe Systems Incorporated	X	X	X
Apple Pro Certification Program (Pass any one exam	Apple, Inc.	X	X	X
Banking and Related Services Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Business Financial Management Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Business and Information Technology Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	X
Brainbench Network Administration Certifications (Pass any one test in this category)	Brainbench	X	X	X
Brainbench Systems Administration Certifications (Pass any one test in this category) (Pass any one test in this category)	Brainbench	X	X	X
Brainbench Software Development Certifications (Pass any one test in this category)	Brainbench	X	X	X
Brainbench Web Design and Development Certifications (Pass any one test in this category)	Brainbench	X	X	X

NOTE: New industry certification credentials and occupational competency assessments are printed in bold.

Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected Verified Credit**	**Career and Technical Education Seal**	**Advanced Mathematics and Technology Seal**
Brainbench Web Administration Certifications (Pass any one test	Brainbench	X	X	X
Brainbench Desktop Publishing Certifications (Pass any one test in this category)	Brainbench	X	X	X
Certified Internet Web Professional (CIW) Program (Pass any one exam in this program)	ProsoftTraining	X	X	X
Certified Novell Administrator (CNA)	Novell	X	X	X
Computer Programming Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	X
Computer Programming Examination	**SkillsUSA**	**X**	**X**	**X**
Financial and Investment Planning Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Fundamental Business Concepts	ASK Institute (DECA/MarkED)	X	X	
General Management Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Human Resources Management Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
IC3 Certification	Certiport	X	X	X
Linux+ Certification	CompTIA	X	X	X
Microsoft Certified Professional (Pass any one Microsoft Professional exam)	Microsoft	X	X	X
Microsoft Technology Associate (MTA) Program (Pass any one exam)	**Microsoft**	**X**	**X**	**X**
Microsoft Office Specialist (MOS)— (Pass any one MOS exam of any version)	Microsoft	X	X	
Network+ Certification	CompTIA	X	X	X
Oracle Certification Program Examinations (Pass any one Oracle certification exam)	Oracle Corporation	X	X	X
Virtual Enterprise Assessment	**National Occupational Competency Testing Institute (NOCTI) and Certiport**	**X**	**X**	
W!SE Financial Literacy Certification	Working in Support of Education (W!SE)	X	X	

NOTE: New industry certification credentials and occupational competency assessments are printed in bold.

Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
CAREER AND TECHNICAL EDUCATION GENERIC CREDENTIALS				
Digital Literacy Certification Test (must be taken in combination with the Virginia Workplace Readiness Assessment)	Microsoft	X	X	
National Career Readiness Certificate	**ACT, WorkKeys®**	**X**	**X**	
Virginia Workplace Readiness Assessment/IC3 Certification Exams (pass Virginia Workplace Readiness Assessment and any one of three IC3 exams)	National Occupational Competency Testing Institute (NOCTI) and Certiport	X	X	
Workplace Readiness Skills for the Commonwealth	**Career and Technical Education Consortium of**	**X**	**X**	
FAMILY AND CONSUMER SCIENCES EDUCATION				
Broad Field Family and Consumer Sciences Examination	American Association of Family and Consumer Sciences (AAFCS)	X	X	
Commercial Foods Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Commercial Baking Examination	**SkillsUSA**	**X**	**X**	
Culinary Arts Prep Cook-Level 1 Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Culinary Arts Cook-Level 2 Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Culinary Arts Examination	American Association of Family and Consumer Sciences (AAFCS)	X	X	
Culinary Arts Examination	**SkillsUSA**	**X**	**X**	
Early Childhood Care and Education Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Early Childhood Education Examination	American Association of Family and Consumer Sciences (AAFCS)	X	X	
Education Careers Examination	American Association of Family and Consumer Sciences (AAFCS)	X	X	
Education and Training Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	

NOTE: New industry certification credentials and occupational competency assessments are printed in bold.

Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
Family Services Examination	American Association of Family and Consumer Sciences (AAFCS)	X	X	
Fashion, Textiles, and Apparel Examination	American Association of Family and Consumer Sciences (AAFCS)	X	X	
Hospitality Management--Food and Beverage Option	National Occupational Competency Testing Institute (NOCTI)	X	X	
Hospitality Management—Lodging Option Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Interior Design Examination	American Association of Family and Consumer Sciences (AAFCS)	X	X	
Nutrition Examination	American Association of Family and Consumer Sciences (AAFCS)	X	X	
ParaPro	Educational Testing Service	X	X	
Personal and Family Finance Certification	American Association of Family & Consumer Sciences (AAFCS)	X	X	
ProStart Program Certification (Levels I and/or 2)	Education Foundation of the National Restaurant Association	X	X	
Retail Commercial Baking Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Restaurant, Food and Beverage Services Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
ServeSafe Certification	Education Foundation of the National Restaurant Association	X	X	
START Certification (Hospitality	American Hotel and Lodging Association	X	X	
HEALTH AND MEDICAL SCIENCES EDUCATION				
Certified Clinical Medical Assistant Examination	**National Healthcareer Association**	**X**	**X**	
Certified Dental Assistant: Infection Control	Dental Assisting National Board, Inc.	X	X	
Certified Dental Assistant: Radiation Health & Safety Examination (RHS)	Dental Assisting National Board, Inc.	X	X	
Certified Veterinary Assistant	Animal Care Technologies	X	X	
Dental Assisting Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Diagnostic Services Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	

NOTE: New industry certification credentials and occupational competency assessments are printed in bold.

Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
EMS First Responder Certification	Department of Health, Office of Emergency Medical Services	X	X	
Emergency Medical Technician	Department of Health, Office of Emergency Medical Services	X	X	
Health Assisting Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Health Informatics Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
Home Health Aide Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Medical Assisting Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Medical Assisting Examination	**SkillsUSA**	**X**	**X**	
National Health Care Foundation Skills Standards	National Consortium on Health Science & Technical Education	X	X	
NRDA Certification (Dental Assisting)	National Allied Health Registry/National Association for Health	X	X	
NRDA Certification (Medical Assisting)	National Allied Health Registry/National Association for Health	X	X	
Nurse Aide	Virginia Board of Nursing	X	X	
Nurse Assisting Examination	**SkillsUSA**	**X**	**X**	
Nursing Assisting Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Practical Nursing Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Practical Nursing Examination	**SkillsUSA**	**X**	**X**	
Therapeutic Services Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
Virginia Pharmacy Technician	Virginia Board of Pharmacy	X	X	
MARKETING				
Concepts of Finance Examination	ASK Institute (DECA/MarkED)	X	X	
Concepts of Entrepreneurship and Management Examination	ASK Institute (DECA/MarkED)	X	X	
Fundamental Marketing Concepts	ASK Institute (DECA/MarkED)	X	X	
Lodging Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	

NOTE: New industry certification credentials and occupational competency assessments are printed in bold.

Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
Lodging Management Program Certification (Levels 1 and/or 2)	American Hotel and Lodging Association (AH&LA)	X	X	
National Professional Certification in Customer	National Retail Federation Foundation	X	X	
Retail Trades Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Retail Management Examination	**National Retail Federation Foundation**	X	X	
Recreation, Amusements, and Attractions Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
Sales Certification	National Retail Federation Foundation	X	X	
Travel and Tourism Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
MILITARY SCIENCE				
Armed Services Vocational Aptitude Battery Examination	United States Military Entrance Processing Command	X	X	
JROTC Skills for Success Assessment	**Department of Defense**	**X**	**X**	
TECHNOLOGY EDUCATION				
3D Visualization & Animation	**SkillsUSA**	**X**	**X**	
ADDA Architectural Drafting	American Design Drafting Association	X	X	
ADDA Mechanical Drafting Examination	American Design Drafting Association	X	X	
ADDA Mechanical Drafting Apprentice Examination	**American Design Drafting Association**	**X**	**X**	
ADDA Architectural Drafting Apprentice Examination	**American Design Drafting Association**	**X**	**X**	
AutoCAD Certifications (Pass any one	Brainbench	X	X	
Autodesk Application Certification Program (Pass any one exam)	Autodesk	X	X	
Autodesk Certification Program (Pass any one exam at fundamentals level)	**Autodesk**	**X**	**X**	
Automated Manufacturing Technology Examination	SkillsUSA	X	X	
Architectural Drafting Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	

NOTE: New industry certification credentials and occupational competency assessments are printed in bold.

Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
Architectural Drafting Examination	SkillsUSA	X	X	
Certified SolidWorks Professional (Pass any one	SolidWorks Corporation	X	X	
Certified SolidWorks Associate	**SolidWorks Corporation**	**X**	**X**	
Electronic Technology Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Electronics Application & Technology Examination	**SkillsUSA**	**X**	**X**	
Engineering Technology Examination	**SkillsUSA**	**X**	**X**	
Manufacturing Technology Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Pre-Engineering Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Pre-Skills Assessment for Mastercam Assessment	Mastercam--Administered by National Occupational Competency Testing Institute (NOCTI)	X	X	
Project Lead the Way End-of-Course Tests (Pass any one end-of-course exam)	**Project Lead The Way**	**X**	**X**	**X**
Robotics Examination	**SkillsUSA**	**X**	**X**	
STARS Certification Examination	Digital Quest, Inc.	X	X	
Technical Drafting Examination	**SkillsUSA**	**X**	**X**	
TRADE AND INDUSTRIAL EDUCATION				
A+ Certification (Pass any one exam from 2009	CompTIA	X	X	X
Access Certification	American Culinary Federation, Inc. (ACF)	X	X	
Advertising Design Examination	PrintED Co-brand, SkillsUSA	X	X	
Advertising and Design Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Audio-Radio Production Examination	**SkillsUSA**	**X**	**X**	
Audio-Visual Communications Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Automotive Technician Core Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Automotive Technician Standard Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	

NOTE: New industry certification credentials and occupational competency assessments are printed in bold.

Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
Automotive Technician Advanced Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Automotive Technician Examination (ASE)—(Pass any one exam from Automobile Technician Test Series)	National Institute for Automotive Service Excellence	X	X	
Aviation Maintenance (Secondary)	**SkillsUSA**	**X**	**X**	
Basic Installer Exam, Mobile Electronics Certified Professional	Consumer Electronics Association	X	X	
BICSI Registered Installer Certification, Level 1	BICSI (International Telecommunications Association)	X	X	
Broadcasting and Journalism Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Building Construction Occupations Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Building Trades Maintenance Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
CAD Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
CAD/CAM Assessment	National Occupational Competency Testing Institute (NOCTI	X	X	
Cabinetmaking Examination	**SkillsUSA**	**X**	**X**	
Cabinetmaking Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Carpentry Examination	**SkillsUSA**	**X**	**X**	
Carpentry Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Carpentry Level One, National Construction Career	National Center for Construction Education & Research (NCCER)	X	X	
Certified Computer Service Technician	Electronics Technicians Association, International (ETA)	X	X	X
Certified Electronics Technician Associate (CET)	Electronics Technicians Association, International (ETA)	X	X	
Certified Satellite Dish Installer	Electronics Technicians Association, International (ETA)	X	X	
CISCO CCNA Academy End-of-Course Examinations (Pass any two end-of-course exams, Levels 1-4)	CISCO Systems	X	X	X

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Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
CISCO Certified Networking Associate (Pass any one exam in	CISCO Systems	X	X	X
Collision Repair Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Collision Repair and Refinishing Technician (ASE)- (Pass any one exam from Collision	National Institute for Automotive Service Excellence	X	X	
Collision Repair/Refinishing Technology Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Computer Maintenance Technology	**SkillsUSA**	**X**	**X**	**X**
Computer Networking Fundamentals Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	X
Computer Repair Technology Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	X
CNC Milling and Turning Technology Examination	**SkillsUSA**	**X**	**X**	
Construction Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
Construction Masonry-Blocklaying Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Construction Masonry-Bricklaying Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Construction Technology Test	National Center for Constructional Education & Research (NCCER)	X	X	
Computer Technology Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	X
CompTIA Strata Fundamentals of IT Technology	**Certiport**	**X**	**X**	**X**
Copper Based Cabling Certification	RBT Systems, Inc.	X	X	
Core: Introductory Craft Skills, National	National Center For Construction Education & Research (NCCER)	X	X	
Cosmetology Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Cosmetology Examination	**SkillsUSA**	**X**	**X**	
Criminal Justice Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Criminal Justice Examination/CSI	**SkillsUSA**	**X**	**X**	
Customer Service Examination	**SkillsUSA**	**X**	**X**	

NOTE: New industry certification credentials and occupational competency assessments are printed in bold.

Board of Education Approved Industry Certifications, Occupational Competency				
2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
Data Cabling Installer Certification (DCIC)	Electronics Technicians Association, International (ETA)	X	X	
Design and PreConstruction Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
Diesel Engine Mechanics Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Drafter Certification	American Design Drafting Association	X	X	
Electrical Construction Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Electrical Occupations Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Electrical, National Construction Career Test	National Center For Construction Education & Research (NCCER)	X	X	
Electronics Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Electronics Module: DC (EM1)	Electronics Technicians Association, International (ETA)	X	X	
Electronics Module: AC (EM2)	Electronics Technicians Association, International (ETA)	X	X	
Electronics Module: Analog (EM3)	Electronics Technicians Association, International (ETA)	X	X	
Electronics Module: DC (EM4)	Electronics Technicians Association, International (ETA)	X	X	
Electronics Module: Comprehensive (EMS)	Electronics Technicians Association, International (ETA)	X	X	
EPA Technician Certification (Levels I, II, or III)	Environmental Protection Agency (Authorized Entity)	X	X	
Fiber Optic Network Cabling	RBT Systems, Inc.	X	X	
Fiber Optics Installer Certification	Electronics Technicians Association, International (ETA)	X	X	
Firefighter I Certification	Virginia Department of Fire Programs	X	X	
Firefighter II Certification	Virginia Department of Fire Programs	X	X	
General Drafting and Design Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Graphic Communications Examination	PrintED Co-brand, SkillsUSA	X	X	
Graphic Communication Technology Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	

NOTE: New industry certification credentials and occupational competency assessments are printed in bold.

Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
Graymark Cabling Installation	Graymark International	X	X	
Heating, Electrical, Air Conditioning Technology (HEAT) Examination (Pass any one	HVAC Excellence	X	X	
Heating, Ventilation, Air Conditioning (HVAC)	National Occupational Competency Testing Institute (NOCTI)	X	X	
Heating, Ventilation, Air Conditioning &	National Occupational Competency Testing Institute (NOCTI)	X	X	
Heavy Equipment Operations Level One	National Center For Construction Education & Research (NCCER)	X	X	
HVAC, National Construction Career Test	National Center For Construction Education & Research (NCCER)	X	X	
HVAC Excellence Certification Program (Pass any one	HVAC Excellence	X	X	
Industrial Maintenance Mechanic Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Industrial Electronics Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
Installer (or Service) Core Certification (HVAC)	North American Technician Excellence, Inc. (NATE)	X	X	
Internetworking Examination	**SkillsUSA**	**X**	**X**	
IT Essentials 1 Examination (PC Hardware and	Cisco Systems	X	X	X
MSSC Certified Production Technician (CPT) Program	Manufacturing Skill Standards Council (MSSC)	X	X	
Machining Skills--Level I (Pass any one Machining (Level 1) examination with	National Institute for Metalworking Skills (NIMS)	X	X	
Major Appliance Repair Examination	**SkillsUSA**	**X**	**X**	
Marine Service Technology Examination	**SkillsUSA**	**X**	**X**	
Masonry Examination	**SkillsUSA**	**X**	**X**	
Maintenance Operations Assessment	**National Occupational Competency Testing Institute (NOCTI)**	**X**	**X**	
Masonry Level One, National Construction Career Test	National Center For Construction Education & Research (NCCER)	X	X	
Motorcycle Service Technology	**SkillsUSA**	**X**	**X**	

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Board of Education Approved Industry Certifications, Occupational Competency				
2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
National Automotive Student Skills Standards Assessments (Pass any one exam from automotive service, automotive refinishing, collision repair, or diesel engine areas)	ASE-AYES-SkillsUSA Co-brand, SkillsUSA	X	X	
Nail Care Examination	**SkillsUSA**	**X**	**X**	
Performing Arts Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Photography Examination	SkillsUSA	X	X	
Plumbing Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Plumbing Examination	**SkillsUSA**	**X**	**X**	
Precision Machining Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Protective Services Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
PrintED Certification Program (Pass any one exam)	Graphic Arts Education and Research Foundation	X	X	
Residential Wiring Examination	**SkillsUSA**	**X**	**X**	
Residential Air-Conditioning and Heating	Air Conditioning and Refrigeration Institute	X	X	
Residential Construction Academy Examination (Pass any one test from available examinations)	Home Builders Institute (Examinations are administered by National Occupational Competency Testing Institute (NOCTI)	X	X	
SENSE Training Program Certification (Level 1, Entry-Level Welder)	American Welding Society (AWS)	X	X	
Screen Printing Examination	PrintED Co-brand, SkillsUSA	X	X	
SkillsUSA Workforce Ready System (Pass any one test from available examinations)	SkillsUSA	X	X	
Student Electronics Technician Certification (SET)	Electronics Technicians Association, International (ETA)	X	X	
Telecommunications Electronics Technician	Electronics Technicians Association, International (ETA)	X	X	
Television Broadcasting Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Television Video Production	**SkillsUSA**	**X**	**X**	
Technical Drafting Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	

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Board of Education Approved Industry Certifications, Occupational Competency 2				
		Meets Board of Education		
Name of Credential	**Issuing Organization**	**Student Selected**	**Career and Technical**	**Advanced Mathematics and**
Visual Arts Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Visual Communications Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Welding Examination	**SkillsUSA**	**X**	**X**	
Welding Assessment	National Occupational Competency Testing Institute (NOCTI)	X	X	
Welding, National Construction Career Test	National Center For Construction Education & Research (NCCER)	X	X	
LICENSE				
Barbers	Board of Barbers and Cosmetology (Virginia Department of	X	X	
Cosmetology	Board of Barbers and Cosmetology (Virginia Department of Professional and Occupational Regulation)	X	X	
Licensed Practical Nurse	Virginia Board of Nursing	X	X	
Nail Technician	Board of Barbers and Cosmetology (Virginia Department of Professional and Occupational Regulation)	X	X	
Pilot's License-Airplane Single Engine Land	Federal Aviation Administration	X	X	
Real Estate Salesperson	Virginia Real Estate Board (Dept. of Professional & Occupational Regulation)	X	X	
EXAMINATION				
Advanced Placement Computer Science A	The College Board	Passing Score = 3		Passing Score =
College Level Examination Program (CLEP): Information Systems and Computer Applications	The College Board	Passing Score = 52		Passing Score = 5
International Baccalaureate Computer Science (Standard Level)	The International Baccalaureate Organization	Passing Score = 3		Passing Score =
International Baccalaureate Computer Science (Higher Level)	The International Baccalaureate Organization	Passing Score = 3		Passing Score =
International Baccalaureate Information Technology in a Global Society (IB6613) (Standard Level)	The International Baccalaureate Organization	Passing Score = 3		Passing Score = 3

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Board of Education Approved Industry Certifications, Occupational Competency				
2				
		Meets Board of Education		
Name of Credential	Issuing Organization	Student Selected	Career and Technical	Advanced Mathematics and
Deletions				
Fundamentals of Wireless LANs	Cisco Systems			
Java Programming Examination	Cisco Systems			
Microsoft Certified Application Specialist (MCAS)- (Pass any one MCAS exam)	Microsoft			
Fundamentals of Unix Examination	Cisco Systems			
A+ Certification (Pass any one exam from 2006	CompTIA			
Basic Principles of Construction: Residential	Delmar Thomson Learning/Home Builders Institute			
Carpentry: Residential Construction Academy	Delmar Thomson Learning/Home Builders Institute			
Electrical Principles: Residential Construction Academy Examination	Delmar Thomson Learning/Home Builders Institute			
House Wiring: Residential Construction Academy Examination	Delmar Thomson Learning/Home Builders Institute			
HVAC: Residential Construction Academy Examination	Delmar Thomson Learning/Home Builders Institute			
IT Essentials 2 Examination (Network Operating Systems)	Cisco Systems			
Plumbing: Residential Construction Academy Examination	Delmar Thomson Learning/Home Builders Institute			
Advanced Placement Computer Science AB	The College Board			

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APPENDIX B

LETTER TO SUPERINTENDENTS

February 7, 2012

Dear (Title)(Last_Name),

My name is Chris Stacy and I am a doctoral student at Virginia Tech in addition to being the principal of Tazewell County Career and Technical Center. On December 15, 2011, I introduced myself at the Superintendents' Region VII meeting in Abingdon, VA and briefly described my dissertation research project.

My dissertation title is "Stages of Concern in the Implementation of the Virginia Credentialing Initiative in Superintendents' Region VII." I would like to ask your permission to send the "Stages of Concern Questionnaire" to all central office Career and Technical Education (CTE) directors, all CTE teachers, all secondary school building principals, and all secondary school guidance counselors in your school division. This survey is web based and consists of 35 questions plus items to determine the characteristics of the participants. It will take an estimated 10 minutes to complete.

I would greatly appreciate your assistance in this project by allowing me to conduct this survey in your division. If you would please respond to this email with the name of your county personnel director, I will contact that person to request the names and email addresses of the appropriate employees of your division to receive the survey.

If you have questions regarding this project, please do not hesitate to contact me at cbstacy@vt.edu or (304) 320-6779.

Sincerely,

Christopher B. Stacy
Doctoral Candidate

APPENDIX C

PERMISSION TO USE QUESTIONNAIRE

ADVANCING RESEARCH
SEDL
IMPROVING EDUCATION

SEDL LICENSE AGREEMENT

To: Christopher Stacy (Licensee)
100 Advantage Drive
Tazewell, VA 24651

From: Nancy Reynolds
Information Associate
SEDL
Information Resource Center—Copyright Permissions
4700 Mueller Blvd.
Austin, TX 78723

Subject: License Agreement to reproduce and distribute SEDL materials

Date: February 23, 2010; revised November 12, 2010

Thank you for your interest in using the ***Stages of Concern Questionnaire*** (SoCQ 075) published by SEDL and written by Archie A. George, Gene E. Hall, and Suzanne M. Stiegelbauer in 2006 as Appendix A, pages 79-82 in *Measuring Implementation in Schools: The Stages of Concern Questionnaire*, as a PDF document on an accompanying CD-ROM, in electronic format as SEDL's *Stages of Concern Questionnaire (SoCQ) Online* and published on pages 48-49 in the SEDL publication *Taking Charge of Change*, revised ed., published in 2006, 2nd printing, 2008, that was written by Shirley M. Hord, William L. Rutherford, Leslie Huling, and Gene E. Hall.

This instrument will be referred to as the "work" in this License Agreement. SEDL is pleased to grant permission to the Licensee, a doctoral candidate at Virginia Tech in Blacksburg, VA, who will use the work in his dissertation and will administer the work to up to 515 career and technical education teachers, guidance counselors, and administrators in Superintendent's Region VII in Southwest Virginia. The following are the terms, conditions, and limitations governing this limited permission to reproduce the work:

1. All distribution activities shall be solely in the format of the Licensee chooses to use the work (i.e., in print or online format) for educational, non-profit use only. Precise compliance with the following terms and conditions shall be required for any permitted reproduction of the work described above.

Voice: 800-476-6861
Fax: 512-476-2286
www.sedl.org
4700 MUELLER BLVD., AUSTIN, TX 78723

2. No adaptations, deletions, or changes are allowed with the exception of substituting the words "the innovation" with a word or phrase that participants will recognize, such as the name of the innovation or initiative, and questions can be added to identify demographic indicators or participants before or after the instrument, but otherwise, the wording and order of items cannot be changed. No derivative work based on or incorporating the work will be created without the prior written consent of SEDL.

3. This permission is non-exclusive, non-transferable, and limited to the one-time use specified herein. This permission is granted solely for the period February 23, 2010 through May 31, 2012. SEDL expressly reserves all rights in this material.

4. If you distribute any printed copies of the work, you must give appropriate credit: "Reprinted with permission of SEDL" or attribute SEDL as appropriate to the professional style guidelines you are following. All reproductions of the materials used by you shall also bear the following copyright notice on each page of use: "Copyright © 2006, SEDL."

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6. SEDL is not charging the Licensee a copyright fee to use the work.

I'm e-mailing you a PDF of this agreement. Please print and sign one copy below, indicating that you understand and agree to comply with the above terms, conditions and limitations, and send the original back to me. If you wish to keep a copy with original signatures, please also print, sign, and return a second copy and, after I receive and sign the copies, I'll return one with both of our signatures to you.

Thank you, again, for your interest in using the ***Stages of Concern Questionnaire (SoCQ)***. If you have any questions about this License Agreement, please contact me at 800-476-6861, ext. 6548 or 512-391-6548, or by e-mail at nancy.reynolds@sedl.org.

Sincerely,

Nancy Reynolds — November 19, 2010

Nancy Reynolds for SEDL — Date signed

Agreed and accepted:

Signature: Christopher B. Stacy — 11/10/10

Date signed

Printed Name: Christopher B. Stacy

APPENDIX D

VIRGINIA TECH INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

Office of Research Compliance
Institutional Review Board
2000 Kraft Drive, Suite 2000 (0497)
Blacksburg, Virginia 24060
540/231-4606 Fax 540/231-0959
e-mail irb@vt.edu
Website: www.irb.vt.edu

MEMORANDUM

DATE: February 6, 2012
TO: Daisy L. Stewart, Christopher Stacy
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires May 31, 2014)

PROTOCOL TITLE: Stages of Concern in the Implementation of the Virginia Credentialing Initiative in Superintendents' Region Seven

IRB NUMBER: 12-080

Effective February 6, 2012, the Virginia Tech IRB Chair, Dr. David M. Moore, approved the new protocol for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at http://www.irb.vt.edu/pages/responsibilities.htm (please review before the commencement of your research).

PROTOCOL INFORMATION:
Approved as: **Expedited, under 45 CFR 46.110 category(ies) 7**
Protocol Approval Date: **2/6/2012**
Protocol Expiration Date: **2/5/2013**
Continuing Review Due Date*: **1/22/2013**
*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:
Per federally regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals / work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

APPENDIX E

CONCERNS QUESTIONNAIRE

SEDL

Stages of Concern Questionnaire

A Message from Your Survey Coordinator

Continue to the questionnaire

The Virginia Credentialing Initiative is an effort to promote acquisition of credentials by high school students participating in career and technical education. "A credential is any industry certification examination, licensure, or occupational competency assessment that is passed (achieved) by a student which is eligible for student-selected verified credit option as approved by the Virginia Department of Education" (Virginia Department of Education, 2008a, p.1).

The purpose of this questionnaire is to determine what people who are using, or thinking about using, various programs or practices are concerned about at different times during the innovation adoption process. By participating in this survey, you can help to provide data relevant to the concerns of practitioners at different stages of innovation implementation. The results of this study will provide policymakers with an understanding of the resources and technical assistance needed by educators at various stages of the change process. In addition, the information could be used by professional organizations to provide in-service programs for educators related to the Virginia Credentialing Initiative.

About the Stages of Concern Questionnaire

The purpose of this questionnaire is to determine what people are thinking about when using various programs or practices. It is intended to assess their levels of concerns at various times during the adoption process.

The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various programs to many years' experience using them. Therefore, **many of the items on this questionnaire may appear to be of little relevance or irrelevant to you at this time.** For the completely irrelevant items, please select "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale.

For example:

The fictional survey items below demonstrate how responses might be filled in by a person who loves to eat pizza but does not like pepperoni. The person has never left the United States before, and the person does not enjoy eating the same meal two days in a row. In this case, the concern being asked about is "EATING PIZZA" and is highlighted in each question.

	Irrelevant	Not true of me now	Somewhat true of me now			Very true of me now		
	0	1	2	3	4	5	6	7

I enjoy eating pizza.	○	○	○	○	○	○	○	●
I enjoy eating pizza four or five days per week.	○	○	○	○	●	○	○	○
I enjoy eating pizza with pepperoni.	○	●	○	○	○	○	○	○
I have enjoyed eating pizza when traveling to foreign countries.	●	○	○	○	○	○	○	○

Please click the button below to start the questionnaire.

Continue to the questionnaire

SEDL

Stages of Concern Questionnaire

Please respond to the items in terms of **your present concerns**, or how you feel about your involvement with **Virginia Credentialing Initiative** . We do not hold to any one definition of the innovation so please think of it in terms of your own perception of what it involves. Phrases such as "this approach" and "the new system" all refer to the same innovation. Remember to respond to each item in terms of your present concerns about your involvement or potential involvement with the innovation.

Thank you for taking time to complete this task.

Please answer the following 8 items:

Gender:
select an option from this list

Race:
select an option from this list

If you selected "other," please specify:

Years of experience in current position:
select an option from this list

Major Job Function:
select an option from this list

If a teacher, what is your primary Program Area:
select an option from this list

If Trade & Industrial Education, which trade area:
select an option from this list

Have you participated in any Staff Development related to Virginia Credentialing Initiative:
select an option from this list

If you are an administrator with prior experience as a CTE teacher, please indicate the subject area and years of CTE teaching experience. (select all that apply)

- ☐ Agricultural Education
- ☐ Business & Information Technology
- ☐ Career Connections
- ☐ Family & Consumer Sciences
- ☐ Health & Medical Sciences
- ☐ Marketing

- [ ] Technology Education
- [ ] Trade & Industrial Education
- [ ] 0-5
- [ ] 6-10
- [ ] 11-15
- [ ] 16-20
- [ ] 21-25
- [ ] 26 or more

Please answer the following question(s):

Please enter your personal survey code.

Select one response for each question below.

		Irrel-evant	Not true of me now	Somewhat true of me now			Very true of me now		
#		0	1	2	3	4	5	6	7
1.	I am concerned about students' attitudes toward Virginia Credentialing Initiative .	○	○	○	○	○	○	○	○
2.	I now know of some other approaches that might work better than Virginia Credentialing Initiative .	○	○	○	○	○	○	○	○
3.	I am more concerned about another innovation.	○	○	○	○	○	○	○	○
4.	I am concerned about not having enough time to organize myself each day (in relation to Virginia Credentialing Initiative).	○	○	○	○	○	○	○	○
5.	I would like to help other faculty in their use of Virginia Credentialing Initiative .	○	○	○	○	○	○	○	○

6.	**I have a very limited knowledge about Virginia Credentialing Initiative .**	○	○	○	○	○	○	○	○
7.	**I would like to know the effect of reorganization on my professional status.**	○	○	○	○	○	○	○	○
8.	**I am concerned about conflict between my interests and my responsibilities.**	○	○	○	○	○	○	○	○
9.	**I am concerned about revising my use of Virginia Credentialing Initiative .**	○	○	○	○	○	○	○	○
10.	**I would like to develop working relationships with both our faculty and outside faculty using Virginia Credentialing Initiative .**	○	○	○	○	○	○	○	○
11.	**I am concerned about how Virginia Credentialing Initiative affects students.**	○	○	○	○	○	○	○	○
12.	**I am not concerned about Virginia Credentialing Initiative at this time.**	○	○	○	○	○	○	○	○
13.	**I would like to know who will make the decisions in the new system.**	○	○	○	○	○	○	○	○
14.	**I would like to discuss the possibility of using Virginia Credentialing Initiative .**	○	○	○	○	○	○	○	○
15.	**I would like to know what resources are available if we decide to adopt Virginia Credentialing Initiative .**	○	○	○	○	○	○	○	○
16.	**I am concerned about my inability to manage all that Virginia Credentialing Initiative requires.**	○	○	○	○	○	○	○	○
17.	**I would like to know how my teaching or administration is supposed to change.**	○	○	○	○	○	○	○	○
18.	**I would like to familiarize other departments or persons with the progress of this new approach.**	○	○	○	○	○	○	○	○

		Irrel-evant	**Not true of me now**	**Somewhat true of me now**			**Very true of me now**		
#		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
19.	**I am concerned about evaluating my impact on students (in relation to Virginia Credentialing**	○	○	○	○	○	○	○	○

	Initiative).								
20.	I would like to revise the Virginia Credentialing Initiative approach.	○	○	○	○	○	○	○	○
21.	I am completely occupied with things other than Virginia Credentialing Initiative .	○	○	○	○	○	○	○	○
22.	I would like to modify our use of Virginia Credentialing Initiative based on the experiences of our students.	○	○	○	○	○	○	○	○
23.	I spend little time thinking about Virginia Credentialing Initiative .	○	○	○	○	○	○	○	○
24.	I would like to excite my students about their part in Virginia Credentialing Initiative .	○	○	○	○	○	○	○	○
25.	I am concerned about time spent working with nonacademic problems related to Virginia Credentialing Initiative .	○	○	○	○	○	○	○	○
26.	I would like to know what the use of Virginia Credentialing Initiative will require in the immediate future.	○	○	○	○	○	○	○	○
27.	I would like to coordinate my efforts with others to maximize the effects of Virginia Credentialing Initiative .	○	○	○	○	○	○	○	○
28.	I would like to have more information on time and energy commitments required by Virginia Credentialing Initiative .	○	○	○	○	○	○	○	○
29.	I would like to know what other faculty are doing in this area.	○	○	○	○	○	○	○	○
30.	Currently, other priorities prevent me from focusing my time on Virginia Credentialing Initiative .	○	○	○	○	○	○	○	○
31.	I would like to determine how to supplement, enhance, or replace Virginia Credentialing Initiative .	○	○	○	○	○	○	○	○

		Irrel-evant	Not true of me now	Somewhat true of me now			Very true of me now		
#		0	1	2	3	4	5	6	7
32.	I would like to use feedback from students to	○	○	○	○	○	○	○	○

	change the program.								
33.	**I would like to know how my role will change when I am using Virginia Credentialing Initiative .**	○	○	○	○	○	○	○	○
34.	**Coordination of tasks and people (in relation to Virginia Credentialing Initiative) is taking too much of my time.**	○	○	○	○	○	○	○	○
35.	**I would like to know how Virginia Credentialing Initiative is better than what we have now.**	○	○	○	○	○	○	○	○

Thank you for giving your time to participate in this important study.

Submit Survey Responses

Survey Subgroup Prompts and Subgroup Options

Text for Subgroup Prompt	Selectable Options for Subgroup Prompt
Gender	Male; Female
Race	African-American (non-Hispanic) Asian Caucasian (non-Hispanic) Latin/Hispanic Native American Pacific Islander Other
Years of experience in current position	0-5 6-10 11-15 16-20 21-25 26 or more
Major job function	Administrator Central Office Administrator/Director/Supervisor CTE teacher Guidance Counselor
If a teacher, what is your primary program area?	Agricultural Education Business & Information Technology Career Connections Family & Consumer Sciences Health & Medical Sciences Marketing Technology Education Trade & Industrial Education

If Trade & Industrial Education, which trade area?	Advertising Auto Body/Automotive Maintenance/Servicing Barbering/Cosmetology Building Trades/Carpentry Computer Maintenance/Networking Criminal Justice Diesel/Heavy Equipment CAD/Drafting Electricity Electronics HVAC Masonry Precision Machining Small Engine Technology Telecommunications Welding
Have you participated in any staff development related to the Virginia Credentialing Initiative	VDOE Webinar Conference In-school training VDOE sponsored training Other training Have not had training

APPENDIX F

INITIAL LETTER

Dear Educator,

You have been selected to participate in a study that deals with the concerns of central office career and technical education (CTE) administrators, secondary school CTE administrators, guidance counselors, and CTE teachers involved in the implementation of the Virginia Credentialing Initiative.

Realizing your time is limited and valuable, this questionnaire will take approximately 10-15 minutes to complete. Answers will remain confidential as we are interested in the aggregate data only and not individual responses. Only researchers will have access to the completed instruments.

Because a high response rate is important, we hope that individuals who have been solicited would choose to participate. Please complete this questionnaire by February 17, 2012.

Your cooperation and assistance are greatly appreciated. Please feel free to contact me with any questions at (276) 988-2529. By participating in this study, you will provide valuable feedback to educational policy makers and professional development providers as they analyze and implement the Virginia Credentialing Initiative.

You may access the survey by using the following link and password:
https://www.sedl.org/concerns/
Password:
Personal Survey Code:

Sincerely,

Christopher B. Stacy
Principal
Tazewell County Career & Technical Center
Tazewell County Public Schools

APPENDIX G

EMAIL -- FIRST FOLLOW UP

February 18, 2012

Dear Educator,

Last week you were emailed a survey regarding the study of the Virginia Credentialing Initiative in Superintendents' Region VII. If you have returned the survey, thank you for your cooperation. If you have not, please take a few minutes to complete and return your survey. It is important to have your input on this critical issue. Your responses are strictly confidential.

You may access the survey by using the following link and password:
http://www.sedl.org/concerns/
Password: csvtswva
Personal Survey Code:
If you have questions about this study or completing the survey, please contact me at cbstacy@vt.edu or (276)-988-2529.

Thank you,

Christopher B. Stacy
Principal
Tazewell County Career & Technical Center
Tazewell County Public Schools

APPENDIX H

EMAIL--SECOND FOLLOW UP (NON-RESPONDENTS)

February 28, 2012

Dear Educator,

About two weeks ago you received a survey regarding a study of the Virginia Credentialing Initiative in Superintendents' Region VII. As of today, we have not received your response. It is very important to us to have your input on this critical issue. Please take a moment to complete and submit your survey at your earliest convenience. Your responses are strictly confidential. You may access the survey by using the following link and password:
http://www.sedl.org/concerns/
Password: csvtswva
Personal Survey Code:

If you have questions about this study or completing the survey, please contact me at cbstacy@vt.edu or (276)-988-2529.

Thank you,

Christopher B. Stacy
Principal
Tazewell County Career & Technical Center
Tazewell County Public Schools

APPENDIX I

LETTER -- THIRD FOLLOW UP (NON-RESPONDENTS)

March 7, 2012

(Title) (Last_Name)
(School)
(Address)

Dear (Title) (Last Name):

Several weeks ago you received a survey regarding a study we are conducting on the Virginia Credentialing Initiative in Superintendents' Region VII. We would like to know what you think about this initiative. If you have submitted your survey, thank you. If you have not, please take a few minutes to complete the enclosed survey and return it in the postage paid envelope.

You may also access the survey by using the following link and password:
http://www.sedl.org/concerns/
Password: csvtswva
Personal Survey Code:

If you have any questions, regarding this study or completing the survey, please feel free to contact me at cbstacy@vt.edu or at (276)-988-2529. Thank you for your cooperation!

Sincerely,

Christopher B. Stacy
Principal
Tazewell County Career & Technical Center
Tazewell County Public Schools