Career and Technical Education in the Crossroads of Change

Janice Quailey

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CAREER AND TECHNICAL EDUCATION IN THE CROSSROADS OF CHANGE

A Dissertation
Submitted to the Interdisciplinary Doctoral Program for Educational Leadership
School of Education
Duquesne University
In partial fulfillment of the requirements for
the degree of Doctor of Education
By
Janice Quailey
December 2012
CAREER AND TECHNICAL EDUCATION IN THE CROSSROADS OF CHANGE

By

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ABSTRACT

CAREER AND TECHNICAL EDUCATION IN THE CROSSROADS OF CHANGE

By

Janice Quailey

December 2012

Dissertation Proposal supervised by Dr. James Henderson

Career and technical education (CTE) is faced with numerous forces that may impact its future. A variety of forces directly or indirectly affect CTE, ranging from the persisting stigma or negative image of career and technical education, the schools’ curricular structure and requirements, along with federal laws such as No Child Left Behind (NCLB) and Perkins.

Federal laws guide administrators’ decisions at the local level that directly or indirectly affect CTE. With NCLB goals for all students to improve academic achievement, reach high standards, and graduate from high school (HS), much pressure is placed on schools. NCLB emphasizes increased academic rigor and progress on students’ state assessments, holding schools accountable to annual yearly improvement. With more accountability, more emphasis is being placed on core academics that may in turn reduce
or eliminate elective career and technical education programs. With continued negative perceptions associated with career and technical education, reinforced by curricular tracks and coupled with the impact of NCLB, CTE is left in a precarious position. Some of these forces may have deleterious effects upon CTE depending upon decisions and reactions of local administrators.

A quantitative survey research study was completed with Pennsylvania administrators from CTE schools and HSs. HS principals and CTE directors were surveyed as to how they perceived the effects of NCLB on role, image, and curriculum changes affecting career and technical education. Surveys were mailed to the directors of shared-time CTE schools and their respective sending HS principals.

The results of the study revealed the perceptions of HS and CTE administrators concerning the ramifications of No Child Left Behind as it relates to CTEs image, the effects on curriculum, and CTEs role in helping schools meet the goals of NCLB. There were significant differences found between CTE directors and HS principals regarding their perceptions of the role and image of CTE as affected by NCLB. In addition, there were no significant differences found between administrators regarding their perceptions of curriculum changes affected by NCLB. Finally, there were no significant differences in perceptions found across settings or regions.

CTE must identify the repercussions of the legislative reform of NCLB, address them, and determine where and how CTE can evolve, including overcoming its negative image and becoming a partner with academic education in the wave of educational reform.
DEDICATION

This dissertation is dedicated to:

My parents who were always there for me; my partner in life Larry and my
brother Bruce who gave me ongoing encouragement and support; my sister-in-law Sue,
nephew John, and niece Tara; my childhood friends: “little sister” Paula and fifth grade
friend Anita; Cousin Stevie who led the way; also my college roommates Valerie, Murph,
Yazz, Gretchen, and Ellie and colleagues/friends Anita, Linda (who got me interested in
this), Kim, and Linda who all cheered me on; and finally Dr. Helen Hazi who said I could
and should.
ACKNOWLEDGEMENT

My committee is comprised of three professors to which I have the deepest respect and appreciation.

I would like to extend my sincerest gratitude to Dr. James Henderson who very willingly accepted being my chairperson. Dr. Henderson’s guidance has been very helpful and his encouragement and generosity in sharing his time and resources are very much appreciated.

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I would like to thank Dr. Carol Parke for her willingness to be on my committee. Her input and feedback have been vital, greatly appreciated, and key to my completion.

In addition, I would like to thank Dr. Chadd and Dr. Drage for their generosity in sharing their survey with me, along with their time in corresponding with me.
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Chapter I

Introduction

Our educational and societal past has perhaps shaped our present concepts regarding career and technical education (CTE). As history has recognized, career and technical education, formerly called vocational education, has been associated with second-class education (Banchero, 2006). Aring, (1993) asserts that the United States is the only industrialized country without a first-class system of career and technical education. Aring (1993) further states that the reason for that could be that “vocational – the ‘V’ word, is a dirty word, its negative connotations deeply embedded in language and culture” (396). The image of CTE identified with blue-collar work, pervades the educational system (Nagle, 1999). Furthermore, Nagle (1999) suggests that a hierarchy occurs in school, reflecting and implying that the working class is the second class, and schools reflect society’s bias (184). The restaurant industry (Allen, 2000) and manufacturing industry (National Association of Manufacturers, 2003) reiterate that there is a negative stigma attached to their fields. In addition, with the emphasis of most secondary school curricula directed toward college preparation, those non-college bound students, often comprised of CTE students, are ignored or forgotten (Wenrich, 1996).

Conceivably this lineage of identity has created the stigma that is perpetuated and continues to be associated with career and technical education to this day. Career and technical education’s roots go back to our country’s beginnings with the role of apprenticeships and indentured servants. In the 1700s and 1800s, those given vocational training and skills were apprentices, orphans, and slaves. At that time, it was the lowest social classes who received this training (Gray & Herr, 1998).
Vocational education has typically been the name used until most recently. Also known as vo-tech and workforce education, career and technical education (CTE) is the current name utilized to emphasize its new focus. The name change coincided with the change in the economy in the 1990s, with fewer low-skilled jobs obtainable and jobs requiring more high-tech skills. In addition, with the national focus on academic accountability coupled with a high-tech world, CTE was forced to change (Banchero, 2006). Fletcher (2006) states that CTE “educators are now struggling to convince policymakers, elected officials, administrators, teachers, and students of a dual mission to prepare students for their future aspirations, regardless of one’s postsecondary path.” (168). Changes in the economy and legislation funneled to the local level generating curricular changes and creating a paradigm shift in some cases not only in career and technical education but also the in the high school curriculum. Currently career and technical education is defined by the Carl D. Perkins Career and Technical Education Improvement Act of 2006 as [the] organized sequence of courses 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; it provides technical skill proficiency, an industry-recognized credential, a certificate, or an associate degree;.... and include(s) 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. (S. 250, 109th Cong., 2006).
Fletcher (2006) suggests that a new name such as “college and career preparatory education” better reflects the dual mission of career and technical education.

As robust as the definition of CTE appears at present, the stigma of CTE may be perpetuated throughout its history. In the late 1800’s and early 1900’s, as African Americans sought education, industrial philanthropists and White northerners and southerners quelled African Americans’ desires by offering vocational education for low-skilled agricultural and mechanical jobs rather than offer them a liberal arts education (Darling-Hammond, Williamson, & Hyler, 2007).

Goffman (1963) speaks of three types of stigmas. The stigma type that applies to career and technical education is what Goffman refers to as tribal stigma. Tribal stigmas are passed down through families and social groups which transmit their attitudes toward others they find unlike themselves and therefore do not fully accept them. Neuberg, Smith, and Asher, (2000) suggest that there are ingroup preferences and ingroup members have a lack of bonding and a feeling of mistrust with outer groups.

The impact of a negative image is demonstrated by survey results obtained by Ferris State University’s Career Institute for Education and Workforce Development (2002). The survey results indicated that although 63% of the 809 juniors and seniors surveyed agreed that it is becoming more acceptable to work in a job that requires two years of career and technical training. However, 41% indicated that there is a sense of embarrassment associated with vocational training (Ferris State University’s Career Institute for Education and Workforce Development, 2002). At the national level when President Clinton emphasized and promoted four-year degrees, senior editor of Training
magazine David Stamps (1998) proclaims that he set career and technical education back when he strongly supported a four-year college education for all. Stamps (1998) said that Clinton reinforced the stigma that CTE training led to a “dead-end grease-monkey job in a grimy machine shop” (32). In a study of 633 high school juniors not enrolled in CTE, 25% replied that they wanted to attend college and 28% said that CTE did not have what was of interest to them (Rossetti, 1989).

Legislation

In the last twenty-five years, legislation directed toward career and technical education, such as the Carl D. Perkins Act and legislation intended for education in general, such as No Child Left Behind Act of 2001 (NCLB) is continuing to affect CTE. Although Perkins is primarily directed toward career and technical education, the No Child Left Behind Act of 2001, is targeted for all students. These laws impact the role of career and technical education which in turn affects curriculum.

The Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) supports CTE with a small portion of federal funding with specific guidelines that is funneled to the local level. Currently Perkins’ funding is to be used to meet such objectives as curriculum rigor and industry certifications for high wage, high priority occupations. The Carl D. Perkins Act of 2006 endorses several initiatives that support and strengthen CTE and promotes partnerships to obtain them. One such initiative creating a paradigm shift is the program of study (POS). The program of study is comprised of a scope and sequence with recommendations of a series of interrelated rigorous high school courses that align with academic standards to enhance each CTE program. In this model, academics and career and technical education merge to offer a
meaningful structured sequence of secondary courses that offer substantial preparation
for postsecondary goals whether it is work or more education. DeLuca, Plank, and
Estacion (2006) refer to this as an “era of de-tracking.” (1).

Another Perkins’ initiative that affects curriculum is the development of
postsecondary partnerships and articulations that offer dual credits to secondary high
school students. Students may get college credits and advanced college placement while
still in high school.

Offering industry certifications to secondary students is yet another initiative that
strengthens the validity and vitality of career and technical education. Students can leave
high school with nationally recognized industry certifications such as A+, SafeServ,
National Institute for Metalworking Skills (NIMS), and the American Welding Society
(AWS) certification. These industry certifications can jumpstart a student’s future.

There are eight Perkins performance core indicators that each local entity must be
annually accountable to the Bureau of Career and Technical Education, Pennsylvania
Department of Education (PDE, BCTE, 2006). The results on student achievement in
math and reading (PSSA) are two of the performance indicators that are reported to the
State. Even though shared-time career and technical schools do not administer these
assessments, they are still accountable for the results. In addition, the NOCTI (National
Occupational Competency Testing Institute) results which measures technical skills in
each particular CTE program area, are another performance indicator reported.
Furthermore, graduation and placement rates are also measured along with participation
and completion in non-traditional fields. The Bureau of Career and Technical Education
establishes the levels of performance that each indicator should attain.
Another federal law, No Child Left Behind Act of 2001 also has significant impact on career and technical education. NCLB targets four main goals: attain at or above grade levels in reading and math for all students by 2014; administer annual assessments and disaggregate data to close the achievement gap; maintain qualified teachers in core academic subjects in every classroom; and provide timely information and options for all parents (U.S. Department of Education, 2007).

These optimistic goals of NCLB may have some negative effects on CTE. Annual pressure is placed on schools to perform better on statewide assessments. As a result, schools are incorporating remedial, brush up courses and tutoring to help students improve their state assessment scores. In addition, additional course requirements may be added, such as math and/or science. A consequence of additional courses could be a reduction in CTE enrollment due to lack of time in one’s schedule. Phelps (2002) reported that “we are already seeing increased academic courses for graduation, therefore reducing the time available to students to take career technical courses.” (6). Fletcher (2006) suggests that “this insight reinforces the assumption that CTE courses may be squeezed out of the curricula with students and administration believing that CTE courses are a waste of time[.]” (165).

Bartik and Hollenbeck (2006) recommended adding depth to academic courses rather than adding more courses to students’ schedules as a possible solution. With more courses, and less time to facilitate them, Bartik and Hollenbeck (2006) speculated that students might acquire less meaning and relevancy. Bridgeland, Dilulio, and Morison (2006) found in their study that the major reason why 47% of students dropped out was that classes were not interesting. Eighty-one percent of the respondents said it would have
been helpful to have more relevant coursework connected to the world of work (Bridgeland, et al., 2006). In addition, 97 percent of a sample of 626 high school graduates not enrolled in college say real-world learning and relevant coursework would have better prepared them (Achieve, Inc. 2005). Bartik and Hollenbeck (2006) further cautioned that more course requirements might increase drop-out rates and decrease enrollment in CTE.

Curricular Issues

Several issues brought on by the emphasis of improving student performance has created constraints on time and organizational structure throughout the day complicating the delivery of the curriculum. Organizing the curricular day, curricular tracks, the standard organizational structure in most high schools, may also reinforce the negative CTE image. In addition, federal laws may have had and continue to have an influence on career and technical education tracks. For example, previous legislation, such as the Smith-Hughes Act of 1917, may have inadvertently reinforced this trend of separate curricular tracks along with separate funding. At that time in history, as an agricultural and emerging industrial nation, funding went toward salaries, studies, training in agriculture, trade, industry, and home economics (Smith, 1999). Today curricular tracks categorize courses as they relate to the outcome after high school. College-bound or the academic tracks along with the CTE track are typical curricular pathways offered in high schools (Oakes, Selvin, Koroly, & Guiton, 1992).

Curricular tracks are a series of courses taken during four years in high school that lead toward a goal. For example, the college-track, where the goal is to attend college, would encompass those courses that prepare a student for college entrance. Likewise, the
vocational track includes a series of career and technical courses and academics to
prepare for work or postsecondary school. Although many schools may not label them as
such, the implied outcome of the curricular pathway choice is either bound for college or
going to work.

The typical curricular pathways are stratified to either enroll in the college track
or the CTE track and are still taking place (Oakes et al., 1992). Particular course
sequences are identified for specific tracks. While this may be an oversimplification of
the curricular configuration, it could restrict course options and therefore affect future
career choices for some students. Students enrolled in the elective CTE track may not
have the same academic course options as those in the academic track. With limited
academic options, preparation for postsecondary may be lessened. Perhaps this is an
explanation for forty percent of new college students and fifty percent at two-year
schools who must take remedial classes (U.S. Department of Education, n.d.).

The annual pressure that is placed on schools to perform better on statewide
assessments may result in allocating time for assessment preparation. As a result, high
schools are incorporating remedial, brush up courses and tutoring to help students
improve their state assessment scores. A consequence of additional academic remedial
courses could be a reduction in CTE enrollment. Bartik and Hollenbeck (2006)
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CTE courses or programs are typically elective credits and are not required for graduation as are core academics. There is a set graduation credits to be taken during four years of high school. The number of credits is established in the school district and usually requires a certain number of core academic courses with some freedom to take elective courses. Depending on the student’s course schedule would depend if there is room for electives. Pennsylvania requires that CTE programs offer a minimum of 360 contact hours per year. This equates to a minimum of two hours of CTE concentration programming per day in a 180-day school year. Time constraints may confound a student’s schedule with this time requirement. The daily schedule may limit those students who want to attend a CTE program because they cannot fit CTE into their schedule. Another dilemma could occur when CTE courses and academic courses are offered concurrently and therefore unavailable at another time, forcing a choice to be made between the two. In addition, it may be assumed that it is not necessary for a CTE track to offer high level of academics and therefore those courses are unavailable.

Positive Outcomes

Although legislation, social pressures, and curricular issues appear to impact career and technical education in various ways, many overlooked positive
outcomes also occur. Better attendance and increased graduation rates are noted with some populations when enrolled in CTE. Students taking three CTE credits and four academic credits are found to have the lowest drop out rate (Oakes, Selvin, Koroly, & Guiton, 1992). This would reflect a shared-time career and technical school’s schedule.

Bishop and Mane (2003) analyzed longitudinal data of U.S. high school students between 1988 and 1992, reviewing graduation rates of juniors and seniors taking CTE courses. Bishop and Mane found that CTE had a statistically significant positive effect on graduation rates (2003). Furthermore, students with severe emotional challenges were more likely to graduate when involved in career and technical education coupled with counseling (Rylance, 1997). Also, it was found that CTE improved labor market outcomes (Bishop & Mane, 2003).

Willard R. Daggett, President of the International Center for Leadership in Education (2003) recommended that CTE convey its contribution to students’ academic success, workplace competencies, and improved attendance.

With the many positive outcomes that CTE demonstrates, contrasted with the misguided notion that everyone should get a four-year college degree along with the stigma attached to CTE and compounded by federal legislation, what is the future of career and technical education?

STATEMENT OF THE PROBLEM

A variety of forces directly or indirectly affect CTE, ranging from the persisting stigma, the schools’ curricular structure and requirements, along with federal laws such as NCLB and Perkins. The persisting stigma or negative image of career and technical
education has prevailed over the years. The perceptions held by district administrators may demarcate the role for CTE in regards to curricular changes and its image.

Federal laws guide local administrators’ decisions that directly or indirectly affect CTE. With NCLB goals for all students to improve academic achievement, reach high standards, and graduate from high school, much pressure is placed on school districts to meet annual yearly progress (AYP). NCLB emphasizes increased academic rigor and progress on students’ state assessments, holding schools accountable to annual yearly improvement. With more accountability, more emphasis is being placed on core academics that may in turn reduce or eliminate elective courses such as career and technical education. Ideally school districts could view CTE as a partner to help positively impact the achievement of NCLB goals together. On the contrary, school districts may see NCLB as only their responsibility and take action accordingly. School districts may view CTE as not having the background or wherewithal to help students meet proficiency on academic standardized tests and therefore may discourage students to attend a career and technical school. Students could be retained by the district for a variety of reasons such as increased graduation requirements or require that students take remedial courses.

Furthermore, NCLB provides states with the option of more flexible federal funding usage that may result in tapping into Perkins monies. Perkins received a small budget cut from Congress in 2007 (ACTEOnline, December 20, 2007). In addition, Perkins did not receive support from President George W. Bush during his two terms in office.

Likewise, Perkins is also emphasizing more rigor in academics. Bureau of Career
and Technical Education (BCTE), Pennsylvania State Department of Education (PDE) has indicated that career and technical schools are also responsible for students’ state test results in reading and math. BCTE has stated that progress must be seen in those areas or Perkins funding may be reduced at that school. This legislation delineates the role for CTE. However, many outside of CTE, may be unfamiliar with what is expected of CTE.

With continued negative perceptions associated with career and technical education, reinforced by curricular constraints and coupled with the impact of NCLB, CTE is left in a precarious position. Some of these forces may have deleterious effects upon CTE depending upon decisions and reactions of local administrators. In 2004, the Association for Career and Technical Education (ACTE) emphasized that the elimination of career and technical programs would be detrimental in educating a highly skilled workforce.

Theoretical Framework

The interconnectedness of societal laws, social structures, and social theories as they all apply to the educational system merge into the focus of this study. Whereas the educational laws (NCLB and Perkins) and curricular constraints as noted above, theories on influence may shed some light as to why people perceive career and technical education so negatively.

Several theories may shed some light on the importance and development of perceptions and stigmas. These theories demonstrate the importance of belonging to a group and the power of group influence. The social identity theory recognizes the importance of identifying with a group (Ashforth & Mael, 1989). The more connected an individual feels with a group, the more willing they are to follow (Barbuto & Moss,
The status attainment theory addresses the power of family influences such as income and educational levels on their children (Chin & Kaplan, 2003). Though the rational bias theory represents discrimination in the workplace, it can serve as a parallel to CTE. For example, the rational bias theory in the work setting may explain why workers may be discriminatory toward others if they perceive that their superiors condone discrimination (Trenthan & Larwood, 1998). Likewise, in a corresponding educational setting, some college-bound students and educators may discriminate (purposefully or unknowingly) against career and technical education and/or CTE students. This would be an example of a tribal stigma (Goffman, 1963) where for example, a college-bound group holds negative attitudes toward those in CTE.

NEED FOR THE STUDY

Career and technical education is facing numerous obstacles including an ongoing stigma, curricular constraints, and federal reform measures. CTE must identify the repercussions of the legislative reform of No Child Left Behind, address them, and determine where and how career and technical education can evolve in the wave of educational reform, including overcoming its negative image and curricular constraints.

This study is needed to discover Pennsylvania’s administrators’ responses and perceptions to NCLB legislation as it affects CTEs role, its image, and curriculum changes. The results may also shed light on any issues that would be pertinent for both CTE and high school administrators to address. Likewise, it is important for district administrators to become cognizant of the ripple effects of changes they make and how those changes impact career and technical education, which in turn ultimately affect their students as well. Chadd and Drage (2006) suggested that high school principals’
perceptions, regarding the role of CTE in meeting NCLB's goals, are the key to the future of secondary CTE programs. In addition, it is important for both CTE and high school administrators to see how working together may be better than working alone in better preparing our youth. Currently, there is little research available noting the impact of NCLB and its effect on CTE.

PURPOSE OF THE STUDY

Career and technical education can be seen at the intersection of federal, local, and perceptual constructs. Federal laws, such as the No Child Left Behind Act and Carl D. Perkins Act, coupled with local educational structures as seen in curricular tracking, and then further affected by negative perceptions of CTE, positions CTE in the crossroads of change.

Administrators hold key roles in defining their schools’ curriculum and schedule. The curricular structure is in school administrators’ complete control provided that the State’s academic standards are addressed and the school boards have approved it. With the national and state emphasis on meeting NCLB mandates, tangible changes such as course additions or removals, changes in graduation credits may occur at the local level.

In this study, administrators of Pennsylvania’s high schools and shared-time CTE schools will be surveyed as to how they have responded to NCLB and what the impact has been on CTE.

The purpose of this study is three-fold regarding the effects of NCLB on career and technical education in Pennsylvania.

First, the study will look at CTEs perceived role as affected by NCLB. Next, the study will reveal the perceptions of high school and CTE administrators concerning the
ramifications of No Child Left Behind as it relates to CTEs image. Finally, the study will
examine actions taken in response to NCLB that are perceived to affect curriculum.

Pennsylvania’s administrators of shared-time career and technical schools and the
sending high schools will be surveyed as to how they have responded to NCLB and the
ramifications on CTE because of those responses and actions. It is hoped that the results
of this study will shed light on the perceived effects of NCLB. With the effects identified,
it is anticipated that they may show common areas of need connecting high schools and
career and technical schools that can be addressed together. With the realization that both
entities are affected by NCLB, collaborating on solutions may be desirable and
resourceful.

RESEARCH QUESTIONS

1. How does No Child Left Behind affect career and technical education’s role in
   helping schools meet the goals of No Child Left Behind as perceived by high
   school and career and technical education administrators in three settings and
   three regions?

2. How does No Child Left Behind affect the image of career and technical
   education as perceived by high school and career and technical education
   administrators in three settings and three regions?

3. How does No Child Left Behind affect curricular changes as perceived by high
   school and career and technical education administrators in three settings and
   three regions?

RESEARCH HYPOTHESES

The image of CTE throughout its history has been weighed down by the stigma
that follows it. Students who are not in the academic track are more likely to take CTE. This group of students is not regarded by some as being the top echelon like the academic track and therefore a stigma acts as a dark cloud over this curricular pathway. However, NCLB and Perkins have required that more rigor and course expectations be placed on CTE. Perhaps this change could have a positive effect on CTEs image. In addition, with the many requirements of NCLB, changes in curriculum have been taking place such as additional credits and remedial and tutoring classes. Administrators from CTE and its sending high schools may view the effect of curriculum changes differently. Finally, NCLB and Perkins have involved CTE as also being responsible for students’ performance in Pennsylvania state testing: Pennsylvania System of School Assessment (PSSA). No longer can CTE sit on the sidelines of responsibility for student performance. With the changes and demands made by NCLB and Perkins, the two sets of administrators may view the impact of NCLB differently.

Several hypotheses will be considered in this research study. Two groups of administrators will be surveyed. Pennsylvania’s administrators from shared-time career and technical schools and its sending high school administrators will be targeted. Administrators from high schools and shared-time career and technical centers, originating from two different perspectives and focuses, may indicate differences regarding the effects NCLB has on CTEs role, image, and curricular issues. With the CTE administrator, a direct effect may be observed with NCLB and its effect on CTE. Conversely, a high school administrator from afar may not realize the effects NCLB has on CTE or realize what his/her response may have regarding implications for CTE. Three hypotheses have been formulated to address each of these.
1) There are differences in perceptions by administrators of high school and
career and technical education administrators in three settings and three
regions regarding CTEs role in helping schools meet the goals of No Child
Left Behind.

2) There are differences in perceptions by administrators of high school and
career and technical education administrators in three settings and three
regions regarding the effects of NCLB as they relate to CTEs image.

3) There are differences in perceptions by administrators of high school and
career and technical education administrators in three settings and three
regions regarding the effects of NCLB on curriculum offerings.
DEFINITION OF TERMS

Academic track/pathway – secondary curricular preparation for entry into a four-year postsecondary institution matriculating into a baccalaureate degree.

Administrator/s – in this the study the term is used generally to refer to either high school principal or assistant principal and career and technical center director or assistant director

Anchors – are the bridge that connects the curriculum to the state assessment and is aligned with the state standards

Career and technical education – will be synonymously used with workforce education and CTE; formerly called vocational education

Carl D. Perkins Career and Technical Education Act of 2006 (Perkins) – requires states to report on students’ attainment of challenging technical skill proficiencies that are aligned with industry-recognized standards where available and appropriate, and that are measured in a valid and reliable way.

College bound – secondary preparation for entry into a four-year postsecondary institution matriculating into a baccalaureate degree.

CTC – career and technical center

CTE – career and technical education

Curricular tracks or stratification – a series of specified courses identified depending on the post-high school outcome

High Priority Occupations – those occupations that are in high demand, require high level skills and able to provide sustainable wages

NCLB – No Child Left Behind Act of 2001; legislation setting high standards for all
students with accountability measures to determine achievement

NIMS - National Institute for Metalworking Skills

NOCTI - National Occupational Competency Testing Institute is a combination of written and hands on assessments warranted by PDE to administer to all CTE students who have completed at least 50% of the CTE program

PACTA – Pennsylvania Association of Career & Technical Administrators (www.pacareertech.org) provides education through leadership, advocacy, and service

Perkins – Carl D. Perkins Act; is legislation that emphasizes high quality career and technical education preparing students for further education and/or careers

Placement – after graduation, enrolled in postsecondary, the military, or employment

POS - Program of Study of the Perkins Act indicates a scope and sequence or a series of interrelated rigorous high school courses that align with challenging academic standards that enhance each CTE program

PSSA - Pennsylvania System of School Assessment is given in grades 3, 5, 8, and 11 in the subject areas of math, reading, writing, and science

Shared-time career and technical school – (part-time) refers to career and technical schools who have students from a sending high school for part of the day or semester rather than all day as in a comprehensive school; the districts and career and technical schools “share the students’ time”

Tracking – refers “to the practice of assigning students to instructional students to instructional groups on the basis of ability. Originally, secondary school students were assigned to academic, general, or vocational tracks, with courses within those tracks designed to prepare students for postsecondary education or careers.” (Hallinan & Oakes,
Vocational education – the former name, now called career and technical education (CTE) or workforce education, and includes intensive hands-on training coupled with academic rigor relating to the particular vocational program.
Chapter II

Literature Review

With erroneous perceptions regarding career and technical education (CTE) coupled with national legislation and customary secondary curricular tracks, CTEs survival may be in jeopardy. There are many forces, both positive and negative, that can affect the direction of CTE. An enduring stigma has been linked with career and technical education throughout its history. When career and technical education comes to mind, stereotypical thoughts may arise. Low paying jobs, getting dirty, and being less educated and less successful may characterize these images. Airing (1993) states that career and technical education is narrowly perceived as training for blue-collar work. Brown (2003) says parents, students, and employers are still holding these stereotypes. After reviewing CTE-related articles over a 10-year period, Catiri (1998) concurred that there is an image problem with CTE. There are various forces of social influence affecting people’s attitudes, perceptions, and decision-making.

Image of Career and Technical Education

The negative image of career and technical education seems to endure. According to Airing (1993), “the ‘v’ word is a dirty word [with] its negative connotations deeply embedded in language and culture” (p.396). Furthermore, Airing (1993) states that “Americans tend to associate ‘vocational education’ with narrow training for marginal students and as preparation for manual, low-status work or, at best, work in the blue-collar trades” (p.396). Lynn Olson, Executive Project Director of Diplomas Count, a report released by Education Week, suggested that the United States lacks respect for apprenticeships and worker skilled knowledge (Swanson & Olson, Edweek.org)
These stereotypical views may be embedded in our educational heritage. At the end of the Civil War, education models for African Americans were debated as to whether they should be liberal arts or vocational (Darling-Hammond, Williamson, & Hyler, 2007). Industrial influence prevailed, according to Darling-Hammond et al. (2007), with the focus on vocational education for African Americans for many years. This educational focus at the time was based on racial, economic, social, and political views of that era (Darling-Hammond et al., 2007). Furthermore, Nagle’s study indicated that schools reflect society, which considers the working class as second-class citizens (1993, 1999). Ainsworth’s and Roscigno’s (2005) findings from the National Education Longitudinal Study (1988-1994) data suggest that inequities are reinforced for those students in CTE in regards to achievement results and socioeconomic background. Eighth grade students scoring high on achievement tests and those with high educational aspirations are less likely to take career and technical classes (Ainsworth & Roscigno, 2005).

Theories – The Power of Influence

Several theories frame how one is influenced toward certain postsecondary goals. These theories create a basis as to why people are inclined toward various careers, and therefore various educational choices and preparations. One theory, status attainment, suggests that the social status of the parents influence their children’s aspirations (VocationalPsychology.com, July 27, 2009). College is the socially accepted panacea. Supporting this notion, Stott (2006) suggests that the emphasis in high schools is to attain a four-year college degree while overlooking the need to replenish a skilled workforce.
Furthermore, a parent survey indicated that approximately 50 percent of the parents surveyed thought that career and technical education was for students who do not plan on going on to college (Ries, 1997). In addition, Ainsworth and Roscigno (2005) affirm that typically students in a lower socioeconomic class are guided toward CTE whereas those in a higher socioeconomic class are not.

In addition, the social identity theory creates a construct of group influence. According to Korte (2007), identification with a group has a powerful influence on its members regarding interests and choices. One study found 40% of the adolescents surveyed specified they would attend postsecondary education because peer and school pressure influenced them (Kniveton, 2004). Furthermore, students indicated that their friends influenced their decision to enroll in a food service course (Johnson, 1987). In addition, the social identity theory suggests that a group can influence the way an individual feels toward particular choices (Tajfel & Turner, 2004). Throughout various studies, Tajfel and Turner (2004) have found that group bias exists from one group towards another. A sense of belonging or social identity to a particular group can create discriminatory responses toward those not in the group (Tajfel & Turner, 2004). Families and social groups may uphold tribal stigmas to those different from themselves (Goffman, 1963). Hogg and Reid (2006) state that individuals identify with an ingroup and that it is polarized away from the outgroup. Neuberg, Smith, and Asher (2000) suggest that there are ingroup preferences and bonding. The ingroup views those groups who are different with a lack of bonding and a feeling of mistrust. It would appear that a high school clique can sway individuals toward their viewpoint.

The sense of belonging to a group and having the respect of a group supersedes
the actuality of following through with the reality of going to college. In a study by Rosenbaum (2001), 71 percent of 12,475 high school seniors reported that they would get a college degree (associate’s degree or higher). However, only 37.7 percent of the seniors who planned to get a degree actually succeeded in obtaining one within ten years after high school graduation (Rosenbaum, 2001). On a larger scale, these theories may portray society as influencing students, parents, and educators into believing that college and career and technical education are for two different groups of students.

The rational bias theory represents stereotypes and discrimination in the workplace (Trenthan & Larwood, 1998). However, it may act as a parallel to how some view CTE. For example, in the work setting, workers may be discriminatory toward others if they perceive that their superiors condone discrimination (Trenthan & Larwood, 1998). Likewise, in a corresponding educational setting, some college-bound students and educators may discriminate (purposefully or unknowingly) against career and technical education and/or CTE students. DeCremer (2001) found that those who strongly identify with their group would show more ingroup favoritism. If negative perceptions are formed, they may be transferred to others, perpetuating the stigma. Negative stereotypical traits were found to be more powerful than positive ones (Huici, Ros, Carmona, Cano, & Morales, 1996). Trenthan and Larwood (1998) ascertained that discrimination can be influenced by a higher authority. In the school setting, that higher authority could be a parent, teacher, guidance counselor or administrator. Consequently, students may be influenced by the bias of authority figures. If the higher authorities have misconceptions about career and technical education, students may not be enlightened to make an informed decision on their own.
Curricular Issues

The current high school curricular structure of course offerings may reinforce the stigma identified with career and technical education resulting in limited academic course options available to CTE students. Curricular tracks are a systematic way to group students with the same goals, such as going on to college or going into the workforce.

Wenrich (1996) suggested that most secondary schools are arranged as college preparatory organizations. Hallinan and Oakes (1994) said that while tracking originally assigned students to categories of academic, general or vocational tracks, it is now more common to have advanced, honors, regular, or basic tracks.

Evidence has suggested average students have no advantage in homogeneous classes versus mixed grouping (Van Houlte, August 2004). However, Hallinan (1994) stated high-ability students fare better in homogeneous classes, whereas low-ability students do not. According to Van Houlte’s (2004) study on educational stratification, the occurrence of students failing school is determined whether a student is in an academic or technical/vocational school.

Some researchers assert that a bachelor degree is not the only road to success. Gray and Herr (2000) suggest that the baccalaureate degree has been marketed as the only road to professional jobs, security, and status. Many well-paying jobs do not require Algebra II, but do require a high level of skills not taught in most college preparation classes (Bartik & Hollenbeck, 2006). Shortages in technician-level fields are due to lack of student interest or discouragement from those advising students to take technical education (Gray & Herr, 2006). Career and technical education needs to become valued by adults and society, the prejudice for technical education be eliminated, and let it be
known that a baccalaureate degree does not guarantee commensurate employment (Gray & Herr, 2006). Mupinga and Livesay (2004) suggest that some benefits of career and technical education are cost effectiveness as compared to paying for a baccalaureate degree, ability to train in a specific field, earn more pay, and have the ability to transfer to a postsecondary school to further their education.

Currently, technical training and associate degrees have emerged as suitable alternatives. Some say there are too many graduates with bachelor degrees and not enough with technical training (Mupinga, 2004). With these somewhat polarized views, it appears there are controversial issues regarding preparation for postsecondary education and career and technical education.

In addition to grouping students by their post high school goals, curricular tracks based on ability, socioeconomic status, or other characteristics may be implemented. The premise of tracking is to organize students into groups with similar abilities to expedite learning (Hallinan, & Oakes, 1994). Kelly (2007) reviewed curriculum guides from 92 public high schools in North Carolina and said “tracking serves to increase social inequities in schooling outcomes” (p. 28). Upon assimilating longitudinal data on adolescents, Ainsworth and Roscigno (2005), found that students from low socioeconomic backgrounds were encouraged to take vocational programming whereas students with higher economic status avoided vocational programming. Students in schools with lower socioeconomic levels were more likely to be vocational tracks than academic tracks and the converse was also found (Jones, Vanfossen, & Ensminger, 1995). In addition, significant numbers of females, Latinos, and African Americans were found channeled into low service vocational programming (Ainsworth & Roscigno,
Likewise, fewer students who were either African American, in a lower socioeconomic status, or having mothers with less education were found in advanced English or math (Dauber et al, 1996). Heck et al. (2004) also found that ethnic background, socioeconomic status, and gender in some courses were differentiated in the curricular structure of a high school that did not formally track students. In review of 1500 ninth through twelfth graders’ schedules, from a Hawaiian high school that did not formally track students, it was found that students’ standardized test scores and courses taken in middle school influenced what courses they took in high school (Heck, Price, & Thomas, 2004). Likewise, in a longitudinal study by Dauber, Alexander, and Entwisle (1996), found that sixth graders’ standardized tests results affected their eighth grade placement. Freidkin (1997) used a sample of over 10,000 students and found that students in CTE were less science-oriented and not likely to have taken four years of high level mathematics. In addition, advanced courses taken in sixth grade were affected by race, the mother’s education, and family income (Dauber et al, 1996). However, Hallinan (1996) found in her study of over 2,300 students that tracks are not static. Although student background, ability, and achievement results influenced tracking, 30% of the students moved to different English tracks during their high school years (Hallinan, 1996).

Collecting data from ten secondary schools from 1992 through 1995, Yonezawa, Wells, and Serna (2002) studied the schools’ process while in the midst of dismantling their tracking system. These schools used “freedom of choice,” allowing the students to choose more rigorous courses rather than the educators detracking the system (Yonezawa, et al., 2002). The researchers found that the schools’ attempt at removing
hierarchical tracks by having students choose their courses was unsuccessful. They found that there were institutional barriers such as course information being distributed unevenly; students’ aspirations being shaped by tracks; and students wanting to be with a peer group they valued and were in turn valued by them (Yonezawa, Wells, and Serna, 2002). With another approach of detracking, Carol Corbett Burris, principal of a New York high school increased learning expectations by providing ‘high track’ curriculum for all students (Burris & Welner, 2005). Students were placed in heterogeneous classes that had once been designated for the academic track students. The results revealed an increase in Regents diplomas (NY students must pass at least eight examinations) and achievement gap closure among ethnic backgrounds unlike was seen at the state level (Burris & Welner, 2005).

Jobs for the Future (2005) found that career and technical education in Pennsylvania has been identified as a curricular track with fewer academic expectations and has historically been used by those not furthering their education. Yet the need for rigorous academics is important for CTE students as well as college-bound students (ACT, 2006). Organizations such as the Center for State Scholars (2004, January), recommend a rigorous course of study for all students. Likewise, Alex Harris, Senior Policy Analyst, Educational Division of the National Governors Association Center for Best Practices, declared that both the college and CTE tracks require the same skill sets to prepare for the skilled workforce (American Policy Youth Forum, 2007). Furthermore, academic rigor was said to be just as important for those attending college as well as for those going into the workforce (ACT, 2006). CTE should continue to add academic rigor to their programs which could reinforce better-prepared workforce needs (Daggett, n.d.).
The Center for State Scholars (2004) proposes four credits of English, three and one-half of social studies, three credits of math (including Algebra 2), basic lab science (including physics), and two credits of the same language other than English.

Core academics as to the quantity, difficulty level, and success of English and science courses taken in ninth and eleventh grades during 2000-2001 school year were studied in year four of a five-year longitudinal study of at-risk students from CTE schools involved in reform measures (Castellano, Stone, Stringfield, Farley, & Wayman, 2004). Castellano et al. (2004) indicated that school reform can include CTE without reducing or eliminating core academics. However, Castellano et al. (2004) found that CTE students’ achievement in English and science was low. Only 29 percent of the career and technical seniors were deemed proficient in reading on the most recent National Assessment of Educational Progress (NAEP), and only nine percent were proficient in mathematics (Cavanagh, 2004, p. 14). By contrast, non-vocational students scored 15 percentage points higher in reading and 8 percentage points higher in mathematics (Cavanagh, 2004). In another longitudinal study, Carbonaro (2005) found that students in higher level tracks (honors or advanced) exerted more effort as perceived by their teachers. These educational tracks connote tiers of an educational caste system that can linger through adulthood. In Chen’s and Kaplan’s study (2003), negative school experience in early adolescence contributes to disadvantages in early adulthood, including negatively influencing the socio-economic status. Ainsworth and Roscigno (2005) suggest that gender, race, and socioeconomic status groupings occur for students who attend career and technical education and may predict inequitable labor market outcomes for this group.
Legislation's Effect on Career and Technical Education

Legislation may have a big effect as to the future of career and technical education. With Perkins adding rigor and accountability to its CTE programs, No Child Left Behind (NCLB) places requirements on core academics which may have ramifications to CTE down the road. Since CTE is an elective and it is not mentioned in NCLB, Chadd and Drage (2006) expressed concern that lawmakers, school administrators and teachers may not realize the contributions CTE can have in achieving NCLB goals. NCLB signed by President Bush in 2001, reauthorized the Elementary and Secondary Education Act. The emphasis in this legislation is academic rigor and accountability at the local level.

Some potential negative effects to CTE (Bartik & Hollenbeck, 2006) may begin at the national level with legislation such as No Child Left Behind. With increased pressure to improve academic results on state testing to meet NCLB standards, changes are being made at the local level. Local school systems are under fire yearly to maintain or improve testing results. Better assessment results positively reflect a better school system. Public pressure is placed on the schools to make annual yearly progress (AYP) with assessment results printed in the newspapers and in websites. A hasty reaction to improving test results may pressure school districts into increasing academic requirements, leaving little room for electives such as CTE. Increased time in math and reading while reducing time in social studies (27%), science (22%), art and music (20%), and physical education (10%) has been documented nationwide (Center on Education Policy, 2004). The William T. Grant Foundation Commission (1998) reviewed data from the previous ten years and found more emphasis placed on rigorous academics. With increased course
requirements, there is less time for elective career and technical education without increasing the school day (William T. Grant Foundation Commission, 1998). The reaction to increase academics is directly tied to the academic testing results with no thought to career-focused training. In addition, according to Bartik and Hollenbeck (2006), there is no consideration for the diversity of skill requirements for different types of jobs. CTE as an elective may result in reduction of students (Bartik & Hollenbeck, 2006).

**Benefits of CTE**

Positive results for CTE are seen in various areas. Relevant curriculum (Mojkowski & Washor, 2007), improved graduation rates (Bishop & Mane, 2003), and preparation for a skilled workforce have been documented. Of the 60% of the at-risk Californian ninth and tenth graders who responded to a poll that they were not motivated to succeed, 90% indicated that they would be more engaged if their coursework was relevant to their future careers (ACTEonline, 2006). Likewise, in a survey of 500 dropouts, 47% stated that the main reason for dropping out was school was not interesting (Bridgeland, Dilulio, & Morison, 2006) In addition, CTE students in schools where school reform was taking place were found to stay in school more often than students in schools where reform was not taking place (Castellano, Stringfield, & Stone, 2003). Furthermore, in a study by Plank, DeLuca, and Estacion (2005), indicated that secondary students who balanced one CTE course with two academic courses were less likely to drop out of school.

Students who participated in CTE, performed just as well in college and the workplace and their earnings were higher than non-CTE graduates (Montgomery County
Public Schools, 2001). The National Assessment of Vocational Education (NAVE) Independent Advisory Panel (2004) found that secondary and postsecondary career and technical education students benefited with short- and medium-run earnings. A report from the NAVE Independent Advisory Panel (2004) found that immediately upon graduation, average earnings of students who took four high school career and technical courses was increased by $1,200 (p.2).

Perkins legislation has outlined CTE guidelines for academic and career skill preparation, industry certifications, and integration of academics. Perkins has developed the structure of Program of Studies (POS) where a high school scope and sequence of rigorous academics and technical courses listed as they relate to a particular CTE field. In addition, reading and math anchors are to be identified in CTE curriculum. Furthermore, by obtaining industry certifications, students graduate with additional accomplishments.

In addition, Perkins adds accountability to CTE with its objectives and measures that are to be met. Each year in Pennsylvania, data is collected from each CTE school in such areas as students’ results in PSSA reading, PSSA math, and occupational skills achievement assessments (NOCTI) and graduation rates. With its guidelines and timelines, Perkins has created a structure for CTE.

Summary of Readings

In reviewing the literature, several themes emerge. For a variety of reasons, CTE has a negative image. This negative image or stigma is perpetuated through a multitude of sources such as the power of social influences, reinforced through curricular tracks, and fortified by legislation. These factors hinge on one another and propagate the negative image of career and technical education that in turn may lead to misguided
One factor that appears to reinforce the negative image of CTE is the secondary curricular tracks. Career and technical education is fine, “just not for my child” seems to be the consensus. A great deal of attention and effort is given to the college bound group with scholarships, financial aid, awards, photos in the newspaper, and dean’s list. Wenrich (1996) asserted that most secondary schools are set up to focus on the college bound students. The value of career and technical education seems to be overshadowed and dominated by those preparing for a bachelor degree. A study by William T. Grant Foundation Commission on Work, Family and Citizenship (1988) declared that the needs of the non-college bound students have basically been ignored and labeled them the “forgotten half.” The William T. Grant Foundation Commission study further stated that postsecondary training other than college is considered second rate by those in education (1988). Although career and technical education students are increasing the number and rigor of academic courses taken, they still fall behind in achievement to non-vocational students (Cavanaugh, 2004).

Social influence theories create the framework as to how people are influenced. Several theories illustrate the affect of influence: status attainment, social identity, and rational bias theory. Status attainment theory includes the power of influence a parent’s educational training level, career, and income level has on the child. Parents may have the same expectations for their children as they had for themselves. If the parent has a bachelor degree, the same expectation may be held for the child. The social identity theory can include the peer pressure one feels in a group. The rational bias theory pertains to the influence authority figures may have on individuals in regards to others.
Legislation at the national level with No Child Left Behind and Perkins also affect CTEs' place in education. Local administrators respond to the NCLB in various ways. More remedial courses may be added to the daily high school schedule whereby time spent in CTE is reduced. Perkins has emphasized more rigor in academics and industry certifications be offered.

Relevance

The negative stigma attached to career and technical education can have a disastrous effect to our future workforce. With technical jobs increasing and unskilled work decreasing, technical education should be more important than ever. Nevertheless, our society has the mindset that a baccalaureate degree is the only road to success. According to Gray and Herr (1998), the labor market does not have enough jobs for all of the baccalaureate graduates. The labor market continues to require only about 20% in professional occupations just as it has for the last fifty years (Montgomery County Public Schools, 2001). Educating the public that jobs in technical fields that do not require a bachelor degree are respectable could be a starting point.

Educators need to sensitize themselves with the theories that conceptualize the powers of influence and recognize how omnipotent and resilient the influences can be. As NCLB is for all students to succeed, so should all students have the same opportunities to enroll in high-level academic classes and career and technical education. Likewise, all students should have the same opportunity of relevant coursework in preparing themselves for life beyond high school. In addition, students and parents should be made aware of postsecondary options as well as the job market. Educating the masses into four-year college degrees with dead-end careers is neither helpful financially to the parents,
the students or our economy. Business and industry will lack workers with the technical
knowledge to be productive.

Chapter 3 will detail the methodology used, including the rationale of the research, study variables, population, participants, instrument, and anticipated analysis and interpretation.
Chapter III

Method

This was a quantitative survey research study about the perceptions of Pennsylvania administrators from high schools and career and technical schools regarding the effects of No Child Left Behind on career and technical education. The research questions included three dimensions (image, curricular changes, and role) and involved three settings (rural, suburban, and urban). The research questions were:

1. How does No Child Left Behind affect career and technical education’s role in helping schools meet the goals of No Child Left Behind as perceived high school and career and technical education administrators in three settings and three regions?

2. How does No Child Left Behind affect the image of career and technical education as perceived by high school and career and technical education administrators in three settings and three regions?

3. How does No Child Left Behind affect curricular changes as perceived by high school and career and technical education administrators in three settings and three regions?

One survey was mailed to shared-time career and technical center school administrators for completion. Likewise, a similar survey was mailed to the administrators of the sending high schools to complete. Each survey included a section for selecting setting of the school. The setting of the school included a choice of urban, suburban, or rural settings. This section also included a selection of eastern, central, or western Pennsylvania regions.
Study Variables

The primary independent variable was administrators. Administrators were divided into two types: high school administrator and career and technical school administrator. The secondary independent variable was the setting of the school and whether the administrator identified the school as rural, suburban, or urban. A third independent variable was the region and whether the administrator distinguished the school as eastern, central, or western Pennsylvania. The three dependent variables were the administrators’ perceptions of NCLB on its effect in these three dimensions: CTEs image, curricular offerings, and CTEs role in meeting NCLB goals.

Population

This study identified 65 shared-time career and technical schools in Pennsylvania (Pennsylvania Department of Education Bureau of Career and Technical Education, 2009, March). Each of these career and technical schools has sending high schools whose students attend for part of the time, whether it is for part of the day or week, thus calling them shared-time schools. For this study, one CTE school and its associated high schools were not used since the researcher was affiliated with it. This study mailed surveys to 64 shared-time career and technical schools and their affiliated high schools.

The 489 sending high schools were identified in several ways. Shared-time career and technical schools and their associated high schools were identified based on identification of shared-time career and technical schools from the Pennsylvania Association of Career and Technical Administrators’ website. Since the sending high schools were not listed with each career and technical school, career and technical schools’ websites were searched for addresses and names of the sending high schools. In
addition, phone calls were made to confirm the affiliated high schools.

Each of the schools was categorized by rural, suburban, or urban settings as indicated by the administrator’s response on a survey. In addition, eastern, central, or western Pennsylvanian region was identified by the administrators.

Participants

Pennsylvania administrators from shared-time career and technical schools and their sending district high schools and were surveyed to collect data regarding their view of the impact of No Child Left Behind legislation on career and technical education. The 64 career and technical schools have from one to 16 sending high schools. Each of the high school surveys was coded to match their sending career and technical school for organizational purposes.

Instrument

A cover letter introducing the study, the survey, and an addressed, stamped return envelope were included in the mailings. The cover letter included a statement explaining that by submitting the survey was indication of informed consent.

The survey used was obtained with permission from Drs. Julie Chadd and Karen Drage, Assistant Professors from Eastern Illinois University who completed a study, then wrote the article No Child Left Behind: Implications for Career and Technical Education (2006). The authors granted the researcher permission to modify the survey as needed for this study. The modified survey reflected Pennsylvania instead of Illinois as well as specific questions pertaining to this study.

Chadd and Drage (2006) used their survey to identify perceptions of Illinois high school principals and career and technical education teachers regarding the impact of No
Child Left Behind on high school CTE programs. With their permission, a modified survey was developed that focused on only administrators’ views from both career and technical schools and their sending high schools regarding the effects of No Child Left Behind on career and technical education. The title of their survey is *No Child Left Behind’s Impact on Career and Technical Education*. Drs. Chadd and Drage used two surveys, each consisting of twenty-three questions, and were used for CTE teachers and high school principals. Their survey was divided into two sections which had 11 questions related to the views of No Child Left Behind and 12 questions related to school demographic information. The 11 NCLB questions were in Likert format with ranges: Strongly Disagree; Disagree; Agree; and Strongly Agree. The school demographic questions included six questions that were fill-in-the-blank. The remaining seven questions included six multiple-choice and one open-ended question asking for additional comments on NCLB and CTE.

The survey used in this study was modified from the survey used by Drs. Chadd and Drage with their permission. Along with descriptive information collected, the modified survey measured three dimensions: career and technical schools’ image, career and technical schools’ role, and curricular changes as affected by No Child Left Behind. Section I, titled “Your School Information,” addresses the descriptive and demographic information with three main questions. In the high school administrator survey, Section I included school setting (urban, suburban, rural) and region (western, central, eastern Pennsylvania). The second question addressed enrollment numbers at the high school and the number of students who attend the CTE school. The third question in the high school survey requested graduation credit requirements. In addition, high school administrators
were asked if they saw increase, decrease, or no change in credit requirements over the
last five years. Likewise in Section I of the CTE survey, the school’s setting and region as
listed above was requested. Enrollment figures at the CTE school was also requested. The
third question of the CTE survey asked for the number of CTE programs. In both
administrator surveys, they were asked if they had seen an increase, decrease, or no
change in enrollment over the last five years.

Section II of each survey was the same for both. It was titled “NCLB” and had
three subsections: A, B, and C respectively for the three dimensions: career and technical
schools’ image, career and technical schools’ role, and curricular changes as affected by
No Child Left Behind. These questions addressed the three research questions and were
in Likert format following the same format as in the Chadd/Drage survey. For analysis
purposes, numbers one through four were assigned to a Likert response. The number one
corresponded to the response Strongly Disagree; the number two equaled Disagree; three
corresponded to Agree; and the response Strongly Agree was assigned the number four.
The numbers were set up in a nominal format so that the higher the number within the
one to four range would indicate higher agreement. Furthermore, at the end of each of the
three sections, a space was provided for additional comments as they related to that
section.

Sub-section IIA, “CTEs Role”, had seven questions duplicated from the Chadd
and Drage survey (2006) except on two questions where English Language Arts and math
Illinois Learning Standards were replaced with Reading and Math Anchors used in
Pennsylvania. Sub-section IIB, “CTEs Image”, used three questions from the original
survey. Two new items were added as items four and five. The new items were: More
academic rigor is being added/has been added to CTE programs as a result of No Child
Left Behind; and Collaboration of high school staff working together with CTE staff has
increased as a result of No Child Left Behind. The third sub-section, IIC, “Curricular
Changes”, had eight Likert items that were not included in the original Chadd and Drage
survey and were developed for this research study. The Curricular Changes sub-section
was added based on the observation of this researcher that curriculum offerings have
changed in recent years.

The surveys had no identification other than a pre-coded box that matched either a
career and technical school or a high school. The pre-coded surveys were for statistical
data entering purposes. No identifying information was recorded so as school and
administrator information remained anonymous. In addition, the surveys were two
different colors to ease in distinguishing the principals’ responses from the directors’
responses. One survey was mailed to shared-time career and technical education
administrators with a parallel survey sent to the career and technical schools’ affiliated
high school administrator. The surveys mirrored one another except on those items
pertinent to that administrator type and were reworded accordingly. Each survey should
have taken approximately 10-15 minutes to complete. The administrators had
approximately two weeks to complete and return the surveys.

Data Collection

As surveys were returned, they were placed in numerical order based on their pre-
codes. Any comments made by the administrators were noted for inclusion in Chapter 4.
First, descriptive analyses were conducted regarding the information compiled
from Section I of the survey. It included administrative type (high school administrator
and CTE administrator), student population, setting (rural, suburban, urban), and region (eastern, central, western). The high school principal was also asked to list graduation credits required, the number of students per grade level, and the number of students who attended the career and technical school from their high school. Whereas the career and technical director were asked to list the total number of students the CTE school had for grades nine through twelve as well as the number of CTE programs. Both sets of administrators were asked if student populations had increased, decreased, or remained the same over the last five years. Principals were asked if credit requirements had increased, decreased, or remained the same over the last five years. The same choices were given to CTE directors who were asked if there was a change in CTE programs during the last five years.

Next, descriptive statistics were conducted for Section II of the survey. A percentage was calculated for administrative type (high school principal and director) who responded “agree” or “strongly agree” for each of the 20 Likert items. In addition, the overall mean, standard deviation, mode, and median were calculated for those responses by both sets of administrator types across all surveys. Furthermore, the same calculations were made for settings: rural, suburban, and urban and regions: eastern, central, and western.

Reliability

The use of inferential analysis (ANOVA) required that individual responses across Likert items in each dimension be averaged. Thus, each individual response had an average for each dimension (career and technical schools’ role, image, and curricular changes). In order to ensure that the items form a reliable dimension, reliability analysis
was conducted to obtain coefficient alphas for each of the three dimensions (career and technical schools’ role, image, and curricular changes). Cronbach’s coefficient alpha was conducted to provide a measure of internal consistency and reliability. If the reliability index in Dimension 1 (Role) is above .65, then all items will be kept. Likewise, the same applied to Dimension 2 (Image) and Dimension 3 (Curricular Changes). If it is below .65, then the results for those items are not contributing to the dimension and will be deleted.

Inferential Statistics

Six Two-Factor Independent-Measures Analysis of Variance were conducted for each dimension (career and technical schools’ role, image, and curricular changes). For each ANOVA, three F-ratios were calculated. See Figure 1, depicting a two by three factorial design. Calculations for a main effect by administrator type (high school administrator and CTE administrator) were completed. In addition, a main effect was examined for setting (rural, suburban, urban). Due to a low response rate for setting (rural, suburban, and urban), suburban and urban were combined into one category. Also an interaction effect (administrator by setting) was examined. In addition, F-ratios were calculated for any differences in administrative type (principal and director) by setting (rural and urban/suburban).
Research design using a two by three factorial design with setting

<table>
<thead>
<tr>
<th>Administrative Type</th>
<th>Setting</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Suburban</td>
<td>Urban</td>
<td></td>
</tr>
<tr>
<td>Principal</td>
<td>Role</td>
<td>Image</td>
<td>Curricular Changes</td>
<td>Role</td>
</tr>
<tr>
<td>Director</td>
<td>Role</td>
<td>Image</td>
<td>Curricular Changes</td>
<td>Role</td>
</tr>
</tbody>
</table>

In addition, a main effect was examined for region (western, central, eastern), Figure 2. Also, an interaction effect (administrator by region) was examined. In addition, F-ratios were calculated for any differences in administrative type (principal and director) by region (western, central, eastern).

Research design using a two by three factorial design with region

<table>
<thead>
<tr>
<th>Administrative Type</th>
<th>Region</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Western</td>
<td>Central</td>
<td>Eastern</td>
<td></td>
</tr>
<tr>
<td>Principal</td>
<td>Role</td>
<td>Image</td>
<td>Curricular Changes</td>
<td>Role</td>
</tr>
<tr>
<td>Director</td>
<td>Role</td>
<td>Image</td>
<td>Curricular Changes</td>
<td>Role</td>
</tr>
</tbody>
</table>

Sample Size

The sample size in this study was approximately one director for every 3.6 high school administrators. Ideally, it would be more statistically sound to have at least 30 high school administrators in each setting (rural, suburban, and urban) and similarly with directors. However, the total sample size for directors with shared-time schools is only 64 possible returned surveys throughout the state of Pennsylvania. There were more than seven times as many high school administrators identified in this study. With that in
mind, an Independent Measures Analysis was conducted rather than a Repeated Measures Analysis.

Forty out of sixty-four or 62.5 percent of the CTE directors returned the surveys. Therefore 37.5 percent of the CTE directors did not respond to the survey. One hundred forty-five high school principals completed the survey out of 489 surveys that were sent resulting in 29.7 percent return rate (See Table 2, p. 44). Consequently 70.3 percent of high school principals did not respond to the survey. Following Table 1, the remaining figures in this study will be based only on those administrators who responded.

Table 1

<table>
<thead>
<tr>
<th>Survey Response Rate by Administrator Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response Frequency</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>CTE Director</td>
</tr>
<tr>
<td>HS Principal</td>
</tr>
</tbody>
</table>
Chapter IV

Results

Introduction

The purpose of this study was to discover the ramifications of No Child Left Behind on career and technical education as perceived by high school and CTE administrators regarding three dimensions: role of CTE in relation to NCLB; NCLB effects on CTEs image; and curriculum changes as seen as a result of NCLB. The study also examined if there were differentiation of responses from the administrators in regards to setting (urban, suburban, or rural). Another independent variable, region (western, central, or eastern), was also examined.

The three dimensions were examined by means of mailed surveys to Pennsylvania high school and CTE administrators. Each of the three dimensions had a set of items whereby these administrators perceived the role of CTE as affected by NCLB, the effect NCLB had on CTEs image, and curriculum changes that resulted from NCLB.

Specifically this study addressed the following research questions.

1. How does No Child Left Behind affect career and technical education’s role in helping schools meet the goals of No Child Left Behind as perceived by high school and career and technical education administrators in three settings and three regions?

2. How does No Child Left Behind affect the image of career and technical education as perceived by high school and career and technical education administrators in three settings and three regions?

3. How does No Child Left Behind affect curricular changes as perceived by high
school and career and technical education administrators in three settings and three regions?

Career and technical education directors of shared-time technical schools with their corresponding sending high school principals responded to a 23-question survey divided into two sections. The first section included three items addressing demographic information such as the region and setting of their school’s location, number of students, and number of credits or programs. The second section included twenty items addressing the three dimensions: CTEs Role, CTEs Image, and CTEs Curricular Changes. The twenty items were in Likert format ranging from Strongly Disagree, Disagree, Agree, and Strongly Agree. For research purposes, these choices were coded 1, 2, 3, and 4 in an ordinal format with Strongly Disagree as 1 on through 4 for Strongly Agree accordingly.

The data from this study are divided into descriptive statistics for demographics, descriptive statistics for survey items, reliability, and inferential statistics.

Descriptive Statistics for Demographics

Section I of the survey included demographic items such as location (setting and region) and student enrollment. In addition, high school administrators were surveyed on graduation credit requirements and changes seen in the last five years. CTE directors were surveyed on the number of CTE programs operating in their schools and whether they had seen changes in the last five years.

Enrollment

Survey results showed that high school enrollment across the state varied greatly. The average student enrollment for high schools was 755. The high school total enrollment ranged from 76 to 3100 students. The number of students who attend career
and technical schools from any given high school ranged from 10 to 359 with the average of 76. (See Table 2). As an elective rather than a required course, career and technical schools’ enrollment is quite different from high schools as seen in Table 2.

As seen in Table 2, some high school principals reported that their school did not have ninth or tenth or sometimes both grades at their school. For example, a school may have only eleventh and twelfth grades. This may also be the reason for a low total high school enrollment (76). Some schools indicated that they did not send ninth or tenth grade students, but did not give a reason. Thus, the average minimum number of students was zero for these grades. In addition, some directors reported zero enrollment for grades nine or ten because they did not offer programming for that grade level.

Table 2

| High School Student Enrollment by Grade According to Principals and Directors |
|---------------------------------|-----|-----|-------|-----|
|                                 | n of Responses | Minimum n | Maximum n | Mean | Median |
| Principals                      |                 |          |          |      |        |
| 9th                             | 139             | 0        | 900      | 173.24 | 135.00 |
| 10th                            | 141             | 0        | 800      | 192.02 | 152.00 |
| 11th                            | 142             | 15       | 750      | 196.61 | 156.00 |
| 12th                            | 141             | 25       | 650      | 199.11 | 154.00 |
| HS Total                        | 142             | 76       | 3100     | 754.52 | 614.50 |
| Sent to CTC in 9th              | 138             | 0        | 68       | 1.48  | .00    |
| Sent to CTC in 10th             | 138             | 0        | 90       | 19.32 | 15.00  |
| Sent to CTC in 11th             | 138             | 0        | 150      | 27.13 | 20.50  |
| Sent to CTC in 12th             | 138             | 2        | 109      | 28.37 | 22.00  |
| Total Enrolled at CTC           | 142             | 10       | 359      | 76.21 | 60.00  |

| Directors                      |                 |          |          |      |        |
| 9th                             | 39               | 0        | 450      | 17.82 | .00    |
| 10th                            | 37               | 0        | 950      | 185.19 | 126.00 |
| 11th                            | 37               | 12       | 800      | 200.89 | 175.00 |
| 12th                            | 37               | 45       | 700      | 190.35 | 174.00 |
| CTC Total                       | 39               | 107      | 3000     | 754.52 | 614.50 |
Slightly less than two-thirds (61.8 percent) of the principals indicated that during the last five years, their high schools’ total enrollment had decreased. In addition, only 11.5 percent reported that enrollment at their high schools had increased and 26.7 percent of the principals saw no change in enrollment.

Approximately one third of the high school principals reported that there had been a decrease in the number of their students attending career and technical schools during the last five years as seen in Table 3. In addition, 21 percent of the principals indicated that the number of their students attending CTE schools had increased during the last five years and almost half of the high school principals indicated that there had not been a change in the number of their students attending CTE schools during that time period.

Over half of the directors (56.4 percent) reported that they had seen a decrease in enrollment over the last five years as seen in Table 3. Approximately twenty-eight percent of the directors saw an increase in enrollment and 15.4 percent saw no change in enrollment over the last five years.

Table 3

<table>
<thead>
<tr>
<th></th>
<th>Directors</th>
<th></th>
<th>HS Principals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Increased</td>
<td>11</td>
<td>28.2</td>
<td>26</td>
<td>21.0</td>
</tr>
<tr>
<td>Decreased</td>
<td>22</td>
<td>56.4</td>
<td>42</td>
<td>33.9</td>
</tr>
<tr>
<td>No Change</td>
<td>6</td>
<td>15.4</td>
<td>56</td>
<td>45.2</td>
</tr>
</tbody>
</table>

Graduation Credit Requirements

Regarding high school graduation credits, approximately two-thirds (68.1 percent) of the high school principals indicated that in the last five years the required number of
credits had remained unchanged. In addition, 26.8 percent specified that credit
requirements had increased and only 5.1 percent stated that credit requirements had
decreased. High school graduation credits ranged from 21 to 35 credits. The average
required graduation credits were 25.34 credits.

Two high school principals noted that their CTE students had different graduation
credit requirements as compared with their non-CTE peers. In one school, CTE students
were required to have 24 credits versus their counterparts’ requirement of 25 credits.
Conversely another high school required CTE students to have 26 credits or 2 more
credits than “regular ed students” as noted by a principal. No explanations were given for
these arrangements.

Career and Technical Programs

The number of CTE programs across shared-time career and technical schools in
Pennsylvania ranged from as few as seven CTE programs in small schools to 50
programs in large schools. The average number of programs was fifteen. Changes in CTE
programs during the last five years as reported by CTE directors were similarly split
among program increases, program decreases, and no change in programming (30
percent, 35 percent, and 35 percent respectively).

School Location

High school principals and CTC directors were asked in the survey to select the
setting where their school was located. They were to choose whether it was located in a
rural, suburban, or urban setting. Of the 145 high school principals who submitted
surveys, 107 or 73.7 percent answered this question. In contrast, 17 out of 40 or 42.5
percent of the CTC directors answered this question. Table 4 illustrates their responses
regarding the settings where their school is located. The low response rate to this could be oversight. It is conceivable that participants overlooked this item since it was in close proximity to the survey item on region, not realizing that it was a separate item. Due to the low response rate for setting (rural, suburban, and urban), suburban and urban were combined into one category for subsequent results.

Table 4

Survey Response Rate by Administrator Type and Setting

<table>
<thead>
<tr>
<th></th>
<th>Directors</th>
<th></th>
<th>HS Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Rural</td>
<td>8</td>
<td>47.1</td>
<td>67</td>
</tr>
<tr>
<td>Suburban</td>
<td>7</td>
<td>41.2</td>
<td>33</td>
</tr>
<tr>
<td>Urban</td>
<td>2</td>
<td>11.8</td>
<td>7</td>
</tr>
</tbody>
</table>

In addition, the administrators were asked to identify either western, central, or eastern region of Pennsylvania where their school was located. Of the responses received, only one high school principal left this blank. One hundred percent of the CTC directors who returned their surveys answered this question. Table 5 delineates the regions by administrator type and their frequency of response.

Table 5

Survey Response Rate by Administrator Type and Region

<table>
<thead>
<tr>
<th></th>
<th>Directors</th>
<th></th>
<th>HS Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Western</td>
<td>19</td>
<td>47.5</td>
<td>65</td>
</tr>
<tr>
<td>Central</td>
<td>8</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Eastern</td>
<td>13</td>
<td>32.5</td>
<td>39</td>
</tr>
</tbody>
</table>
Descriptive Statistics for Survey Items

There were 20 Likert items divided amongst three dimensions: Role, Image, and Curriculum Changes. The role dimension had seven items. There were five items in image dimension and eight items in curriculum changes.

Dimension 1 - Role

Role as viewed in this study refers to the role of CTE regarding career and technical education’s responsibility in meeting the goals of NCLB as perceived by both directors and high school principals. Specifically, participants were asked to consider the effects of NCLB on CTEs role as it relates to: state assessments; meeting high standards; attaining proficiency or better on state assessments; graduation rates; meeting NCLB goals; and incorporating reading and math anchors into the CTE programs. Research Question One addresses role: How does No Child Left Behind affect career and technical education’s role in helping schools meet the goals of No Child Left Behind as perceived by rural, suburban, and urban area high school administrators and career and technical education administrators?

Table 6 shows the high level of agreement by administrator type. It depicts the number and percentage of director and principal responses that were answered agree or strongly agree in the role dimension. In the role dimension of the survey, directors agreed or strongly agreed ranging from 87.5 percent (items 6: “The Reading Anchors can easily be incorporated into many CTE programs offered at your CTE school.”) and 7: “The Math Anchors can easily be incorporated into many CTE programs offered at your CTE school.”) to 97.5 percent (item 4: “CTE programs can help your CTE school meet the goal of ‘all students will graduate from high school.’”) for all seven items.
The principals on the other hand agreed or strongly agreed ranging from 28.4 percent (item 1: “CTE programs offered at your CTE school help to prepare students to take the state assessment for reading.”) to 86.9 percent (item 4: “CTE programs can help your CTE school meet the goal of ‘all students will graduate from high school.’”). Item 1 (“CTE programs offered at your CTE school help to prepare students to take the state assessment for reading.”) had the most extreme responses from the administrators with 95 percent of the directors and only 28.4 percent of the principals in agreement or strong agreement. The administrators appeared to be like-minded in Item 4 (“CTE programs can help your CTE school meet the goal of ‘all students will graduate from high school.’”), Item 6 (“The Reading Anchors can easily be incorporated into many CTE programs offered at your CTE school.”), and Item 7 (“The Math Anchors can easily be incorporated into many CTE programs offered at your CTE school.”) with approximately a ten percentage point difference. This would suggest that there is a lack of understanding or awareness on behalf of the principals regarding the role CTE may have in preparing students for the state reading assessment.
Table 6

*Number and Percentage of Responses on Role Answered Agree or Strongly Agree by CTE Directors and HS Principals*

<table>
<thead>
<tr>
<th>Role</th>
<th>CTE Director</th>
<th>HS Principal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CTE programs offered at your CTE school help to prepare students to take the state assessment for reading.</td>
<td>40 95%</td>
<td>141 28.4%</td>
</tr>
<tr>
<td>2. CTE programs offered at your CTE school help to prepare students to take the state assessment for math.</td>
<td>40 92.5%</td>
<td>141 42.6%</td>
</tr>
<tr>
<td>3. CTE programs can help your CTE school meet the goal of “all students will reach high standards, at a minimum of attaining proficiency or better in reading and mathematics.”</td>
<td>40 90%</td>
<td>142 42.2%</td>
</tr>
<tr>
<td>4. CTE programs can help your CTE school meet the goal of “all students will graduate from high school.”</td>
<td>40 97.5%</td>
<td>145 86.9%</td>
</tr>
<tr>
<td>5. CTE programs are an important resource in helping your school meet the No Child Left Behind goals.</td>
<td>39 97.4%</td>
<td>145 57.9%</td>
</tr>
<tr>
<td>6. The Reading Anchors can easily be incorporated into many CTE programs offered at your CTE school.</td>
<td>40 87.5%</td>
<td>137 75.9%</td>
</tr>
<tr>
<td>7. The Math Anchors can easily be incorporated into many CTE programs offered at your CTE school.</td>
<td>40 87.5%</td>
<td>139 75.6%</td>
</tr>
</tbody>
</table>

Note: n represents total number of participants who responded to the item.

Nineteen high school principals and five directors commented on role dimension.

One principal noted that “there is increased awareness of the need to prepare students academically at Tech.” However, another principal stated that “the CTE instructors are not trained to use/incorporate standards/eligible content properly.” A director acknowledged that “teacher training in CTE programs also needs to be reviewed.”

Another principal declared that their career and technical school “could do a lot more to help with reading and math anchors.” Furthermore, another principal affirmed that “math and reading taught there at CTC does not mimic the assessment for the PSSA – which is the gauge of proficiency.” Another principal stated that the career and technical school his/her students attend offers “a math and reading course that focuses on PA
standards…is for 30 minutes each day…. [and] do not think this class can replace the
did not think this class can replace the academic rigor that is at the sending school.” In concurrence, one principal stated that
“although I believe the CTE programs prepare students for careers, many of our CTE
students have reading and math deficiencies that are not addressed in their program at
CTE.” Another principal acknowledged that ‘efforts are being made by CTEs, but not to
a high degree.” One director had a contrary view and stated that “We need to have
appropriately placed students in order to meet these goals.” A view held by one principal
was that “CTE shouldn’t be expected to support the narrow focus of the PSSA.”
Some principals alleged that “Algebra II is most difficult to incorporate into many
CTE programs [and] many math anchors/standards are beyond practical application for
most CTC college prep students.” One career and technical director concurred and
commented that “all of the math anchors cannot be incorporated into any of our
programs, but some math anchors can be incorporated in every CTE program.” Another
director stated that “PSSA math anchors have very little in common with industry level
math…[with] seven percent of all U.S. jobs require[ing] Algebra.” Finally, one principal
admitted that “I am not very familiar with the [CTE] curriculum…”
One principal stated that “In my opinion – NCLB is destroying our much needed
technical schools!” On the contrary, one director observed that “NCLB is the best thing
that ever happened to CTE. Our kids get better academics because of NCLB.”
Several principals complimented career and technical education and stated that
“CTE offers ideal instruction that services our students well beyond what NCLB
assesses.” Another stated “I want to clarify that our CTE makes every attempt to ‘help’ in
those areas, but there is no data or evidence that it does.” Finally a director asserted that “CTE helps all students who want to succeed.”

Dimension 2 - Image

The second dimension, image is characterized in this study as positive impacts perceived regarding career and technical education’s image as it applies to enrollment, academic rigor, and collaboration between the staff of both types of schools. Research Question 2 addresses Image: How does No Child Left Behind affect the image of career and technical education as perceived by high school administrators and career and technical education administrators in rural, suburban, and urban settings? In addition to survey results, thirteen principals and seven directors commented on image dimension.

In the image dimension of the survey, Table 7 shows the high level of agreement by administrator type. The lowest percentage of directors (23.1 percent) who agreed or strongly agreed was enrollment in CTE programs increasing as a result of NCLB, item 1. This is congruent to their response in the Section I of the survey when only 28.2 percent of the directors responded that enrollment has increased (Table 3). Similarly, 21.3 percent of the principals also were in agreement that enrollment in CTE programs increased as a result of NCLB.

Several administrators commented that the focus on test results have negatively impacted career and technical education. One principal noted that “increased pressure to improve scores has caused schools to pull students back from CTEs because of increased need to remediate core subject areas.” Another principal observed that “the focus becomes more on academics and sadly less on CTE programs.” A different principal added that “with an increase in academics in their CTE courses, student interest and
success had slowed students enroll[ment] in these classes as an alternative to academic
courses.”

Only 16.2 percent, the lowest percentage of the principals perceived NCLB to
have had a positive impact on the image of career and technical education (question 2)
and less than one third of the directors (30.8 percent) concurred. One principal remarked
that “NCLB has overshadowed the success our CTE programs have had because nothing
else matters except NCLB!” Another principal remarked that “… CTE is still the victim
of negative stigma by some students/parents. College as seen as the ‘only way to
succeed’ is decreasing.” An analogous remark from a career and technical director stated
“the historical roots of CTE, established with the passage of the Smith-Hughes Act,
continue to influence the perception of CTE in the contemporary world. Districts
continue to promote the dualism of CTE. That said, I believe that academic and
occupational outcomes speak for themselves and will promote the changes being
implemented in the CTE system.”

The highest percentage of agreement occurred for both sets of administrators in
item 4 (“More academic rigor is being added/has been added to CTE programs as a result
of No Child Left Behind.”) with 95 percent of the directors and 66.1 percent of the
principals in agreement. One principal commented that “academic rigor is increasing, but
not because of NCLB.” However, concerns were expressed by directors regarding the
ramification of testing results. One stated that “some students need additional academic
help which then limits their CTE time.” Another director concurred and stated “NCLB
mandates students pass PSSA in grade 11 – failure to make proficiency requires LEA to
provide local remediation and assessment. Generally this pulls seniors out of their CTE
program resulting in lower completion rate and impacts NOCTI.” Another concerned director stated that “we are made to be aware of our potential impact. Other than the voice of the CTE director, no one is making the home school teachers aware of CTEs impact (PDE?!).” Supporting the nature of this concern, a principal remarked that “I don’t understand your questions relating NCLB to CTE.”

Table 7

Number and Percentage of Responses on Image Answered Agree or Strongly Agree by CTE Directors and HS Principals

<table>
<thead>
<tr>
<th>Image</th>
<th>CTE Director n</th>
<th>CTE Director %</th>
<th>HS Principal n</th>
<th>HS Principal %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Enrollment in CTE programs has increased since No Child Left Behind was enacted.</td>
<td>39</td>
<td>23.1</td>
<td>136</td>
<td>21.3</td>
</tr>
<tr>
<td>2. No Child Left Behind has had a positive impact on the image of CTE at your CTE school.</td>
<td>39</td>
<td>30.8</td>
<td>136</td>
<td>16.2</td>
</tr>
<tr>
<td>3. No Child Left Behind has had a positive impact on how CTE courses are taught at your CTE school.</td>
<td>40</td>
<td>75</td>
<td>134</td>
<td>35.1</td>
</tr>
<tr>
<td>4. More academic rigor is being added/has been added to CTE programs as a result of No Child Left Behind.</td>
<td>40</td>
<td>95</td>
<td>136</td>
<td>66.1</td>
</tr>
<tr>
<td>5. Collaboration of high school staff working together with CTE staff has increased as a result of No Child Left Behind.</td>
<td>40</td>
<td>50</td>
<td>137</td>
<td>32.1</td>
</tr>
</tbody>
</table>

Note: n represents total number of participants who responded to the item.

Three fourths (75 percent) of the directors perceived NCLB as having a positive impact on how courses were taught at their schools (See Table 7, item 3). Additionally, the majority of the directors felt more academic rigor had been integrated into the CTE curriculum. One director stated that “…our CTC sees itself as a major contributor to success on PSSAs and the academic success of students in general through contextual teaching and learning.” A director commented that “the improvements in our CTE curriculum are the result of working with our post-secondary school partner.”
Fifty percent of the directors and approximately 32 percent of the principals agreed that more collaboration was taking place between the two entities (item 5, p. 58). There were mixed comments regarding collaboration. Several principals stated that there has been “more collaboration but not because of NCLB.”; “Collaboration occurs ‘as a result of logic, not law.’”; “I see no change because of NCLB in how we work with our CTE.”; and “We have always had a close collaborative relationship – it remains strong.” One director commented that “collaboration time with districts is almost impossible because the districts are working feverishly to prepare students for PSSA.”

Other high school principals had less encouraging statements regarding collaboration. One stated that there is “no collaboration between [the career and technical school] and the sending school.”; Another said that “our high school never interacts with the CTE staff at our regional CTE school.”; and “the demands and stress have caused professionals to withdraw and begin to worry about their own classrooms and shy away from using time to collaborate with others.”

Dimension 3 – Curriculum Changes

Curriculum Changes, the third dimension measured, is depicted as changes in instructional time; remedial/tutoring opportunities; high school electives; graduation requirements; scheduling; academic course offerings; and more rigorous academic course enrollment. Research Question 3 addresses Curriculum Changes: How does No Child Left Behind affect curricular changes as perceived by high school administrators and career and technical education administrators in rural, suburban, and urban settings?

As seen in Table 8, items 2 (“Remedial and/or tutoring opportunities have been added to the high school curriculum as a result of No Child Left Behind.”) and 4 (“As a
result of No Child Left Behind, instructional time spent at the career and technical school has been increased.”) were the highest and lowest responses respectively for both sets of administrators. Approximately 95 percent of the directors and 92 percent of the principals agreed/strongly agreed with item 2. Only 18.4 percent of the directors and 12.6 percent of the principals agreed/strongly agreed to item 4 (“As a result of No Child Left Behind, instructional time spent at the career and technical school has been increased.”). Also, item 3 (High school electives have been increased as a result of No Child Left Behind.) was a low response by both directors and principals (18.9 and 16.5 percent respectively).

Two additional items, increased graduation requirements and CTE students enrolling in more rigorous courses as a result of NCLB (items 5 and 8 respectively) had a high level of agreement for directors with 84 percent and 82 percent respectively.

Table 8

<table>
<thead>
<tr>
<th>Curriculum Changes</th>
<th>CTE Director n</th>
<th>CTE Director %</th>
<th>HS Principal n</th>
<th>HS Principal %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Instructional time has been added to the high school day as a result of No Child Left Behind.</td>
<td>36</td>
<td>47.3</td>
<td>145</td>
<td>38.6</td>
</tr>
<tr>
<td>2. Remedial and/or tutoring opportunities have been added to the high school curriculum as a result of No Child Left Behind.</td>
<td>37</td>
<td>94.6</td>
<td>146</td>
<td>91.8</td>
</tr>
<tr>
<td>3. High school electives have been increased as a result of No Child Left Behind.</td>
<td>37</td>
<td>18.9</td>
<td>146</td>
<td>16.5</td>
</tr>
<tr>
<td>4. As a result of No Child Left Behind, instructional time spent at the career and technical school has been increased.</td>
<td>38</td>
<td>18.4</td>
<td>143</td>
<td>12.6</td>
</tr>
<tr>
<td>5. Graduation requirements have been increased as a result of No Child Left Behind.</td>
<td>37</td>
<td>83.8</td>
<td>144</td>
<td>40.3</td>
</tr>
<tr>
<td>6. Students may enroll in both CTE school and college-bound courses at the high school without schedule conflicts.</td>
<td>39</td>
<td>43.6</td>
<td>143</td>
<td>58.7</td>
</tr>
<tr>
<td>7. As a result of No Child Left Behind, academic courses are offered multiple times a day for availability to CTE students.</td>
<td>38</td>
<td>42.1</td>
<td>139</td>
<td>59.7</td>
</tr>
<tr>
<td>8. CTE students are taking more rigorous academic courses as a result of No Child Left Behind.</td>
<td>38</td>
<td>81.6</td>
<td>140</td>
<td>37.1</td>
</tr>
</tbody>
</table>

Note: n represents total number of participants who responded to the item.
Comments pertaining to the curriculum change dimension were made by eighteen principals and six directors. Less than positive remarks regarding NCLB were made by several administrators. One principal stated that No Child Left Behind is having a strong negative impact on CTE. Students are being forced to spend more time on academics when their career skills will be the skills that will benefit them and help them have a better future. The CTE is trying to increase academic standards and ignore the students who could most benefit from the training – those with limited ability.

In addition, director commented that “because the districts have increased academic requirements, they have sent students for less time to the CTC. Another director stated that “NCLB has made it harder for our students to be successful. There is so much emphasis on academics in the pure version that we forget that students learn the same concepts in an applied setting and tend to remember it better. Many of these same students come to us because they feel unsuccessful in the academic world.” Another director declared that “CTE schools must prove, through academic and occupational outcomes, that relevance taught in the CTE content does positively improve results.”

Another principal acknowledged that “NCLB has increased our focus on math and reading while narrowing academic choice in other subjects.” Similarly, another principal stated that “NCLB has increased course offerings in math and reading but has eliminated electives and eliminated/reduced foreign language.”

Lack of funding created problems as seen by at least two principals who stated that “State budget cuts have led to staff cuts and fewer course offerings.” and another concurred and lamented that “we had tutoring but with the budget cuts, lost it!” A
director stated that “because of NCLB, some schools are taking time away from the CTC for remediation. Also, because of the current budget issues from the state, many remediation and tutoring programs were eliminated.”

Schedule changes had varied comments from principals such as “our school is too small to offer the college courses to match our CTE schedule many times.” and principals stating that they “were offering these academic courses at multiple times prior to NCLB.”

Two directors made observations that “some students in small schools don’t have as much access to high level academic courses.”; and “Students may but generally can’t enroll in both CTE school and college-bound courses.”

Missing Data

In general, there were data missing in each dimension and by each administrator type, although in small percentages. For CTE directors, there were 23 out of a possible 800 total Likert items skipped or left blank with 2% total missing. For high school principals, there were 110 out of a possible 2920 total Likert items skipped or left blank with 4% total missing.

Dimension 1 – Role

As seen in Table 9, in the role dimension, out of a total possible 280 Likert items for directors, only one director left one item blank, with .36 percent of possible items left blank. Out of a total possible 980 Likert items, principals left 32 items blank, with 3 percent of possible items left blank. Therefore, principals were 10 times more likely to leave items blank in the role dimension than directors.
Missing Data by Administrator Type for Role Dimension

<table>
<thead>
<tr>
<th>Role</th>
<th>CTE Director</th>
<th>HS Principal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n missing</td>
<td>n missing</td>
</tr>
<tr>
<td>1. CTE programs offered at your CTE school help to prepare students</td>
<td>40 0 0</td>
<td>141 5 3.4</td>
</tr>
<tr>
<td>to take the state assessment for reading.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. CTE programs offered at your CTE school help to prepare students</td>
<td>40 0 0</td>
<td>141 5 3.4</td>
</tr>
<tr>
<td>to take the state assessment for math.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. CTE programs can help your CTE school meet the goal of “all</td>
<td>40 0 0</td>
<td>142 4 2.8</td>
</tr>
<tr>
<td>students will reach high standards, at a minimum of attaining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>proficiency or better in reading and mathematics.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. CTE programs can help your CTE school meet the goal of “all</td>
<td>40 0 0</td>
<td>145 1 .7</td>
</tr>
<tr>
<td>students will graduate from high school.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. CTE programs are an important resource in helping your school</td>
<td>39 1 2.5</td>
<td>145 1 .7</td>
</tr>
<tr>
<td>meet the No Child Left Behind goals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. The Reading Anchors can easily be incorporated into many CTE</td>
<td>40 0 0</td>
<td>137 9 6.2</td>
</tr>
<tr>
<td>programs offered at your CTE school.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. The Math Anchors can easily be incorporated into many CTE</td>
<td>40 0 0</td>
<td>139 7 4.8</td>
</tr>
<tr>
<td>programs offered at your CTE school.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: n represents total number of participants who responded to the item.

Dimension 2 – Image

As seen in Table 10, in the image dimension, out of a total possible 200 Likert items for directors, two items were left blank, with one percent of possible items left blank. Out of a total possible 730 Likert items, principals left 51 items blank, with 7 percent of possible items left blank. Therefore, principals were seven times more likely to leave items blank in the image dimension than directors.
Table 10

**Missing Data by Administrator Type for Image Dimension**

<table>
<thead>
<tr>
<th>Image</th>
<th>CTE Director</th>
<th></th>
<th>HS Principal</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>n missing</td>
<td>n</td>
<td>n missing</td>
</tr>
<tr>
<td>1. Enrollment in CTE programs has increased since No Child Left Behind was enacted.</td>
<td>39</td>
<td>1</td>
<td>2.5</td>
<td>136</td>
</tr>
<tr>
<td>2. No Child Left Behind has had a positive impact on the image of CTE at your CTE school.</td>
<td>39</td>
<td>1</td>
<td>2.5</td>
<td>136</td>
</tr>
<tr>
<td>3. No Child Left Behind has had a positive impact on how CTE courses are taught at your CTE school.</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>134</td>
</tr>
<tr>
<td>4. More academic rigor is being added/has been added to CTE programs as a result of No Child Left Behind.</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>136</td>
</tr>
<tr>
<td>5. Collaboration of high school staff working together with CTE staff has increased as a result of No Child Left Behind.</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>137</td>
</tr>
</tbody>
</table>

Note: n represents total number of participants who responded to the item.

*Dimension 3 – Curriculum Changes*

As seen in Table 11, in the Curriculum Changes dimension, out of a total possible 320 Likert items for directors, 20 items were left blank, with 6 percent of possible items left blank. Out of a total possible 1168 Likert items, principals left 22 items blank, with 2 percent of possible items left blank. Therefore, directors were three times more likely to leave items blank in the curriculum changes dimension than principals.
Table 11

Missing Data by Administrator Type for Curriculum Changes Dimension

<table>
<thead>
<tr>
<th>Curriculum Changes</th>
<th>CTE Director</th>
<th></th>
<th>HS Principal</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>n missing</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>1. Instructional time has been added to the high school day as a result of No Child Left Behind.</td>
<td>36</td>
<td>4</td>
<td>10.0</td>
<td>145</td>
</tr>
<tr>
<td>2. Remedial and/or tutoring opportunities have been added to the high school curriculum as a result of No Child Left Behind.</td>
<td>37</td>
<td>3</td>
<td>7.5</td>
<td>146</td>
</tr>
<tr>
<td>3. High school electives have been increased as a result of No Child Left Behind.</td>
<td>37</td>
<td>3</td>
<td>7.5</td>
<td>146</td>
</tr>
<tr>
<td>4. As a result of No Child Left Behind, instructional time spent at the career and technical school has been increased.</td>
<td>38</td>
<td>2</td>
<td>5.0</td>
<td>143</td>
</tr>
<tr>
<td>5. Graduation requirements have been increased as a result of No Child Left Behind.</td>
<td>37</td>
<td>3</td>
<td>7.5</td>
<td>144</td>
</tr>
<tr>
<td>6. Students may enroll in both CTE school and college-bound courses at the high school without schedule conflicts.</td>
<td>39</td>
<td>1</td>
<td>2.5</td>
<td>143</td>
</tr>
<tr>
<td>7. As a result of No Child Left Behind, academic courses are offered multiple times a day for availability to CTE students.</td>
<td>38</td>
<td>2</td>
<td>5.0</td>
<td>139</td>
</tr>
<tr>
<td>8. CTE students are taking more rigorous academic courses as a result of No Child Left Behind.</td>
<td>38</td>
<td>2</td>
<td>5.0</td>
<td>140</td>
</tr>
</tbody>
</table>

Note: n represents total number of participants who responded to the item.

Reliability

On each of the three dimensions (role, image, and curriculum changes), a reliability analysis was performed. A correlation of survey items was determined within each dimension to assess internal consistency. The lowest and highest correlations were identified in each dimension. In addition, the item mean, and variance of inter-item correlations were established. Finally the Cronbach’s alpha was calculated for each dimension.

Dimension 1 - Role
All role dimension inter-item correlations were positive which means if the administrators agreed with one item, they tended to agree with other items in the role dimension. The lowest inter-item correlation was .215, item 4 (CTE programs can help your CTE school meet the goal of “all students will graduate from high school.”) and item 7 (The Math Anchors can easily be incorporated into many CTE programs offered at your CTE school.). The strongest inter-item correlation was .860 and was between item 1 (CTE programs offered at your CTE school help to prepare students to take the state assessment for reading.) and item 2 (CTE programs offered at your CTE school help to prepare students to take the state assessment for math.).

Internal consistency was seen from strong to weak regarding inter-item correlations. Item 3 had five out of the seven correlations above .50. This shows strong internal consistency. Items 1, 2, and 5 had four out of seven correlations above .50 showing moderate internal consistency. Items 4, 6, and 7 had two out of seven correlations, showing low internal consistency. The variance of inter-item correlation was .036 which shows consistency of inter-item correlation.

The scale mean for role dimension was 19.20 and the standard deviation was 4.089. The item variances ranged from .437 to .828. The mean inter-item correlation was .472, with a range from .215 to .860. The maximum correlation ratio was approximately four times the smallest correlation. This signifies lesser consistency among inter-item correlations.

Six of the seven items in the Item-Total Statistics were above .50 indicating the items are consistent with the scale. Only item 4 (“CTE programs can help your CTE school meet the goal of ‘all students will graduate from high school.’”) was below .50.
Six of the seven items of squared multiple correlations share approximately 54% to 77% of its variance in common with a combination of the remaining items. Again, item 4 (“CTE programs can help your CTE school meet the goal of ‘all students will graduate from high school.’”) only shared approximately 26%.

Cronbach’s coefficient alpha was .865 indicating moderate internal consistency. If item 4 (“CTE programs can help your CTE school meet the goal of ‘all students will graduate from high school.’”) was deleted, the reliability coefficient of the scale would change only slightly (.872). Therefore, item 4 should remain.

**Dimension 2 - Image**

All inter-item correlations were positive which means if the administrators agreed with one item, they tended to agree with other items in the image dimension. There was a range of inter-item correlations, with most of them below .50 indicating a poor relationship. The lowest inter-item correlations was .083, item 1 (“Enrollment in CTE programs has increased since No Child Left Behind was enacted.”) and item 4 (“More academic rigor is being added/has been added to CTE programs as a result of No Child Left Behind.”). The strongest inter-item correlation was .576 and was between item 3 (‘No Child Left Behind has had a positive impact on how CTE courses are taught at your CTE school.’) and item 4 (“More academic rigor is being added/has been added to CTE programs as a result of No Child Left Behind.”).

Internal consistency was seen as fairly weak regarding inter-item correlations. Item 3 had three out of the five correlations above .50. This shows fairly weak internal consistency. Items 2 and 4 had only two out of five correlations above .50 showing weak internal consistency. Items 1 and 5 had no correlations above .50, showing poor
internal consistency. However, the variance of inter-item correlation was .029 which shows fair consistency of inter-item correlations. Furthermore, the variance of .029 was small and indicates greater consistency of among inter-item correlations.

The scale mean was 11.53 and the standard deviation was 2.380. The item variances ranged from .415 to .591. The mean inter-item correlation was .305 with a range of .083 to .576. The maximum correlation ratio was approximately seven times the smallest correlation. This signifies lesser consistency among inter-item correlations.

Two of the five items in the Item-Total Statistics were above .50 indicating the items were consistent with the scale. Item 4 (“More academic rigor is being added/has been added to CTE programs as a result of No Child Left Behind.”) was slightly below .50 with a value of .495. Items 1 and 5 were below .50 (.295 and .319 respectively), showing a weak relationship to Image.

Three of the five items of squared multiple correlations shared approximately 42% to 51% of its variance in common with a combination of the remaining items. Item 1 (“Enrollment in CTE programs has increased since No Child Left Behind was enacted.”) and Item 5 (“Collaboration of high school staff working together with CTE staff has increased as a result of No Child Left Behind.”) only shared approximately 21% and 17% respectively.

Cronbach’s coefficient alpha was .686 indicating fair internal consistency. If any of the items were deleted, the reliability coefficient of the scale would not change very much. Therefore, all items should remain.

*Dimension 3 - Curriculum Changes*

Six of the eight inter-item correlations have from one to three negative values
which means they were not all measuring Curriculum Changes. All of inter-item
correlations were below .50 which indicates a poor relationship. The lowest inter-item
correlations was -.057, item 2 (“Remedial and/or tutoring opportunities have been added
to the high school curriculum as a result of No Child Left Behind.”) and item 6
(“Students may enroll in both CTE school and college-bound courses at the high school
without schedule conflicts.”). The strongest inter-item correlation was .424 and was
between item 6 (“Students may enroll in both CTE school and college-bound courses at
the high school without schedule conflicts.”) and item 7 (“As a result of No Child Left
Behind, academic courses are offered multiple times a day for availability to CTE
students.”).

Cronbach’s coefficient alpha was .554, below the set .65, indicating a poor internal
consistency. Therefore, this indicates that the set of items in the curriculum change
dimension was not necessarily measuring curriculum change. Internal consistency is seen
as weak regarding inter-item correlations. No items had correlations above .50. In
conclusion, all paired correlations are low.

The scale mean was 19.32 and the standard deviation was 2.818. The item
variances ranged from .324 to .688. The mean inter-item correlation was .131 with a
range of -.057 to .424. The maximum correlation ratio was approximately eight times the
smallest correlation. This signifies a very low consistency among inter-item correlations.
The squared multiple correlations show that the items share from the lowest 8% to
the highest 30% of variance in common with a combination of the remaining items.

If any of the items were deleted, the reliability coefficient of the scale would not
change very much. Therefore, the results of this dimension are a limitation.
Inferential Statistics for Item Dimensions

The following shows survey results of six Two-Factor Independent-Measures Analysis of Variance (ANOVA) that examined the effects of No Child Left Behind on career and technical education as perceived by administrator type (CTE director and high school principal), setting (urban/suburban and rural), and region (western, central, eastern) for each dimension (role, image, curricular changes). The following denotes results each dimension with administrator type by setting and region.

**Dimension 1 - Role**

The significance level was set at .05 when calculating the ANOVA for administrator by setting with role dimension. As seen in Table 13, the Administrator Type (director and principal) was found to have a significant main effect (p = <.001). There was a significant difference found in administrators’ responses with an F-ratio of 22.76. This indicates that the differences in responses between administrators (directors and high school principals) were more than 22.76 times larger than what would be expected by chance. This shows that there were significant differences in administrator type for their response to how NCLB affects the role of CTE in helping meet the goals of NCLB. In addition, the mean for directors was 3.26, sd = .40, a significantly higher mean than the mean for principals, 2.59, sd = .55 as seen in Table 12. In addition, Table 13 indicates that there were no significances found in administrator type responses by urban/suburban and rural settings (F = .149, p = .700). The main effect for Settings (urban/suburban and rural) was found not significant (p = .700) with means statistically similar for urban/suburban and rural settings (2.68, and 2.69 respectively). The interaction effect for Administrator Type by Setting with role as the dependent variable
was not significant (F = .003, p = .960).

Table 12

**Means and Standard Deviations for Role Dimension – Administrator by Setting**

<table>
<thead>
<tr>
<th>Setting Groups</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Total M</th>
<th>Total SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directors</td>
<td></td>
<td></td>
<td></td>
<td>Principals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban/Suburban</td>
<td>9</td>
<td>3.24</td>
<td>.45</td>
<td>40</td>
<td>2.56</td>
<td>.59</td>
<td>2.68</td>
<td>.63</td>
</tr>
<tr>
<td>Rural</td>
<td>8</td>
<td>3.29</td>
<td>.37</td>
<td>66</td>
<td>2.61</td>
<td>.53</td>
<td>2.69</td>
<td>.55</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>3.26</td>
<td>.40</td>
<td>106</td>
<td>2.59</td>
<td>.55</td>
<td>2.68</td>
<td>.58</td>
</tr>
</tbody>
</table>

**ANOVA Results for Role Dimension – Administrator by Setting**

<table>
<thead>
<tr>
<th>Source</th>
<th>MS</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator Type</td>
<td>6.605</td>
<td>1</td>
<td>22.758</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Setting</td>
<td>.043</td>
<td>1</td>
<td>.149</td>
<td>.700</td>
</tr>
<tr>
<td>Administrator*Setting</td>
<td>.001</td>
<td>1</td>
<td>.003</td>
<td>.960</td>
</tr>
<tr>
<td>Error</td>
<td>.290</td>
<td>119</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>122</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3 shows the estimated marginal means of role with setting for each administrator type. It shows no significance between settings because the lines are nearly horizontal. The lines are nearly parallel and the mean differences are small with the lowest mean approximately 2.50 and the highest mean being approximately 3.25, with a difference of .75. Therefore, there was no significant interaction effect between administrators by setting.
The significance level was set at .05 when calculating the ANOVA for administrator and region with role dimension. As seen in Table 15, the Administrator Type (director and principal) was found to have a significant main effect (p = <.001). There was a significant difference found in administrators’ responses with an F-ratio of 55.66. This indicates that the differences in responses between administrators (directors and high school principals) were more than 55.7 times larger than what would be expected by chance. This shows that there were significant differences in administrator type for their response to how NCLB affects the role of CTE in helping meet the goals of NCLB. In addition, the mean for directors was 3.30, sd = .37, a significantly higher mean than for principals, 2.59, sd = .52 as seen in Table 14. In addition, Table 15 indicates that there were no significances found in regard to western, central, or eastern regions.
responses (F = .759, p = .470). The main effect for Region (western, central, eastern) was found not significant (p = .470) with means statistically similar for western, central, and eastern (2.76, 2.66, and 2.80 respectively). The interaction effect for Administrator Type by Region with Role as the dependent variable was also found not significant (F = .678, p = .509).

Table 14

Means and Standard Deviations for Role Dimension – Administrator by Region

<table>
<thead>
<tr>
<th>Region Groups</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Total</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directors</td>
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<td></td>
<td></td>
<td>Principals</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Western</td>
<td>19</td>
<td>3.26</td>
<td>.43</td>
<td>64</td>
<td>2.62</td>
<td>.48</td>
<td>2.76</td>
<td>.54</td>
<td></td>
</tr>
<tr>
<td>Central</td>
<td>8</td>
<td>3.16</td>
<td>.21</td>
<td>40</td>
<td>2.56</td>
<td>.46</td>
<td>2.66</td>
<td>.48</td>
<td></td>
</tr>
<tr>
<td>Eastern</td>
<td>13</td>
<td>3.44</td>
<td>.34</td>
<td>39</td>
<td>2.59</td>
<td>.65</td>
<td>2.80</td>
<td>.69</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>3.30</td>
<td>.37</td>
<td>143</td>
<td>2.59</td>
<td>.52</td>
<td>2.75</td>
<td>.57</td>
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</tr>
</tbody>
</table>

Table 15

ANOVA Results for Role Dimension – Administrator by Region

<table>
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<tr>
<th>Source</th>
<th>MS</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator Type</td>
<td>13.653</td>
<td>1</td>
<td>55.660</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Region</td>
<td>.186</td>
<td>2</td>
<td>.759</td>
<td>.470</td>
</tr>
<tr>
<td>Administrator *Region</td>
<td>.166</td>
<td>2</td>
<td>.678</td>
<td>.509</td>
</tr>
<tr>
<td>Error</td>
<td>.245</td>
<td>177</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>182</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4 shows the estimated marginal means of role with region for each administrator type. The mean differences are small with the lowest mean approximately 2.50 and the highest mean being approximately 3.45, with a difference of .95. Therefore, there was no significant interaction effect between administrator type by region because the mean differences are small.
Figure 4

Plot of Means for Role Dimension – Administrator by Region

The significance level was set at .05 when calculating the ANOVA for administrator by setting with image dimension. As seen in Table 17, the Administrator Type (director and principal) was found to have a significant main effect (p = <.001). There was a significant difference found in administrators’ responses with an F-ratio of 13.00. This indicates that the differences in responses between administrators (directors and high school principals) were more than 13.00 times larger than what would be expected by chance. Therefore, there were significant differences in administrator type for their response to how NCLB affects the image of CTE in helping meet the goals of
NCLB. In addition, the mean for directors was 2.71, sd = .41, a significantly higher mean
than the mean for principals, 2.25, sd = .48 as seen in Table 16. In addition, Table 17
indicates that there were no significances found in administrators’ responses in regard to
urban/suburban and rural settings (F=339, p = .561). The main effect for Setting
(urban/suburban and rural) was found not significant (p = .561) with means statistically
similar for urban/suburban and rural (2.27 and 2.23 respectively). The interaction effect
for Administrator Type by Setting with image as the dependent variable was not
significant (F = .102, p = .751).

Table 16

Means and Standard Deviations for Image Dimension – Administrator by Setting

<table>
<thead>
<tr>
<th>Setting Groups</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Total</th>
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<td>n</td>
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<td></td>
<td>M</td>
</tr>
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<td>Directors</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban/Suburban</td>
<td>9</td>
<td>2.76</td>
<td>.47</td>
<td>39</td>
<td>2.27</td>
<td>.55</td>
<td>2.36</td>
</tr>
<tr>
<td>Rural</td>
<td>8</td>
<td>2.65</td>
<td>.35</td>
<td>66</td>
<td>2.24</td>
<td>.44</td>
<td>2.28</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>2.71</td>
<td>.41</td>
<td>105</td>
<td>2.25</td>
<td>.48</td>
<td>2.31</td>
</tr>
</tbody>
</table>

Table 17

ANOVA Results for Image Dimension – Administrator by Setting

<table>
<thead>
<tr>
<th>Source</th>
<th>MS</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator Type</td>
<td>2.952</td>
<td>1</td>
<td>13.001</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Setting</td>
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<td>1</td>
<td>.339</td>
<td>.561</td>
</tr>
<tr>
<td>Administrator *Setting</td>
<td>.023</td>
<td>1</td>
<td>.102</td>
<td>.751</td>
</tr>
<tr>
<td>Error</td>
<td>.227</td>
<td>118</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>121</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 5 shows the estimated marginal means of image with setting for each
administrator type. The mean differences are small with the lowest mean approximately
2.25 and the highest mean being approximately 2.75, with a difference of .5. Therefore,
there was no significant interaction effect between administrators by setting.

Figure 5

Plot of Means for Image Dimension – Administrator by Setting

<table>
<thead>
<tr>
<th>Admin Type</th>
<th>Estimated Marginal Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTC Administrators</td>
<td>2.80</td>
</tr>
<tr>
<td>HS Administrators</td>
<td>2.20</td>
</tr>
</tbody>
</table>

The significance level was set at .05 when calculating the ANOVA for administrator by region with image dimension. As seen in Table 19, the Administrator Type (director and principal) was found to have a significant main effect (p = .001).

There was a significant difference found in administrators’ responses with an F-ratio of 10.795. This indicates that the differences in responses between administrators (directors and high school principals) were more than 10.795 times larger than what would be expected by chance. Therefore, there were significant differences in administrator type for their response to how NCLB affects the image of CTE in helping meet the goals of NCLB. In addition, the mean for directors was 2.60, sd = .55, a significantly higher mean
than for principals, 2.23, sd = .49 as seen in Table 18. In addition, Table 19 indicates that there were no significances found in western, central, or eastern regions’ responses (F = 1.536, p = .218). The main effect for Region (western, central, eastern) was found not significant (p = .218) with means statistically similar for western, central, and eastern (2.29, 2.21, and 2.44 respectively). The interaction effect for Administrator Type by Region with image as the dependent variable was not significant (F = 1.532, p = .219). Table 18

**Means and Standard Deviations for Image Dimension – Administrator by Region**

<table>
<thead>
<tr>
<th>Region Groups</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western</td>
<td>19</td>
<td>2.69</td>
<td>.48</td>
<td>64</td>
<td>2.17</td>
<td>.47</td>
<td>2.29</td>
</tr>
<tr>
<td>Central</td>
<td>8</td>
<td>2.38</td>
<td>.39</td>
<td>39</td>
<td>2.18</td>
<td>.40</td>
<td>2.21</td>
</tr>
<tr>
<td>Eastern</td>
<td>13</td>
<td>2.60</td>
<td>.71</td>
<td>37</td>
<td>2.39</td>
<td>.57</td>
<td>2.44</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>3.60</td>
<td>.55</td>
<td>140</td>
<td>2.23</td>
<td>.49</td>
<td>2.31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prinicipals</th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>19</td>
<td>2.17</td>
<td>.47</td>
<td>64</td>
<td>2.17</td>
<td>.47</td>
<td>2.29</td>
</tr>
<tr>
<td>Central</td>
<td>8</td>
<td>2.18</td>
<td>.40</td>
<td>39</td>
<td>2.18</td>
<td>.40</td>
<td>2.21</td>
</tr>
<tr>
<td>Eastern</td>
<td>13</td>
<td>2.39</td>
<td>.57</td>
<td>37</td>
<td>2.39</td>
<td>.57</td>
<td>2.44</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>2.23</td>
<td>.49</td>
<td>140</td>
<td>2.23</td>
<td>.49</td>
<td>2.31</td>
</tr>
</tbody>
</table>

Table 19

**ANOVA Results for Image Dimension – Administrator by Region**

<table>
<thead>
<tr>
<th>Source</th>
<th>MS</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator Type</td>
<td>2.652</td>
<td>1</td>
<td>10.795</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Region</td>
<td>.377</td>
<td>2</td>
<td>1.536</td>
<td>.218</td>
</tr>
<tr>
<td>Administrator *Region</td>
<td>.376</td>
<td>2</td>
<td>1.532</td>
<td>.219</td>
</tr>
<tr>
<td>Error</td>
<td>.246</td>
<td>174</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 6 shows the estimated marginal means for Image with Region for each administrator type. The mean differences are small with the lowest mean approximately 2.15 and the highest mean being approximately 2.70, with a difference of .55. Therefore, there was no significant interaction effect between administrators by region.
Figure 6

Plot of Means for Image Dimension – Administrator by Region

Dimension 3 – Curriculum Changes

The significance level was set at .05 when calculating the ANOVA for administrator by setting with curriculum change dimension. As seen in Table 21, the Administrator Type (director and principal) was found not to have a significant main effect (p = .850). There was no significant difference found in administrators’ responses with an F-ratio of .036. This indicates that the differences in responses between administrators (directors and high school principals) were only .036 times larger than what would be expected by chance. Therefore, there were no significant differences in administrator type for their response to how NCLB affects the curriculum changes of CTE in helping meet the goals of NCLB. In addition, the mean for directors was 2.45, sd = .30, a similar mean to the mean for principals, 2.42, sd = .35 as seen in Table 20. In
addition, Table 21 indicates that there were no significances found in administrators’ responses in regard to urban/suburban and rural settings (F = .024, p = .877) with means statistically similar for urban/suburban and rural (2.46 and 2.41 respectively). The main effect for Setting (urban/suburban and rural) was found not significant (p = .877) with means statistically similar for urban/suburban and rural (2.45 and 2.41 respectively). The interaction effect for Administrator Type by Setting with curricular change as the dependent variable was not significant (F = .329, p = .567).

Table 20

Means and Standard Deviations for Curriculum Change Dimension – Administrator by Setting

<table>
<thead>
<tr>
<th>Setting Groups</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td>M</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Directors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban/Suburban</td>
<td>9</td>
<td>2.43</td>
<td>.28</td>
<td>40</td>
<td>2.47</td>
<td>.36</td>
<td>2.46</td>
</tr>
<tr>
<td>Rural</td>
<td>8</td>
<td>2.47</td>
<td>.35</td>
<td>67</td>
<td>2.40</td>
<td>.35</td>
<td>2.41</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>2.45</td>
<td>.30</td>
<td>107</td>
<td>2.42</td>
<td>.35</td>
<td>2.43</td>
</tr>
</tbody>
</table>

Table 21

ANOVA Results for Curriculum Change Dimension – Administrator by Setting

<table>
<thead>
<tr>
<th>Source</th>
<th>MS</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator Type</td>
<td>.004</td>
<td>1</td>
<td>.036</td>
<td>.850</td>
</tr>
<tr>
<td>Setting</td>
<td>.003</td>
<td>1</td>
<td>.024</td>
<td>.877</td>
</tr>
<tr>
<td>Administrator *Setting</td>
<td>.040</td>
<td>1</td>
<td>.329</td>
<td>.567</td>
</tr>
<tr>
<td>Error</td>
<td>.121</td>
<td>120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 7 shows the estimated marginal means of curriculum change with setting for each administrator type. The lowest mean is approximately 2.40 and the highest is
approximately 2.47, with a difference of .07. The scale for the y-axis on the graph exaggerates the difference and indicates that the lines intersect. However, the difference among means is quite small and does not show a significant interaction effect between administrators and setting. Therefore, there was no significant interaction effect between administrators by setting.

Figure 7

Plot of Means for Curriculum Change Dimension – Administrator by Setting

The significance level was set at .05 when calculating the ANOVA for administrator by region with curriculum dimension. As seen in Table 23, the Administrator Type (director and principal) was found to not have a significant main effect (p = .104). There was not a significant difference found in administrators’ responses with an F-ratio of 2.671. In addition, the mean for directors was 2.51, sd = .38,
a mean similar to principals, 2.41, sd = .35 as seen in Table 22. In addition, Table 23 indicates that there were no significances found in western, central, or eastern regions’ responses (F = .998, p = .371). The main effect for Region (western, central, eastern) was found not significant (p = .371) with means statistically similar for western, central, and eastern (2.40, 2.40, and 2.50 respectively). The interaction effect for Administrator Type by Setting with curriculum changes as the dependent variable was not significant (F = .109, p = .897).

Table 22

Means and Standard Deviations for Curriculum Changes Dimension – Administrator by Region

<table>
<thead>
<tr>
<th>Region Groups</th>
<th>Directors</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Principals</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Total</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>19</td>
<td>2.46</td>
<td>.33</td>
<td>65</td>
<td>2.38</td>
<td>.37</td>
<td>2.40</td>
<td>.36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central</td>
<td>8</td>
<td>2.53</td>
<td>.27</td>
<td>40</td>
<td>2.38</td>
<td>.26</td>
<td>2.40</td>
<td>.26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern</td>
<td>12</td>
<td>2.58</td>
<td>.51</td>
<td>39</td>
<td>2.47</td>
<td>.39</td>
<td>2.50</td>
<td>.42</td>
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<tr>
<td>Total</td>
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<td>.38</td>
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<td>.35</td>
<td>2.43</td>
<td>.36</td>
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</tbody>
</table>

Table 23

ANOVA Results for Curriculum Change Dimension – Administrator by Region

<table>
<thead>
<tr>
<th>Source</th>
<th>MS</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator Type</td>
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<td>1</td>
<td>2.671</td>
<td>.104</td>
</tr>
<tr>
<td>Region</td>
<td>.128</td>
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<td>.998</td>
<td>.371</td>
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<tr>
<td>Administrator *Region</td>
<td>.014</td>
<td>2</td>
<td>.109</td>
<td>.897</td>
</tr>
<tr>
<td>Error</td>
<td>.128</td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>182</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 8 shows the estimated marginal means of curriculum changes with region for each administrator type. The mean differences are small with the lowest mean
approximately 2.38 and the highest mean being approximately 2.57, with a difference of 
.19. Therefore, there was no significant interaction effect between administrators by 
region.

Figure 8

Plot of Means for Curriculum Dimension – Administrator by Region

![Plot of Means for Curriculum Dimension – Administrator by Region](image)
Chapter V

Discussion

This study was about researching the perceptions of Pennsylvania administrators of shared-time career and technical schools and high schools regarding what the impact of No Child Left Behind (NCLB) has had on career and technical education. With federal laws such as NCLB Act of 2001 and Carl D. Perkins Vocational and Technical Education Act of 2006, education and specifically career and technical education (CTE) has gone through many changes. Few studies were found on this issue. However, one study by Chadd and Drage (2006) was similar to this researcher’s study. Their study focused on Illinois high school principals and CTE teachers regarding the impact of NCLB on career and technical education. As some of their research was similar to this study, permission was granted by Chadd and Drage to modify their survey for use in this study.

The previous chapters included the introduction, research questions, literature review, methodology, and results of the study. This chapter will discuss the findings of the results, limitations of the study, implications of findings, recommendations for future research, and conclusion.

Findings of Results

With no mention of career and technical education in NCLB legislation (Chadd & Drage, 2006), many educators may not realize the role that CTE could have in addressing the goals of NCLB. Furthermore, Chadd and Drage (2006) suggest that since CTE is not mentioned in the legislation, lawmakers and educators may not understand how CTE can contribute to achieving the goals of NCLB. The first research question examined in this study was the perceptions of Pennsylvania secondary administrators regarding the role of
CTE as affected by NCLB. Research question 1 asked “How does No Child Left Behind affect career and technical education’s role in helping schools meet the goals of No Child Left Behind as perceived by high school and career and technical education administrators in three settings and three regions” The hypothesis was “There are differences in perceptions by administrators of high school and career and technical education administrators in three settings and three regions regarding CTEs role in helping schools meet the goals of No Child Left Behind.” The survey questions for this dimension (role) were modified from the Chadd and Drage survey (2006).

In Chapter IV, significant differences were found with the independent variable, administrator type with two of the three dependant variables, role and image dimensions. In examining the first dependent variable, role dimension, these significant findings indicate that directors and principals perceive the role of career and technical education differently regarding CTE meeting the goals of NCLB. The chasm of viewpoints is seen with item 1 (“CTE programs offered at your CTE school help to prepare students to take the state assessment for reading.”) where 95 percent of directors and 28.4 percent of principals agreed or strongly agreed.

The divergent responses by administrators may be attributed to high school principals having a lack of knowledge regarding the role and responsibility that career and technical education has as it relates to state assessments. For example, career and technical schools must report to the Bureau of Career and Technical Education (BCTE) of the Pennsylvania Department of Education, the math and reading PSSA results along with technical skills assessment results. Another result that career and technical schools must report to BCTE is its graduation rate as well as placement rate (working,
postsecondary enrollment, or military). BCTE assigned this role and responsibility to career and technical schools and therefore, CTE has a stake in attaining these goals. However, it is likely that high school principals are uninformed of CTEs responsibilities and therefore resulted in extremely different survey responses contrasting with the directors’ responses. The significant differences in survey results found between administrators (director and principal) support this assumption regarding CTEs role in meeting the goals of No Child Left Behind.

In addition, high school principals may be unaware that career and technical schools are an unsuspecting resource in helping meet the goals of NCLB. This could be a lack of public relations and education on the part of career and technical education. CTE administrators as well as district superintendents need to make principals aware of the multitude of responsibilities that coincide, overlap, and align with high school requirements and NCLB goals. Performance measures such as PSSA math and reading results for which CTE is also accountable and adding rigor to the CTE curriculum such as identifying reading and math anchors in each program are examples of information needing to be presented to principals. These are also goals common to high schools and should be shared.

CTE directors and high school principals should be allies in tackling the goals of NCLB. Each entity should work on the goals from their perspective as well as together, making a more comprehensive team approach. For example, contextual learning is omnipresent in career and technical education. Contextual learning is an approach that has been found to keep students interested in learning as well as keeping them motivated to stay in school with improved attendance (Daggett, 2003), and has shown a positive
effect on graduation rates (Bishop & Mane, 2003). For example, pairing a CTE teacher
with a math teacher could yield contextual teaching strategies for the math teacher.
Likewise, high school teachers are familiar with reading and math anchors. The high
school staff could work with CTE staff in identifying reading and math anchors in the
CTE curriculum. Focusing on commonalities as well as pairing division of strengths and
expertise, need to be shared. The goals are the same. Why not work together to achieve
them?

In examining the role dimension survey responses found with settings or regions,
there were no significant differences found. Likewise, there were no significant
differences found with administrator and either setting or region. This indicates that
despite the setting or region, neither has an effect on administrators’ perceptions
regarding CTEs role in helping schools meet the goals of NCLB. The hypothesis minus
setting (rural, suburban, urban) is supported by the results.

Image has been an ongoing obstacle for career and technical education. The
second research question examined how NCLB affects the image of CTE. Research
question 2 states “How does No Child Left Behind affect the image of career and
technical education as perceived by high school and career and technical education
administrators in three settings and three regions?” The hypothesis was “There are
differences in perceptions by administrators of high school and career and technical
education administrators in three settings and three regions regarding the effects of
NCLB as they relate to CTEs image.” The survey questions for this dimension were
modified from the Chadd and Drage survey (2006).

The results regarding the image dimension as shown in Chapter IV, were found to
be significant with administrative type. These findings indicate that directors and
principals perceive NCLB affecting the image of career and technical education
differently. Since high schools and career and technical schools have such separate
identities and have worked basically in isolation, perhaps each group feels lack of
connection or bonding to the other group. This group identity as described in the social
identity theory observes that groups have powerful influences over its members (Korte,
2007). It is plausible that this is why more collaboration between the two groups does not
occur. In addition, conceivably principals and high school staffs may not be cognizant of
the fact that CTE has added more rigor to their programs and that CTE teachers are being
trained to teach differently by incorporating more academics. It is possible and quite
likely that high school staff is just unfamiliar with CTE curriculum.

In examining the image dimension responses found with settings or regions, there
were no significant differences. Likewise, there were no significant differences found
with administrator by either setting or region. This indicates that despite the setting or
region, neither has an effect on administrators’ perceptions regarding the effects of
NCLB as they relate to CTEs image. The hypothesis minus setting (rural, suburban,
urban) is supported by the results.

The third and last research question was “How does No Child Left Behind affect
curricular changes as perceived by high school and career and technical education
administrators in three settings and three regions?” The hypothesis was “There are
differences in perceptions by administrators of high school and career and technical
education in three settings and three regions regarding the effects of NCLB on curriculum
offerings.” The hypothesis was not supported as no relationship was found. Furthermore,
there was low consistency found among inter-item correlations as well as poor internal consistency. Perhaps the reason for these results is that this researcher developed these questions based on her experience and observations of curriculum changes in her local area. In addition, these survey questions for this dimension were not field tested. Even though it has been noted elsewhere that “curricula may be getting ‘left behind’” with the increased emphasis on core academics (Fletcher, 2006, 162), it was not found significant in this study.

**Limitations of Study**

This study of the effects of No Child Left Behind with career and technical education as perceived by directors and high school principals had several limitations. First of all, there were some limitations with internal validity. The two sample sizes varied greatly between shared-time CTE directors and high school principals. This was expected as there are many more high school principals as compared to directors. In this study, 40 out of 64 directors and 145 out of 489 principals responded to the survey. In addition, of those who completed the survey, many did not respond to the additional independent variable setting (suburban, urban, and rural), therefore, suburban and urban were combined to obtain a larger sample. However, irregardless, the result for setting was found not to be a significant finding.

Another internal validity design limitation was the distribution of surveys. Since several high schools sent students to more than one shared-time career and technical school, those principals were mailed the respective number of surveys to complete on all of their career and technical schools. However, this researcher did not make it clear in the directions of this intent. In addition, this researcher did not consider sending the number
of surveys equal to the number of sending high schools to the shared-time career and
technical schools. Therefore, career and technical schools only completed one survey
even though the majority of CTE schools had many sending high schools. Since none of
the surveys were labeled and were without reference, it is conceivable that the CTE
directors generalized their survey responses since many have numerous sending high
schools.

Regarding measurement, there were some additional issues. There were numerous
blanks or missing data on the completed Likert surveys. Some administrators noted that
they could not answer certain items either because they were indecisive between answers
or they were unfamiliar with the question. This may have been resolved if “Do Not
Know” was given as a choice. Perhaps with that choice, more insight would be acquired.
Another limitation was the third dimension, curriculum changes, which was found to
have low internal consistency and low paired correlations. This dimension would need to
be eliminated or field tested and revised if used.

Implications of Findings
Many forces come into play that influence educational outcomes. From historical
legislation such as the Smith-Hughes Act to Carl D. Perkins Act and No Child Left
Behind, these laws shape educational structures such as tracking, result in educational
reform and perhaps influence peoples’ beliefs such as stigmas. Although career and
technical education was not mentioned in NCLB, this law still encompasses all students.
Thus, career and technical education must incorporate these changes to address NCLB
goals. Overlapping with NCLB goals, Perkins has required CTE to measure such
indicators as PSSA math and reading results as well as graduation rates. Career and
technical education has been focusing on adding more rigor to the CTE programs,
incorporating math and reading anchors, and providing in-service training to CTE
teachers on how to add rigor to their programs.

This study indicated that directors and principals had significant differences when
responding to how NCLB impacts the role and image of career and technical education.
These differences could be the result of several factors. One possibility for the differences
is that the high school staff may be unaware of the required responsibilities of CTE, many
of which overlap with high school responsibilities. Improving math and reading PSSA
results and increased graduation rates are examples of overlapping responsibilities for
both entities.

An obvious solution is to inform and educate high school staff regarding related
responsibilities that ultimately address the goals of NCLB. Bringing two entities together
in trainings and in-services to reach the same goals would only strengthen the likelihood
of reaching them. However, since both entities have historically worked in isolation,
perhaps there is some uneasiness and lack of trust between the two. The social identity
theory describes a sense of belonging or social identity (Tajfel & Turner, 2004) and
identification with a group (Korte, 2007) having a powerful influence on its members.
Group bias can exist from one group to another (Tajfel & Turner, 2004). This may create
polarization from a group (Hogg and Reid, 2006) and a feeling of mistrust (Neuberg,
Smith, and Asher, 2000). Perhaps this is a reason the two entities do not join forces in
tackling similar goals. Or perhaps these views go even deeper and may be connected to
our distant past where perpetuating stigmas are held on to and there is no interest in
career and technical education. One way to inform one another is to have in-services
together – to educate, collaborate, and change any preexisting perceptions. Nevertheless, administrative leaders including CTE directors, district superintendents, and high school principals need to assume responsibility and join forces. Furthermore, the Pennsylvania Department of Education should lead by example by recognizing the important role CTE has in meeting NCLB goals, in addition to reinforcing the importance of the two factions working together.

One way to bridge a communication gap is to provide professional development. Professional development focusing on joint goals for academic and CTE teachers could be provided. Garet, Porter, Desimone, Birman, and Yoon (2001) found in their longitudinal study on professional development that enhanced knowledge and skills are likely to change teaching practices. In addition, the more connected the professional development is to the teachers’ professional experiences such as standard alignment and professional communication, the more likely the teachers will change their practice (Garet et al.). Furthermore, Desimone, Porter, Garet, Yoon, and Birman, (2002) found that professional development is effective when teachers are engaged in active learning such as interacting with their colleagues on a regular basis regarding student learning.

This would be ideal but it might be difficult when joining CTE and academic teachers on a regular basis since they work in separate buildings and sometimes in different counties. However, with technology, communication can conveniently occur via computers.

One of NCLBs goals is to maintain qualified teachers. Although CTE teachers are not mentioned in the legislation, perhaps making an impact to CTEs image would be to ensure that CTE teachers are highly qualified (Fletcher, 2006) as are the academic teachers under NCLB. The Southern Regional Education Board is collaborating with the
National Research Center for Career and Technical Education in creating a CTE teacher induction model. Sass (2011) suggests that by doing so advances a new image of CTE. This may offer the credibility that CTE teachers and CTE deserve.

**Recommendations for Future Research**

This study added to limited existing research on the effects of No Child Left Behind and career and technical education. Although both NCLB and Perkins are in the process of being reauthorized, this study could serve as a source for future studies on this topic. Additional research could develop from this study. One such study could be if adding rigor along with adding reading and math anchors to CTE programs makes a difference in assessment results. In addition, with these changes to the CTE curriculum, a study regarding the delivery of this changed curriculum by which the CTE instructors are surveyed might prove beneficial. Conducting a similar research study with a comprehensive career and technical school might prove worthy. Also, it might be worthwhile to survey the administrators (directors and principals) again but in a qualitative study to gain understanding and uncover their beliefs regarding the role and image of CTE. Another qualitative study may be beneficial to study a CTE school with its sending high schools matching responses regarding those individual items and dimensions. Since this study was specific to career and technical education directors and high school principals in Pennsylvania, similar studies could be done in other states. A case study could be done on the effects that a CTE school and a sending high school collaboration has on student assessment results. In addition, given that setting and region were found not to be significant, perhaps including the administrator’s years of experience would yield more information. Furthermore, a study with both CTE and
district boards may prove worthy. Since the CTE board members also serve on the
districts’ board of education, a study may be informative regarding their perceptions.

Conclusion

The significant findings of career and technical education directors’ and high
school principals’ perceptions of role and image as affected by No Child Left Behind
should inform both entities. There are several actions that directors and principals could
take. First of all, CTE directors need to inform and educate high school principals and
staffs of the positive role CTE can offer in helping meet the goals of NCLB. Chadd and
Drage (2006) suggest that high school principals’ perceptions of CTEs ability to
contribute to the goals of NCLB are key to the future of CTE programs. Thus it is vital
that leadership not only in career and technical education but also in the school districts
set the tone and direction in collaborating and recognizing the role CTE can contribute in
meeting NCLB goals. Most importantly, PDE must reinforce the significance of CTE and
school districts and high schools will follow suit as a result. Furthermore, career and
technical education needs to continuously add rigor which adds depth to their programs.
However, Cavanaugh (2004) stated that adding rigor to the CTE curriculum did not keep
the CTE students from falling behind on test results. Nevertheless, rigor in itself may
improve the image of CTE by gaining respect for using “hands and mind” with a bonus to
hopefully improve CTE students’ achievement success. The effective and positive
contributions that CTE makes toward the NCLB goals can only positively affect the
image of career and technical education.

Legislative forces such as No Child Left Behind and a perpetuating stigma may
have contributed to the significant differences found in this study regarding Pennsylvania
directors’ and principals’ perceptions of the role and image of CTE as affected by NCLB.

Directors and principals need to join forces for the common goals of NCLB. By doing so, both entities must change their previous mode of operation. The common goals of NCLB along with shared students should and must link these two entities together to form a more powerful force of achievement than if done alone.

Amid school reform ignited by NCLB and overcoming embedded stigmas, CTE must establish itself as having an integral role in school reform. With the many roles and responsibilities CTE has, coupled with the enormous expectation of preparing students for 21st century careers and beyond, CTE has its work cut out. Being in the crossroads of change, career and technical education may need to redefine its role, re-examine its image, and respond to curriculum changes. If career and technical education does nothing, then it may reach a dead end.
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Appendix A

Permission from Drs. Chadd and Drage
Jan,

Thank you for your interest in our study. You are more than welcome to utilize the instrument that was developed for the study we conducted. I have attached the instrument that was sent to administrators. We also sent the instrument to teachers. If you would like a copy of that instrument too, please let me know.

Good luck with your doctoral degree!

Julie

Julie Chadd, Ph.D.
Assistant Professor and
Coordinator of CTE Program
Eastern Illinois University
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Charleston, IL 61920
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From: Jan Quailey [mailto:quaileyj@msn.com]
Sent: Sunday, February 22, 2009 3:34 PM
To: Chadd, Julie; Drage, Karen
Subject: NCLB: Implications for Career and Technical Education - request for information

Dear Ms. Chadd and Ms. Drage:

Your article/study, No Child Left Behind: Implications for Career and Technical Education was of great interest to me. I have worked in cte for over 20 years and am now a director of a secondary school in Pennsylvania. I came across your study while working on my doctorate and thought that I would like to do something similar in Pennsylvania.

In Pennsylvania, there are comprehensive cte schools and half-day cte schools (which is my school). The district high schools may offer some cte courses such as vo-ag, consumer and homemaking, and some business classes. When you mentioned "principal" in your article, I wasn't sure if it referred to the high school principal or principal in a cte school. With that in mind, I would be interested in looking at both administrators and their perceptions of the impact of NCLB. Is your survey available to replicate?

At your convenience, please send any particulars regarding your survey (such as fee, etc.). I am looking forward to hearing from you. Thank you.

Sincerely,

Jan Quailey
quaileyj@msn.com

2138 Smithtown Road
Morgantown, WV 26508 (I live in WV, but I work in PA)
Appendix B

Letter to Principals and Directors
January 23, 2012

2138 Smithtown Road
Morgantown, WV 26508

Dear Principal/Director:

My name is Janice Quailey and I have enclosed a survey that I am requesting that you complete and submit to me. The survey results will serve as the basis for my research in completion of my dissertation at Duquesne University. The overall purpose of the survey is to obtain administrators’ perceptions on the role, curricular changes, and image of career and technical education since No Child Left Behind has been implemented.

This study is important, as the results will serve to inform administrators of high schools and shared-time career and technical schools. Since students are shared between schools, it is hoped that the results will shed light on the effects NCLB. With the effects identified, it is anticipated that they may show common areas of need that can be addressed together.

The enclosed survey includes questions regarding the effects of No Child Left Behind legislation on career and technical education. It should take no longer than 15 minutes to answer. The survey has a total of 23 questions, beginning with three short answer questions requesting location, enrollment, and graduation requirements/number of cte programs. Following are three sections totaling 20 questions that are in the form of a likert scale ranging from Strongly Disagree to Strongly Agree. In addition, there is an area to provide additional comments after each section.

I know how valuable your time is and I do appreciate that you will take the time to complete this survey. By completing and submitting the survey, I hope you understand that you are consenting to participate in this research. If you have any questions, please call me at 304-276-5283 or email me. The study should be completed by April and if interested, results will be made available to you by emailing me at quaileyj@hotmail.com and writing NCLB Study Results in the subject line.

Please complete the enclosed survey and return in the stamped, addressed envelope by February 10, 2012. Thank you in advance for your assistance.

Sincerely,

Janice Quailey
Appendix C

High School Administrator Survey
**No Child Left Behind’s Impact on Career and Technical Education**

**Dear High School Administrator:**

Please respond to the following items regarding the impact of the No Child Left Behind Legislation on the Career and Technical Education school in your area. **Section I** contains 3 multiple choice and short answer responses. **Section II** consists of 20 Likert questions. It should take approximately 15 minutes to complete. Thank you in advance for completing this. CTE in this survey is for Career and Technical Education.

### SECTION I - YOUR SCHOOL INFORMATION:

1. **School’s Location**  (Circle response on Line a. and Line b.)
   - a. Western PA
   - b. Eastern PA
   - a. Central PA
   - b. Eastern PA
   - a. Urban
   - b. Suburban
   - a. Rural

2. **Enrollment**

   State the number of students enrolled per grade in your high school and the number of those students who attend career and technical school. (Check each grade that is eligible to attend career and technical school)

   **HIGH SCHOOL:**
   - a. Grade Total
   - c. Number attending CTE school in each grade
     - 9th
     - 10th
     - 11th
     - 12th
   - b. Total: _____ During the last 5 years has this Total: INCREASED, DECREASED, or NO CHANGE (circle one)
   - d. Total: _____ During the last 5 years has this Total: INCREASED, DECREASED, or NO CHANGE (circle one)

3. **Graduation Credit Requirements**

   a. List the number of credits required for graduation in each subject area.
      - English
      - Math
      - Science
      - Social Studies
      - Electives
      - Other Required Course/s (list):

   b. Total Number of Credits Required for Graduation: _____
   c. During the last 5 years has this Total: INCREASED, DECREASED, or NO CHANGE (circle one)
SECTION II – NCLB:
Select your views on the No Child Left Behind Legislation and Career and Technical Education (CTE) using the following Likert Scale. Section IIA addresses CTEs Role; Section IIB addresses CTEs Image; and Section IIC addresses Curricular Changes.

Circle your level of agreement with the following statements using the scale below. 
Strongly Disagree = SD  Disagree = D  Agree = A  Strongly Agree = SA

Additional comments may be added at the end of each section and/or at the end of the survey.

Section II A - CTEs Role
While completing this section, consider the effects of NCLB on CTEs ROLE as it relates to: state assessments; meeting high standards; attaining proficiency or better on state assessments; graduation rates; meeting NCLB goals; and incorporating reading and math anchors into the CTE programs.

1. CTE programs offered at your CTE school help to prepare students to take the state assessment for reading. (SD D A SA)

2. CTE programs offered at your CTE school help to prepare students to take the state assessment for math. (SD D A SA)

3. CTE programs can help your CTE school meet the goal of “all students will reach high standards, at a minimum of attaining proficiency or better in reading and mathematics.” (SD D A SA)

4. CTE programs can help your school meet the goal of “all students will graduate from high school.” (SD D A SA)

5. CTE programs are an important resource in helping your school meet the No Child Left Behind goals. (SD D A SA)

6. The Reading Anchors can easily be incorporated into many CTE programs offered at your CTE school. (SD D A SA)

7. The Math Anchors can easily be incorporated into many CTE programs offered at your CTE school. (SD D A SA)

Please provide any additional comments on CTEs role due to NCLB.
Section II B - CTEs Image

While completing this section, consider the effects of NCLB on CTEs IMAGE as it relates to: enrollment; impact on CTEs image; how CTE courses are taught; academic rigor in CTE programs; and collaboration of high school and CTE staff.

1. Enrollment in CTE programs has increased since No Child Left Behind was enacted (2002).

2. No Child Left Behind has had a positive impact on the image of CTE at your CTE school.

3. No Child Left Behind has had a positive impact on how CTE courses are taught at your CTE school.

4. More academic rigor is being added/has been added to CTE programs as a result of No Child Left Behind.

5. Collaboration of high school staff working together with CTE staff has increased as a result of No Child Left Behind.

Please provide any additional comments on CTEs image due to NCLB.

Section II C - Curricular Changes

While completing this section, consider the effects of NCLB on CURRICULAR CHANGES as it relates to: instructional time; remedial/tutoring opportunities; high school electives; graduation requirements; scheduling; academic course offerings; and more rigorous academic course enrollment.

1. Instructional time has been added to the high school day as a result of No Child Left Behind.

2. Remedial and/or tutoring opportunities have been added to the high school curriculum as a result of No Child Left Behind.

3. High school electives have been increased as a result of No Child Left Behind.

4. As a result of No Child Left Behind, instructional time spent at the CTE career and technical school has been increased.

5. Graduation requirements have been increased as a result of No Child Left Behind.

6. Students may enroll in both CTE school and college-bound courses at the high school without schedule conflicts.
7. As a result of No Child Left Behind, academic courses are offered multiple times a day for availability to CTE students.

8. CTE students are taking more rigorous academic courses as a result of No Child Left Behind.

Please provide any additional comments on curricular changes due to NCLB.

Thank you for taking the time to complete this survey.
If you would like a copy of the results, please e-mail quaileyj@hotmail.com with NCLB Study Results in the subject line.

Enclose the completed survey in the addressed, stamped envelope and mail by February 10, 2012.

Thank you

Jan

This survey has been modified with permission from Dr. Chadd and Dr. Drage from Eastern Illinois University.
Appendix D

CTE Administrator Survey
SURVEY

No Child Left Behind’s Impact on Career and Technical Education

Dear CTE Administrator:

Please respond to the following items regarding the impact of the No Child Left Behind Legislation on the Career and Technical Education on your school. Section I contains 3 multiple choice and short answer responses. Section II consists of 20 Likert questions. It should take approximately 15 minutes to complete. Thank you in advance for completing this.

SECTION I – YOUR SCHOOL INFORMATION:

1. School’s Location (Circle response on Line a. and Line b.)
   a. Western PA  Central PA  Eastern PA
   b. Urban  Suburban  Rural
   c. List the names of the sending high schools: ______________________________________

2. Enrollment
   a. State the number of students per grade who attend career and technical school. (Check each grade that is eligible to attend career and technical school)
   b. Number enrolled in your career and technical school for each grade:
      □ Grade 9  ______
      □ Grade 10  ______
      □ Grade 11  ______
      □ Grade 12  ______
      Total  ______
   c. During the last 5 years has this Enrollment Total:
      INCREASED, DECREASED, or NO CHANGE? (circle one)

3. Number of Programs
   a. How many career and technical education (CTE) programs does your CTE school offer? ______
   b. During the last 5 years has the number of CTE programs:
      INCREASED, DECREASED, or NO CHANGE? (circle one)
SECTION II – NCLB:
Select your views on the No Child Left Behind Legislation and Career and Technical Education using the following Likert Scale. Section IIA addresses CTEs Role; Section IIB addresses CTEs Image; and Section IIC addresses Curricular Changes.

Circle your level of agreement with the following statements using the scale below.
Strongly Disagree = SD  Disagree = D  Agree = A  Strongly Agree = SA

Additional comments may be added at the end of each section and/or at the end of the survey.

Section II A – CTEs Role
While completing this section, consider the effects of NCLB on $CTEs$ ROLE as it relates to: state assessments; meeting high standards; attaining proficiency or better on state assessments; graduation rates; meeting NCLB goals; and incorporating reading and math anchors into the CTE programs.

1. CTE programs offered at your CTE school help to prepare students to take the state assessment for reading
   
   SD  D
   A  SA

2. CTE programs offered at your CTE school help to prepare students to take the state assessment for math.

   SD  D
   A  SA

3. CTE programs can help your CTE school meet the goal of “all students will reach high standards, at a minimum of attaining proficiency or better in reading and mathematics.”

   SD  D
   A  SA

4. CTE programs can help your CTE school meet the goal of “all students will graduate from high school.”

   SD  D
   A  SA

5. CTE programs are an important resource in helping your CTE school meet the No Child Left Behind goals.

   SD  D
   A  SA

6. The Reading Anchors can easily be incorporated into many CTE programs offered at your CTE school.

   SD  D
   A  SA

7. The Math Anchors can easily be incorporated into many CTE programs offered at your CTE school.

   SD  D
   A  SA

Please provide any additional comments on CTEs role due to NCLB.
Section II B – CTEs Image

While completing this section, consider the effects of NCLB on **CTEs IMAGE** as it relates to: enrollment; impact on CTEs image; how CTE courses are taught; academic rigor in CTE programs; and collaboration of high school and CTE staff.

1. Enrollment in CTE programs has increased since No Child Left Behind was enacted (2002).  
2. No Child Left Behind has had a positive impact on the image of CTE at your CTE school.  
3. No Child Left Behind has had a positive impact on how CTE courses are taught at your CTE school.  
4. More academic rigor is being added/has been added to CTE programs as a result of No Child Left Behind.  
5. Collaboration of high school staff working together with CTE staff has increased because of No Child Left Behind.

Please provide any additional comments on CTEs image due to NCLB.

Section II C – Curricular Changes

While completing this section, consider the effects of NCLB on **CURRICULAR CHANGES** as it relates to: instructional time; remedial/tutoring opportunities; high school electives; graduation requirements; scheduling; academic course offerings; and more rigorous academic course enrollment.

1. Instructional time has been added to some/all of your sending high schools’ day as a result of No Child Left Behind.  
2. Remedial and/or tutoring opportunities have been added to some/all of your sending high schools’ curriculum as a result of No Child Left Behind.  
3. The number of electives at some/all of your sending high schools’ has been increased as a result of No Child Left Behind.  
4. As a result of No Child Left Behind, instructional time spent at the CTE career and technical school has been increased.  
5. Graduation requirements at some/all of your sending high schools have been increased as a result of No Child Left Behind.
6. Students may enroll in both CTE school and college-bound courses at the high school without schedule conflicts.

7. As a result of No Child Left Behind, academic courses are offered multiple times a day for availability to some/all CTE students at their high school.

8. CTE students are taking more rigorous academic courses as a result of No Child Left Behind.

Please provide any additional comments on curricular changes due to NCLB.

Thank you for taking the time to complete this survey. If you would like a copy of the results, please e-mail quaileyj@hotmail.com with Survey Results in the subject line.

Thank you
Jan

This survey has been modified with permission from Dr. Chadd and Dr. Drage from Eastern Illinois University.