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The University of Southern Mississippi

IMPLICATIONS OF THE NO CHILD LEFT BEHIND LEGISLATION
ON CAREER AND TECHNICAL EDUCATION

by

Thomas Kyle Wallace

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

August 2012

ABSTRACT

IMPLICATIONS OF THE NO CHILD LEFT BEHIND LEGISLATION ON CAREER AND TECHNICAL EDUCATION

by Thomas Kyle Wallace

August 2012

The passage of No Child Left Behind (NCLB) legislation in 2001 brought about a multitude of education reform policies for education institutions that made the future of Career and Technical Education's (CTE) role in secondary educations unclear. These mandates forced educational leaders to emphasize student enrollment in tracks that prepare them for post-secondary educational opportunities that require a stronger background in academic courses. The standards-based mandates required by NCLB legislation make promotion of CTE courses more difficult because these courses are primarily elective courses and have caused educational agencies to look at what CTE programs provide in terms of meeting these requirements.

The data presented in this research provides an in-depth look at the impact that NCLB had on CTE in Mississippi and how its students fared on state subject area tests (biology, algebra, and language arts) compared to students who did not enroll in CTE programs of study. A trend analysis of CTE student enrollment over the decade of NCLB implementation and adaptation for the state of Mississippi gives insight to the impact that a more specific emphasis on academics had on CTE enrollment. Also, a local school district's biology subject area test score data is used to compare students enrolled in an agriculture program with students who were not enrolled to determine if a difference existed between student performances. Finally, a focus group dialogue with former

students of CTE completers and noncompleters in the same district is discussed to determine the effect that participation or nonparticipation had on student postsecondary or career choices.

Understanding the influence that an increased focus on academic courses had on CTE programs will enable school leaders and district planners to become better prepared as redesign models and career pathways begin to transform public education in the future. Educational organizations that use this research to embrace and promote CTE should see reductions in class size, dropout rates, and increased attendance, not to mention the performance-driven curriculum that reaches across CTE programs and conceptualizes the goals of CTE and academic programs alike.

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Approved:

Director

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CHAPTER I

INTRODUCTION TO THE STUDY

Background of the Problem

From the infancy of public education, a continuous evolvement of educational goals and the characteristics that described an *educated* person has continued to be refined. Since the inception of No Child Left Behind (NCLB) in 2001, emphasis has focused primarily on preparing students academically for college. While no mention of Career and Technical Education (CTE) in NCLB exists, the impact of NCLB legislation stimulated discussion and prompted investigation of its effects. The NCLB legislation increased academic standards for all students, “requiring stronger school accountability, more stringent qualifications for teachers, and an emphasis on programs and strategies with demonstrated effectiveness” (Reeves, 2003, p. 2). Current curricula in the United States, with standards-based mandates required by NCLB legislation, made promotion of CTE courses more difficult because these courses were primarily elective courses.

The emphasis for students was to enroll in courses that prepared them for post-secondary educational opportunities that required a stronger background in academic courses. However, industry is having ever-increasing difficulty in hiring workers who possess the skills required to fill available jobs. “Nearly two-thirds of employers—62 percent—said that they have difficulty in finding qualified applicants to fill vacancies. The skill shortage is having a detrimental effect on business operations” (Schoeff, 2009, p. 1). Career and Technical Education fills the skill gap between school and work. It places emphasis on work ethics, self-motivation, personal accountability, punctuality, time management, and professionalism—all qualities that drive American capitalism.

Developing educational systems that prepare students for college and careers as they exit secondary school confirm CTE's worthiness in producing human capital.

History of Vocational Education

As with many public school educational initiatives, vocational education or Career and Technical Education (CTE), as it is called today, has continued to evolve over the last century. The influences that have created this evolution are deeply tied to economic and societal concerns often associated with national educational policy. CTE falls under many definitions, primarily depending on the application and how or where funding mechanisms arise. In years past, CTE was recognized as a skill driven technically-applied curriculum with student leadership organizations that provided students with opportunities to demonstrate proficiency in trained areas. Not until recent legislative reform applications, have academic components been incorporated and tracked for students enrolled in these skilled areas. CTE was born out of the Smith-Hughes Act of 1917 and has advanced into a modern comprehensive curriculum derived from such legislative action as the Carl D. Perkins Career and Technical Education Improvement Act of 2006.

Smith Hughes Act of 1917

Funding of Career and Technical Education in the United States began when The United States Congress passed the Smith Hughes Act of 1917. The act mandated states to develop and promote programs of vocational education that, at the time, were not adequately provided in state education systems. The act provided for vocational education in agriculture, trade and industries, and homemaking. The Vocational Education Amendments of 1968 and 1976 authorized federal grants to states to maintain

and improve existing vocational programs, develop new vocational programs, and carry out programs to overcome sex discrimination in order to provide equal opportunities for both men and women.

Carl D. Perkins Vocational Education Act of 1984

The Carl D. Perkins Vocational Education Act of 1984 provided federal support of vocational education for a five-year period. This act emphasized funding and aimed instruction at providing marketable skills for special populations including physically challenged, disadvantaged, and single parents.

Carl D. Perkins Vocational Education Act of 1990

The Perkins Act of 1990 initiated Tech Prep; the most noted revision to this version was the coordination of CTE curriculums from the secondary to postsecondary level. The concept of nontraditional training (e.g., training women to be mechanics and men to be nurses) was also introduced with this revision to remove inequalities in what were traditionally gender-based programs of study. The law also mandated that states begin tracking performance-based standards such as program completion and job placement for students enrolled in CTE programs of study. This required districts to track students from the time they enrolled in a CTE program until they graduated high school. Districts had to document whether a student enrolled in a postsecondary institution or went into the work force or military.

Carl D. Perkins Vocational Educational Act of 1998

The reauthorization of the Perkins Act in 1998 changed the performance standards of the previous legislation with increased focus on accountability. The new standards required states to report data relative to student attainment, credential

attainment, placement and retention, and students in nontraditional programs of study.

States could be placed on probationary status if combinations of indicators were not met, which would subsequently deny them federal funding.

Carl D. Perkins Career and Technical Education Improvement Act of 2006

Under the 2006 edition, the name was changed to the Carl D. Perkins Career and Technical Education Improvement Act. *Career and Technical* was added in order to begin to change the stigma that surrounded vocational education. “Vocational Education resonates with many as being representative of vocational education in the traditional sense and not academically focused or resulting in a college degree or high status occupations the way career and technical education can be perceived” (Browder, 2007, p. 1). This legislation also united NCLB standards and Perkins accountability. CTE programs began to be held accountable for academic attainment, proficiency in core academic courses, and graduation rates of students enrolled in CTE programs at the secondary level.

Development of the No Child Left Behind Act

Legislation that created major changes in academic education came about much later than CTE in the twentieth century; although the idea of a public education had been in place since the common school movement in the early 1800, there was no formal collaborative effort that framed what academia would look like on the secondary level. The Elementary and Secondary Education Act of 1965 provided the first federal structure and equalization of funding for poor school districts along with increased accountability standards. Several variations of ESEA were developed under numerous presidential administrations since 1965, but the most far-reaching effort issued from the federal level

occurred with the No Child Left Behind Act of 2001. The latest version of ESEA was reauthorized during in 2010 during the Obama administration. The influence and focus of each piece of legislation continued to shape what public education has evolved into as practitioners strive to maintain a transparent view of the educational system in the United States.

Elementary and Secondary Education Act of 1965

Considered by many as the largest single federal education act, the ESEA was a product of President Lyndon Johnson's administration in 1965. His focus on *The War on Poverty* created an \$11 billion source of federal funding for K-12 education in the United States. This funding through various mechanisms has been sending federal monies to local school districts for more than four decades. The original funds were used to focus on and assist poor schools, communities, and children from lower socioeconomic households. ESEA emphasized equal access to education and was the first federal legislation to establish high standards and accountability for academic education.

The No Child Left Behind Act of 2001

“On January 8, 2002, Congress amended ESEA and reauthorized it as the No Child Left Behind Act of 2001” (Trahan, 2002, p. 1). NCLB redefined the federal role of K-12 education and was intended to help close the achievement gap. With NCLB, “a new era began where accountability, local control, parental involvement, and funding what works became the cornerstones of the nation's education system. If our children aren't learning, the law requires that we find out why” (Jorgensen & Hoffman, 2003, p. 6). “The NCLB policy purports to raise standards by testing, holding all students and

schools accountable, increasing public awareness of schools' progress, and ensuring all teachers are highly qualified" (Mantel, 2005, p. 3).

The principle goal of the NCLB Act of 2001 was to hold the nation responsible for educating all students. It brought to light the disparity in student achievement and attainment gaps and then shaped a sense of necessity for highly qualified teachers in all classrooms. The law required that highly qualified teachers teach children. According to the Center on Educational Policy (2006), "NCLB's requirement that districts and schools be responsible for improving not only the academic achievement of students as a whole but also the achievement of each subgroup of students is directing additional attention to traditionally underperforming groups of students" (p. 2). Schools that did not demonstrate yearly progress in mathematics, reading, and science over two years were required to develop corrective action plans.

2010 Reauthorization of the Elementary and Secondary Education Act

Introducing *A Blueprint for Reform the Reauthorization of the Elementary and Secondary Education Act* (U.S. Department of Education, 2010, p. 1) President Barack Obama said in an opening letter, "today, more than ever, a world-class education is a prerequisite for success." Obama continued, "together, we must achieve a new goal, that by 2020, the United States will once again lead the world in college completion. We must raise the expectations for our students, for our schools, and for ourselves" (p. 1). The Obama administration's blueprint focused on state accountability systems that raised the bar for all students graduating from high school so that they were ready to begin successful careers or excel in postsecondary education. Impoverished districts that showed improvements in helping more students acquire the skill sets necessary to

become college and career ready would be rewarded and recognized through the new accountability system of the 2010 legislation.

In response to the American Recovery and Reinvestment Act of 2009, the blueprint for the 2010 ESEA reauthorization was built around momentous transformations that caused tremendous changes for secondary education in the future. The four main areas outlined by the blueprint included the following:

1. Improving teacher and principal effectiveness to ensure that every classroom has a great teacher and every school has a great leader.
2. Providing information to families to help them evaluate and improve their children's schools, and to educators to help them improve their students' learning.
3. Implementing college- and career-ready standards and developing improved assessments aligned with those standards.
4. Improving student learning and achievement in America's lowest-performing schools by providing intensive support and effective interventions. (U.S. Department of Education, 2010 p. 3)

Through the reauthorization of ESEA, Congress has tried to redefine its role in the education process by moving from a compliance mandate to one that lends itself to allowing state and local modernism to infuse a system of success, while continuing to build relationships with stakeholders. As with the NCLB legislation, the complete impact of the ESEA Reauthorization would not be felt until several years after its implementation.

Secondary CTE Students Since Implementation of NCLB

Characteristics that once identified what typical CTE students exhibited have continued to evolve, creating a diverse and robust clientele from the public school setting. Secondary CTE students have changed as each reauthorization of ESEA requires implementation of the latest practices and methodologies for student engagement. Other influences of NCLB that affect who CTE students are include student enrollment and student achievement requirements at the local, state, and federal levels. Of all recent legislation, implementation of NCLB has had the greatest impact on student populations including how those students participated in secondary education.

Who are CTE Students?

For decades, CTE programs have been the educational track for lower-achieving students, and these programs typically contained a higher proportion of underprivileged students. In a study released in the fall of 2007, Gaunt and Palmer reported that “research revealed that the typical CTE student performs somewhat lower academically, lives less often with both parents while more commonly residing without either parent present, and is more economically disadvantaged” (p. 6). Another influence typical of NCLB legislation was associated with students who have special needs. “CTE participants had less advantaged educational backgrounds than non participants. Among the public high school class of 2005, a greater percentage of occupational concentrators took lower levels of 9th grade mathematics courses compared to non concentrators (15 vs. 11 percent)” (Levesque et al., 2008, p. 6). Due to NCLB legislation, school districts have been required to reduce the number of students classified with cognitive or behavioral

deficiencies by including them in regular classroom settings without modifications to instruction or testing in order to meet the required mandates. Kymes (2004) reported,

In order to satisfy NCLB, special needs students would be required to take remedial courses until they could demonstrate proficiency. The implications of this for CTE centers are clear. A substantial number of CTE secondary students are special needs students. Remedial courses for these students would preclude their participation in CTE programs. (p. 3)

However, in 2005 researchers found that nearly 92% of high school graduates took at least one occupational course and that approximately 21% completed an occupational concentration, earning three or more credits. Male students typically have a greater interest and higher placement in CTE courses. “Specifically, among public high school graduates in 2005, the majority of occupational concentrators were male (59%), while the majority of non-concentrators were female (54%)” (Levesque et al., 2008, p. 6). During the 1990s and through the early 2000s, a shift in the characterization of students with a CTE emphasis was discovered at the high school level. According to Levesque et al. (2008):

A larger percentage of the 2005 public high school graduates who took high level 9th grade mathematics courses completed an occupational concentration compared with their 1990 peers (an increase of 8 percent points), while a smaller percentage of 2005 graduates who took low level 9th grade mathematics courses completed an occupational concentration compared with their 1990 peers (a decrease of 9 percentage points). (p. 7)

Was this shift due to increased academic standards mandated by NCLB, or has the educational system blocked out certain populations of students from participating in CTE programs by requiring students to remediate in core subjects to demonstrate proficiency? Gaona (2004) explained, “student success, rather than simple placement, will determine a student’s educational path” (p. 1). Even with the increasing effort of practitioners and advocates for CTE to increase academic content and appeal to a wide-ranging mix of student ability, tremendous inequalities still remained between CTE and non-CTE students alike.

Student Enrollment in CTE Courses

CTE serves many functions for secondary school students: it helps students to remain engaged in school, explore profession options, gain work-related skills, and enhance academic studies in order to prepare for post-secondary education. In recent years, the trend for students was to use CTE courses as an exploration across program areas, rather than to concentrate in a particular program area. “Data suggest fewer students may now view developing skills in a specific program area as their main objective for enrolling in vocational education. Focus group discussions with students in vocational courses suggest a variety of reasons for their participation” (Silverberg, Warner, Fong, & Goodwin, 2004, p. 28). Several factors played important roles in the transition of student viewpoints toward enrolling in CTE courses. Schools offered fewer sequences of connected courses. Programs became more broad based and did not offer concentrated rigor. Another perceived factor was that students should be developing a foundation for future career aspirations by combining functional skills from conceivably different areas of study.

With the implementation of NCLB, the CTE community anticipated a drop in enrollment numbers within CTE programs. The directives of NCLB required districts to ensure that all students have a score of proficient or above and meet adequate yearly progress (AYP) standards. “One hypothesis was that schools would increasingly focus students in the early high school grades on academic courses and preparation for the assessments, potentially crowding out vocational courses until later in the high school years” (Silverberg et al., 2004, p. 31). However, the *Career and Technical Education in the United States: 1990 to 2005 Statistical Analysis Report* (Levesque et al., 2008) confirmed:

Between 1990 and 2005, no measurable changes were detected in the overall occupational course taking patterns of public high school graduates. About 91-92 percent of students in both graduating classes took at least some occupational coursework during high school, and graduates from both classes earned on average 2.9-3.0 occupational credits. (p. 26)

However, in light of the stable student participation, the share of credits that students received through CTE has become increasingly smaller with approximately one fifth of students concentrating in an occupational area. The number of required academic credits increased in 2000, from 14.3 to 18.8 credits, resulting in a decrease of 16.2 % in the total number of credits earned through CTE courses. The National Assessment of Vocational Education: Final Report to Congress (Silverberg et al., 2004) reported “a 2.8 percent decline in the number of students who are occupational concentrators” (p. 25). With a limited amount of data and even less current research focused on student participation in CTE courses, shifts in student enrollment were not completely

representative in relation to the prominence school districts placed on preparation for academic assessments in recent years. “It has been noted that the repercussions of this legislation to career and technical education, and agricultural education as a career and technical education area are yet to be investigated” (Ruhland & Bremer, 2003, p. 2).

Career and Technical Education Student Achievement

The reputation that surrounded CTE as a less demanding track for secondary students has not been encouraging through the midst of recent school reform initiatives. Typically, public perception considered that, when students participated in CTE courses that lacked or contained academic rigor, their academic success did not improve. While research is varied, gaps still remained between students who participated in CTE programs and those who do not. As more academic emphasis was being incorporated into CTE courses, the reputation of less demanding was shifting in a positive direction. “The current major focus of CTE is to require all students to participate in a combination of CTE and academic courses and to focus on broad career clusters instead of specialized jobs in CTE courses” (Fletcher, 2006, p. 5). The impact that CTE has created in closing the achievement gap between occupational concentrators and students who received limited or no vocational education has significantly narrowed, in the National Assessment of Vocational Education (Silverberg et al., 2004), the 12th grade National Assessment of Educational Progress showed that:

An increase of 8 scale points for reading (1994 compared to 1998) and an increase of 11 scale points for math (1990 compared to 2000) for students that were considered occupational concentrators. Students with limited or no CTE training improved their scores by only 4 scale points in reading and failed to show

an increase in math. Comparing students from 1990 to 2005 there was a 28 percent increase between students meeting core academic standards and completing college preparatory courses. (p. 22)

Occupational concentrators continued to making increased gains in terms of student achievement. Similar research reported results concerning CTE student achievement compared to non-completer achievement on core academic standards. In the *Career and Technical Education in the United States: 1990-2005 Statistical Analysis Report*, Levesque et al. (2008) reported that:

In 1990, a lower percentage of public high school graduates who accumulated 4.00 or more occupational credits in high school than their classmates who took no occupational coursework met the New Basic core academic standards (18 vs. 55 percent) and completed 4-year college preparatory coursework (10 vs. 45 percent). The percentage of graduates meeting these two course taking benchmarks increased between 1990 and 2005 regardless of graduates' level of occupational course taking in high school. In fact, the magnitude of the gains in the percentage of graduates meeting these benchmarks over the decade increased as the number of occupational credits earned in high school increased. For example, graduates who accumulated 4.00 or more occupational credit in high school exhibited a 42 percentage point gain between 1990 and 2005 in meeting the core academic standards, compared with a gain of 17 percent age points among graduates who took no occupational coursework in high school. (p. 47)

Participation in a CTE course does not guarantee that students will improve their academic achievement. The National Assessment of Vocational Education (Silverberg et al., 2004) stated, “the noted improvements in academic performance are likely due to higher academic graduation requirements and increased emphasis on academic reforms, vocational programs do not themselves ‘add value’ to academic achievement as measured by test scores” (p. 23).

However, advocates of CTE disagreed that increasing the rigor in programs has not had an effect on student achievement. According to the Southern Regional Education Board, in a press release by the National Association of State Directors of Career Technical Education Consortium (2005), “students who complete a rigorous academic core coupled with a career concentration have test scores that equal or exceed college prep students. These students are more likely to pursue postsecondary education and be less likely to quit school” (p. 1). CTE promoted and motivated students through contextual teaching, showing them the relationship between objectives being taught and the real world. The following research suggested this form of instruction lead to lower dropout rates: “High school dropouts shared that one way schools can help prevent students from dropping out is improving teaching and curricula to make school more relevant, engaging, and enhancing the connection between school to work” (Bridgeland, DiIulio, & Morison, 2006, p. 4). This suggests that CTE is a potentially viable option to students who are considering dropping out of high school; however, no current measurable data was found that provided a numerical correlation.

Investigating CTE students’ likelihood of participating in post-secondary education also revealed several interesting facts. Research conducted by the *National*

Research Center for Career and Technical Education (DeLuca, Plank, & Estacion, 2006) determined, “CTE participants were significantly more likely to attend a two-year college than non participants” (p. 29). The data also revealed, “a negative relationship existed between CTE participation and enrolling in a 4-year institution” (DeLuca et al., 2006, p. 29).

With student achievement moving to the forefront of legislative initiatives through mandates such as NCLB, the pretense that CTE was a less demanding track and lacked the rigor to meet academic requirements became the common position of many leaders through recent educational reform initiatives. Research has indicated that gaps still remain between students on academic and vocational tracks. However, the impact that CTE programs have on students, typically, is more difficult to measure than test scores. CTE programs typically give students a better sense of belonging and provide career choices and opportunities that are not often part of academics. These opportunities allowed students to transition into college or become prepared for jobs. Not only do educational initiatives have a tremendous impact on student achievement and participation in programs that provide life lessons, but these mechanisms also often affect subsequent areas of education that are often overlooked during development of policies.

Other Implications of NCLB on CTE

Other implications that have influenced CTE include mandates that require teachers to become highly qualified, loss of CTE courses, and the integration of academics into CTE programs of study. Several of these mandates take aim directly at CTE. Meeting the highly qualified requirements drew much fire from CTE advocates because most CTE teachers come directly from industry and use their experience in the

field to educate students. The potential loss of CTE courses has become an unintended consequence of state and federal mandates and became a contentious point at the implementation of NCLB; however, as the focus and incorporation of academic standards became increasingly common, CTE programs have changed and state departments of education have actually allowed students to receive academic credit for participation in CTE programs.

Highly Qualified Teachers

A major component of NCLB was the focus on highly qualified teachers. Beginning teachers were required to meet the qualifications of state standards that were scrutinized by the U.S. Department of Education. School districts have been struggling with the provision of teachers being highly qualified in core subject areas. Teachers already in the field had four years to meet the standards. This mandate included CTE teachers who instructed courses where core credit was given for completion of a course or program of study. The NCLB legislation required that teachers meet state requirements for certification in a respective content or subject. According to Kymes (2004), “this takes issue with a key philosophy of CTE. Teachers are hired for their industrial proficiency; this experience and expertise are primary factors used to make staffing decisions. Teachers may not obtain certifications until several years into their careers” (p. 2).

States revised qualifications for teacher certification shortly after implementation of the NCLB law. With the wide variance of CTE certification routes among states, most have begun to require CTE instructors to have, at a minimum, an associate’s degree or to maintain industry certification. “Revising the teacher certification process will ensure

that teachers know the knowledge and skills of their profession. This approach is particularly effective when paired with an induction program to support the next generation of teachers' entry into the profession" (National Governor's Association Center for Best Practices, 2007, p. 9).

Loss of CTE Courses

The NCLB requirement that students become proficient according to state assessment by 2014 was directed to help all schools meet the Adequate Yearly Progress (AYP) provision. With the focus of these assessments on student proficiency solely in math, science, and reading, the AYP provision had potentially profound effects on CTE programs. "Some have forecasted the focus on academics will result in a reduction of secondary CTE programs. Some states are already seeing increased academic courses for graduation, therefore reducing the time available to students to take career and technical courses" (Phelps, 2002, p. 7). Because CTE courses did not meet the core accreditation requirements of most states, school districts would see CTE programs as less worthy of funding. Since the intent of NCLB was to increase proficiency in core academic areas, most believed that directives of NCLB did not have any effect on CTE. However, in a study conducted by Martin, Fritzsche, and Ball (2006) participants in the study agreed, "there will be elimination of career and technical education programs at the local level because of the requirements and effects of the NCLB legislation" (p.107). The funding mechanisms associated with NCLB were other points that many believed would have an impact on the survivability of CTE programs. Efforts have been made by past presidential administrations to channel Perkins funding into other educational reform programs, including NCLB initiatives. Moreover, while in the midst of an economic

recession, local and state budgets are being scrutinized by their respective leaders. At the state level, maintenance of effort must be continued in order for states to receive federal funding through the Carl D. Perkins grants. If states fail to adequately fund CTE, the overall impact would be tremendous, causing school districts to close CTE programs. The combination of potential decreases in student numbers due to the increased focus on core academic subjects and the dependency of CTE programs on state and federal money could potentially force school districts to take a closer look at CTE's place in the modern educational setting.

Integration of Academics into CTE

In 2006, Congress reauthorized the Perkins Act until 2012. This legislation required states to develop a more rigorous curriculum and implement programs that allow students to expand academic skills. Perkins legislation required states to assist CTE students in meeting the requirements of academic proficiencies by state. "Federal vocational policy now places priority on ensuring that students in vocational programs are academically well prepared for success in both postsecondary education and the labor market" (Silverberg et al., 2004, p. 86). However, with the increasing demands of NCLB legislation on academic courses, would school districts be prepared to remain open to the idea of CTE programs providing instruction for key academic areas? "CTE centers in most states depend heavily upon common schools' cooperation for recruiting students. In order to maintain this cooperation, CTE institutions additionally may have to assume responsibility for the academic growth of their students in mathematics and science" (Kymes, 2004, p. 2).

The complete influences of high school reform policies on student achievement were unclear; however, several strategies have been implemented in recent years to negotiate the increased rigor of those policies. Career academies, block scheduling, articulation agreements with post-secondary institutions, and elimination of low-level academic courses were efforts that have been made to increase opportunities for students to participate in CTE programs. “In some states, academic content has been made explicit in CTE courses and CTE teachers understand and teach to each state’s academic standards” (ACTE, 2006, p. 14). Interestingly, the Association for Career and Technical Education (ACTE, 2006) also reported, “CTE students in these states have outperformed the general high school population on the standardized high school exit exams” (p. 14). CTE programs must continue to incorporate academics and implement successful teaching strategies into traditional CTE courses in order to remain viable programs of study for secondary school students. Fletcher (2006) stated, “it is imperative that CTE programs not only emphasize these new 21st century objectives, but also be accountable through empirical research that shows a positive relationship between students who enroll in CTE programs and successful graduation from postsecondary institutions” (p. 7).

Statement of the Problem

As NCLB mandates became infused within the mainstream of day-to-day school operations, the realization that they would have a profound impact on CTE began to become clear to all stakeholders. While most educators agreed that academic standards providing students with the best opportunity to develop skills leading to post-secondary degrees should increase, educationalists tended to overlook the vast majority of students who never attended college or only chose to complete certification levels of education

post-secondary graduation. The emphasis on teacher accountability also contributed to the perception that CTE no longer meets student needs in today's society. In contrast, CTE has taken the initiative to incorporate academic components within the CTE curricula and encouraged cross-curriculum studies that allowed students to transfer knowledge to real world situations.

With the shortage of skilled workers and a decreased emphasis on students learning performance-oriented skills, the potential vacuum NCLB has imposed on CTE made important the process where by educational professionals began to determine what the final product should resemble. Advocates of CTE should begin to document and provide evidence of CTE's ability to provide a meaningful contribution to the educational process, one that enriches and enhances academic student achievement. Interestingly, by comparing subject area test scores of students who were enrolled in CTE programs and students who were not, a pattern may be detected that provides evidence that CTE brings a viable option to education. In terms of student achievement, this comparison will determine if a higher percentage of these graduates are placed in skilled jobs, military, or postsecondary education. Other components that spurred research into this topic dealt with declining student enrollment in CTE programs. Most CTE programs have experienced a decline in total enrollment since the implementation of NCLB. This decline was primarily derived from students being required to meet academic standards through demonstrating success in passing subject area tests.

Purpose of the Study

How NCLB has and will continue to impact CTE will likely not be fully felt for several more years. However, CTE leaders should begin to measure and adjust to the

environment created by NCLB. Two main focal points that were the driving force behind this research were (a) how the implementation of NCLB has influenced student participation on CTE programs and (b) comparing student achievement for secondary students who have completed a CTE program of study and secondary students who have not completed a program of study.

As part of the reauthorization of the 2010 Elementary and Secondary Education Act, *A Blueprint for Reform* was adopted by the U.S. Department of Education. This blueprint included College and Career Readiness standards that have been determined essential for students to be successful after completing their post-secondary education, regardless of income level, race, ethnicity, language, or disability status. This in-depth look at the impact of NCLB and CTE can prove to be a valuable tool for leaders to use in development of programs and can serve as a link between what CTE provides, while at the same time help school districts meet the goals set forth by NCLB mandates.

Collaboration between skilled educators will result in a more complex and learner rich environment that can help meet the assorted requirements of student growth and development. Secondary students no longer settle to fit into a mold; therefore, every avenue should be used to encourage students to develop into well-rounded and productive citizens. In order for an education to meaningfully contribute opportunities for development of entry-level skills in a changing workforce or to be successful in post-secondary settings, educational leaders must consider all options and become less one-dimensional in relation to curriculum development. This research will help inform readers how CTE has enabled students to become more competitive in the workforce, as well as in post-secondary programs of study.

Hypotheses

The rationale of this study was to determine the effect(s) of No Child Left Behind Legislation on Career and Technical Education. Two main areas of focus pertained to student enrollment in CTE courses and the relationship between students enrollment or not in CTE courses on the Mississippi Subject Area Test. The following hypotheses and research question guided the study in order to derive a purpose-driven outcome:

H₁ There will be no difference between the means on the Mississippi Subject Area Test scores (Biology, Algebra, and Language Arts) for student completers in Career and Technical Education courses versus non Career and Technical Education completers from the 2008-2009 and 2009-2010 school years.

H₂ Student placement in skilled jobs, military, or post secondary education (two or four years) does not increase for program completers, as reported in the Mississippi Office of Career and Technical Education Carl Perkins Annual Report by local Career and Technical Education Centers in Mississippi.

H₃ There is no difference in the Mississippi Subject Area Biology Test scores for students who do not enroll in a Career and Technical program of study versus those that enrolled in the Agricultural Environmental Science Technology (Agricultural Concepts) course during the 2006-2007, 2007-2008, and the 2010-2011 school years.

Research Questions

R₁ Were students who completed CTE course sequences in high school not as likely to be competitive in the workforce or college compared to students who did not complete CTE course sequences in high school?

R₂ How has student enrollment in Career and Technical Education in Mississippi changed between the fall semester of 2002 and the fall semester of 2010?

Methodology

The primary focus of this research was to determine if the implementation of NCLB has influenced student participation in CTE programs. Quantitative data were used to help determine the implications on CTE. Data pertaining to student enrollment and participation in CTE programs, student completer placement, and student scores from the Mississippi Career Planning and Assessment System; Second Edition (MS-CPAS2) were compiled from archived records from the Mississippi Department of Education, Office of Vocational and Technical Education. Mississippi Biology Subject Area Test scores for the state were compiled from the Mississippi Department of Education Office of Student Assessment archived records. The test scores were compared to determine if a difference exists between the means of students who were enrolled in CTE programs and those not enrolled. A focus group of former CTE and academic students was developed from a school in Southeast Mississippi. This focus group was used to determine if students who were enrolled in CTE programs developed more skills during their secondary education that enabled them to be competitive sooner in the workforce. This focus group was also used to study student perceptions on the implications of school reform policies on non-enrollment into CTE programs as well as to provide valid proof of the contributions that CTE makes to the educational process.

The intent of this research was to provide a compelling look at the effect NCLB has had on CTE programs and CTE students in Mississippi and to present a link between what CTE can produce in terms of helping school districts achieve the goals of NCLB.

The constant pull between academic-oriented instruction and technical-oriented instruction remained a highly contested debate among educational practitioners. This research was solely meant to add to the body of knowledge so that future educators can apply this information to decisions that will aid in the development of a student-centered curriculum that leads to an increased acknowledgment of the diverse needs of students.

Definition of Terms

Adequate Yearly Progress (AYP) - is the measure by which schools, districts, and states are held accountable for student performance under Title I of the No Child Left Behind Act of 2001 (Education Week, 2004). In accordance with NCLB, each state sets the minimum levels of academic improvement—measurable in terms of student performance—that school districts and schools must achieve within time frames specified by the law (U.S. Department of Education, 2003).

American Recovery and Reinvestment Act of 2009 (ARRA) - a \$787 billion economic stimulus package signed into law by President Barack Obama on February 17, 2009. A percentage of the package targets spending (contracts, grants, and loans) and the rest includes tax cuts and entitlements such as Medicaid and Social Security Administration payments (U.S. Government, 2011).

Career Academy - a small learning community where a student receives academic instruction at his or her assigned high school combined with work-based learning opportunities at an industry center, or technical school or college. A career academy is a specialized charter school established by a partnership between one or more local boards of education and a technical school or college. Usually, a career academy is approved by the state board of education (US Legal, 2011).

Career and Technical Education (CTE) - organized educational activities that offer a sequence of courses that provides individuals with coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in current or emerging professions and provides technical skill proficiency, an industry recognized credential, a certificate, or an associate's degree (Kansas State Department of Education, 2008).

Carl D. Perkins Career and Technical Education Improvement Act of 2006 (Perkins IV) - *Career and Technical* was added in order to begin to change the stigma that surrounds vocational education. Perkins IV requires states to continue funding at the same or at a higher level as they had in the past. The greatest changes were at the K-12 level where the focus would become more academic to assist meeting the goals of No Child Left Behind (Shelby County Schools, 2010).

Carl D. Perkins Vocational Education Act of 1984 (Perkins I) - provided federal support of vocational education for a five-year period. Several features of this act emphasized funds aimed at providing marketable skills for special populations, including disabled, disadvantaged, and single parents. The dual theme of responding to economic demands for a trained workforce with marketable skills and social concerns for accessible programs to CTE students was embedded within the legislation. The financial objective of this act was to advance the skill set of the labor force and prepare adults for employment opportunities (Rojewski, 2002).

Carl D. Perkins Vocational Education Act of 1990 (Perkins II) - emerged with a broad theme that placed greater emphasis on academics. While the commitment to special populations remained strong, it was tempered somewhat by the high level of

publicity and effort devoted to increasing academic standards in career and technical programs (Rojewski, 2002).

Carl D. Perkins Vocational Education Act of 1998 (Perkins III) - was signed into law in 1998. Perkins III emphasized improving academic achievement and preparing young people for postsecondary education and work. Initiatives enacted through Perkins III consisted of core performance indicators. Core performance indicators included things such as student attainment of identified academic and vocational proficiencies; attainment of a high school diploma or postsecondary credential; placement in postsecondary education, the military, or employment; and student participation in and completion of nontraditional training and employment programs (Lynch, 2000).

Carnegie Unit- developed in 1906 as a measure of secondary school units, each of which represent one year of work in a subject. These units are used to determine graduation qualifications or admission requirements to universities, to particular colleges, and to some college level courses (Pennsylvania State University, 2012).

Completer - a student who has completed three Carnegie units of credit in grades 9-12 including all of the required core courses in a career focus/program of study and graduated from high school. (Arkansas Department of Workforce Education, 2004).

Elementary and Secondary Education Act of 1965 (ESEA) - considered by many as the largest single federal education act, ESEA was a product of President Lyndon Johnson's administration in 1965. ESEA created an \$11 billion source of federal funding for K-12 education in the United States. The original funds were used to focus on and assist poor schools, communities, and children from lower socioeconomic households. ESEA emphasized equal access to education and was the first federal legislation to

establish high standards and accountability for academic education (Association for Educational Communications and Technology, 2001).

Highly Qualified Teacher - No Child Left Behind sets criteria for teachers in order for them to be considered highly qualified. This requirement applies only to teachers providing direct instruction in core academic subjects: English, reading/language arts, civics and government, math, science, foreign languages, economics, arts, history, and geography (Support for Families of Children with Disabilities, 2007).

Mississippi Career Planning and Assessment System; Second Edition (MS-CPAS2) - a vocational assessment that measures technical skills and is used for one of the accountability measures for Career and Technical Education programs in Mississippi. MS-CPAS2 is used to provide a fair means of establishing accountability for both the secondary and postsecondary vocational programs (Mississippi Department of Education, 2011).

Mississippi Subject Area Testing Program (M-SATP) - consists of four academic, end-of-course tests. Since the 2001-2002 school year, students have been required to pass the subject area test(s) as a requirement for graduation. Students are assessed on the content at the completion of the course in Algebra I, Biology I, English II, and U.S. History from 1877 (Mississippi Department of Education, 2011).

National Assessment of Educational Progress (NAEP) - known as the Nation's Report Card, NAEP assesses the educational achievement of elementary and secondary students in various subject areas. It provides data for comparing the performance of students to that of their peers nationwide (North Carolina State Board of Education, 2010).

No Child Left Behind Act of 2001 (NCLB) - many believe that NCLB represents the most sweeping national education reform legislation in decades. The U.S. Department of Education noted that NCLB is based on the principles of increased flexibility, local control, stronger accountability for results, expanded options for parents, emphasis on effective teaching methods, and it was scientifically proven to increase students' academic achievements (Gordon, Yocke, Maldonado, & Saddler, 2007).

Non-Traditional Student - concentration in Career and Technical programs where less than 25% of individuals from one gender comprise the total number of individuals employed in that field or occupation (Mississippi Department of Education, 2010).

Occupational Concentrator – a student who earns 2.0 or more CTE credits in at least one of the 11 broad occupational programs of study (U.S. Department of Education, 2011).

Tech-Prep - is an important school-to-careers transition program model that helps students make the connection between school and lifelong learning. The program combines rigorous academic courses with high-level technical training leading to a certificate, associate's, or baccalaureate degree (Mississippi Department of Education, 2010).

Title I - is the largest federal education funding program. It provides funding for high poverty schools to help students who are behind academically or at risk of falling behind. Many of NCLB's requirements for schools designated for improvement are outlined in Title I (North Carolina State Board of Education, 2010).

Smith Hughes Act of 1917 - established vocational education as a separate and distinct “system” of education that included separate state boards of vocational education funding, teacher preparation programs and certification. (Gordon et al., 2007)

Vocational Education Act of 1963 - signified a major change in federal policy and direction for CTE, from an exclusive focus on job preparation to a shared purpose of meeting economic demands that also included a social component (Rojewski, 2002). It broadened the definition of vocational education to include occupational programs in comprehensive high schools, such as business and commerce (Gordon, 2010).

Assumptions

This study made the following assumptions about the data collected.

1. Student enrollment numbers are assumed to be correctly submitted and entered into the Mississippi Department of Education state reporting system by local school districts for the 2007-2010 school years.
2. Students test score data on the Mississippi Subject Area Test (Biology, Algebra, and Language Arts) are assumed to be correctly submitted and entered into the Mississippi Department of Education state reporting system for the 2008-2009 and 2009-2010 school years.
3. Student placement numbers for CTE program completers as reported by local Career and Technical Centers are assumed to be accurately and correctly submitted to the Mississippi Office of Career and Technical Education.
4. Participant responses in focus group sessions are assumed to be accurately represented, and present a detailed description of the influence CTE has had on providing

a skill set that made students more competitive in the workforce than students who did not complete a CTE program of study.

Delimitations

Several delimitations were identified as the methodologies for this body of research.

1. This study examined student enrollment in Career and Technical programs in Mississippi for the school years between 2007 and 2010 only. These years represent the four most recent years of enrollment data.

2. This study examined the mean differences of the Mississippi Subject Area Test for Biology, Algebra, and Language Arts for CTE completers and students not enrolled in CTE programs of study for the 2008-2009 and 2009-2010 school years.

3. This study will compare students' scores on the Mississippi Subject Area Biology Test for students who were enrolled in Agriculture Concepts during the 2006-2007, 2007-2008, and the 2010-2011 school years versus those who did not enroll in Agriculture Concepts and completed the state exam.

4. For the qualitative portion of this research, the participant pool remained small with four to five students from one Career and Technical Center in South Mississippi and only three to four ended questions.

Limitations

Several limitations were identified that could impact the results of this research. However, all precautions were made to protect the integrity of this research, so that it could be used in the advancement of the field of education and, more particularly, Career and Technical Education.

1. Researcher bias may develop as a result of the prior experience as an Agriculture instructor and as current experience serving as a Career and Technical Education Director.
2. Career and Technical Education programs have been perceived as not having adequate academic rigor compared to other programs of study as determined by high stakes test scores.
3. Career and Technical Education programs are perceived as not having the ability to prepare students for post-secondary educational opportunities or placement within the military.
4. Career and Technical Education students are viewed as being less likely to be competitive in the workforce or in post-secondary educational settings than students who are not enrolled in Career and Technical Education.
5. Generalizations should be made only to the participants of this study. In no way do the results infuse a visualization that can be applied to all educational situations. These results are intended only to add to the body of knowledge so that establishing pedagogy can become more effective and efficient.

Justification

The continuous strain of theoretical frameworks on education coupled with legislated mandates by local, state, and federal bodies of government required that all educational entities continuously monitor their current situation and adjust to meet the most immediate demands. This research attempted to reflect on the effects that NCLB had or will continue to have on CTE programs. Several important components were identified that carried significance for CTE. Prerequisite programs that required students

to take remedial course offerings, in many instances, preventing participation in CTE programs. Student achievement remained at the forefront of school reform, establishing CTE's ability to provide and demonstrate a rigorous contribution toward meeting the requirements of academic courses.

As in the past, the value of CTE remained a hub at the center of contention concerning its place in today's modern educational setting. A more comprehensive approach to providing people at all levels with the skills needed to acquire jobs or advance their educations was identified and remained an important concept through the completion of this research. Embracing the diversity of today's student and the ability of CTE programs to ensure that students transfer knowledge to applicable skill sets are important concepts in moving forward, as more and more emphasis is placed on student literacy. The intent of this research was to provide a link between what CTE offers school districts in meeting the requirements of NCLB.

Summary

All educators agree that the legislated mandates of NCLB have had a profound influence on the way most public school districts handle business. Since implementation of NCLB in January of 2002, a tremendous amount of finances, attention, and focus is being placed on increasing student academic performance. Numerous reports and research are being conducted on the NCLB Act; however, in relation to the effects on CTE programs, the research is limited and has been primarily conducted at the beginning stages of the new initiatives. Still, effects are being felt as a result of this legislation that should and needs to be addressed. This research presents a unique review as to how the

NCLB legislation has impacted CTE programs in Mississippi during the first decade of the 21st century.

The potential impact this research can have is situated within theory that CTE provides a valuable contribution to the body of secondary education. Exposing students to work and career-ready experiences enables teachers to provide a more robust opportunity for learning that gives students the capacity and knowledge required to remain competitive in a global economy. Teachers can have students apply skills learned through CTE programs to a multitude of academic courses. Research pertaining to what an increased focus on academic courses can have on CTE programs will enable school leaders and district planners to become better prepared, as redesign models and career pathways begin to transform public education in the future.

CHAPTER II

REVIEW OF THE LITERATURE

Development of Career and Technical Education

From the infancy of public education, a continuous evolvement of educational goals and the characteristics that described an educated person have continued to be refined. “Responding to various political, economic, and social forces, current debates on the future of public schooling are increasingly framed within the discourse of occupational relevance, globalization, and international market competition” (Spring, 1998, p. 37). “Vocational education in the U.S. is the product of an extended evolutionary process. Economic, educational, and societal issues repeatedly influence the definition of vocational education, as well as on how, when, where, and to whom it will be provided” (Gordon, 2010, p. 1).

Since the inception of NCLB in 2001, emphasis has focused primarily on preparing students academically for college. While there was no mention of Career and Technical Education (CTE) in NCLB, the impact of this legislation continued to stimulate discussion and prompt investigation on its effects in relation to CTE. The No Child Left Behind legislation increased academic standards for all students, “requiring stronger school accountability, more stringent qualifications for teacher, and an emphasis on programs and strategies with demonstrated effectiveness” (Reeves, 2003, p. 2). Current curricula in the United States, with standard-based mandates required by NCLB legislation, made promotion of CTE courses more difficult because these courses are primarily elective type courses. The emphasis for students was to enroll in courses that prepared them for post-secondary education opportunities. However, industry has had

ever-increasing difficulty hiring workers who possess the skills that are needed to complete and fill available jobs. “Nearly two-thirds of employers – 62 percent—said that they have difficulty in finding qualified applicants to fill vacancies. The skill shortage is having a detrimental effect on business operations” (Schoeff, 2009, p. 1).

Career and Technical Education has had a tremendous influence in filling the skill gap between school and work, placing emphasis on work ethics, self-motivation, personal accountability, punctuality, time management, and professionalism. “Reflecting a historical pattern consistent with various market economy crises, governments and corporations from industrialized countries around the world are heralding vocational education reform as a major determinant of economic success within the new global economy” (Spring, 1998, p. 21). Developing systems that prepare students for college and career readiness as they exit the secondary school will confirm CTE’s worthiness in producing human capital.

History of Vocational Education

As with many public school educational initiatives, vocational education or Career and Technical Education (CTE), to which it is referred today, has continued to evolve over the last century. The influences that have created this evolution are deeply tied to economic and societal concerns often associated with national educational policy. CTE falls under many definitions, primarily depending on the application and how or where funding mechanism arise. In years past, CTE was recognized as a skill-driven technically-applied curriculum with student leadership organizations that provide students with opportunities to demonstrate proficiency in trained areas. Not until recent legislative reform, applications have academic components been incorporated and tracked

for students enrolled in these skilled areas. CTE's was born out of the Smith-Hughes Act of 1917 and has advanced into a modern comprehensive curriculum derived from such legislative action as the Carl D. Perkins Career and Technical Education Improvement Act of 2006.

Smith-Hughes Act of 1917 (PL64-347)

According to Hawkins, Prosser, and Wright (1951), President Woodrow Wilson in 1916, confirmed his position on the development of the Smith-Hughes Act by expressing:

We ought to have in this great country a system of industrial and vocational education under federal guidance and with federal aid, in which a very large percentage of the youth of the country will be given training in the skillful use and application of the principles of success in maneuver and business. (p. 51)

The history of Career and Technical Education in the United States began when Congress passed the Smith-Hughes Act of 1917. "The act reflected the view of reformers who believed that youth should be prepared for entry-level jobs by learning specific occupational skills in separated vocational schools" (Gordon, 2010, p. 1). According to Kantor and Tyack (1982), "this brand of vocationalism had its critics, including the American philosopher and educator John Dewey, who believed that such specific skill training was unnecessarily narrow and undermined democracy" (p.126). Smith-Hughes encouraged States to develop and promote programs of vocational education, which at the time were not adequately provided in state education systems.

"A primary force that led to passage of the Smith-Hughes Act was economic, seen in the growing need to prepare young people for jobs created as a result of the industrial

revolution” (Gordon et al., 2007, p. 2). The act provided for vocational education in agriculture, trade and industries, and homemaking. Public schools were the only organizations entitled to support under the act. Training in vocational agriculture under the act provided for direct or supervised practice in agriculture. Unfortunately, the legislation “contributed to the isolation of vocational education from other parts of the comprehensive high school curriculum and established a division between practical and theoretical instruction in U. S. public schools” (Hayward & Benson, 1993, p. 3). In order to receive Federal funds under Smith-Hughes, each state was required to establish a state board for vocational education. As required by the U.S. Congress (1917) in The National Vocational Education (Smith-Hughes) Act, each state board was required to establish a plan

showing the kinds of vocational education for which it is proposed that the appropriation shall be used; the kinds of schools and equipment; courses of study; methods of instruction; qualifications of teachers; and, in the case of agricultural subjects, the qualifications of supervisors or directors; plans for the training of teachers’ and, in the case of agricultural subjects, plans for the supervision of agricultural education, as provided for in section ten.... The State Board shall make an annual report to the Federal Board for Vocational Education...on the work done in the State and the receipts and expenditures of money under the provisions of this Act. (Section 8)

The great need for trained individuals resulting from the Industrial Revolution required attention to be focused on developing a workforce that was the greatest in the world. The economic impact this act would have complimented the fact that the U.S was developing

into a world super power that required a comprehensive approach to educating youth. The Smith-Hughes enacted what many have considered the most important legislation affecting secondary education, creating skilled training for public school students. This act separated vocational and academic programs of study that have remained at the center of deep seated debates concerning the role of secondary education in the United States.

Separation of Funds

The United States Congress (1917) through the Smith-Hughes Act emphasized the federal government's objective that vocational teachers should be “persons who have had adequate vocational experience or contact in the line of work” (Section 12) in which they were to instruct classes. “Smith-Hughes established vocational education as a separate and distinct ‘system’ of education that included separate state boards of vocational education funding, teacher preparation programs and certification” (Gordon et al., 2007, pp. 2-3). Federal, state, and local funds for vocational education could be used to compensate teachers with vocational experience, but could not contribute to the salaries of academic teachers. Although the act’s intent was to escape raiding of vocational resources by other divisions of the comprehensive school, the result disconnected the vocational education program from the mainstream of a school’s business and produced a division between vocational and academic educational systems.

Segregation of Vocational Education Students

Smith-Hughes required that instruction be given “to persons who have not entered upon employment [and] shall require that at least half of the time of such instruction shall be given to practical work of a useful or productive basis” (U.S. Congress, Section 12). The limiting piece of the act did not apply to teachers, but to students. The law required

that if a high school student was taught one class by a teacher partially or fully funded from federal vocational funds, that student could no longer receive more than 50% academic instruction. The legislation enabled the Federal Vocational Board to quickly expand the power of control on students' time. This contributed to what became known as the 50-25-25 rule: 50% time in applied hands-on training; 25% in strongly connected subjects, and 25% in academic study. This rule became a universal characteristic of state plans from the 1920s to the early 1960s.

Segregation of the Curriculum

Progression of the Smith-Hughes Act led vocational teachers to place more focus on instruction related to job specific skills exclusive of academic substance. As a result, the scholastic development of vocational students had a tendency to be inadequate during developmental stages of growth and comprehension. "Programs were established within vocational education which further segregated students by subject matter. This segregation into Agriculture, Homemaking, and Trade and Industrial Education segments in the initial legislation has persisted for most of this century" (Prentice Hall, n.d., p. 1). The establishment of a segregated curriculum has not only had a profound impact on academia relations, but the design of Smith-Hughes also caused distinction within the various aspects of vocational education programs leading to disconnected professional development, detached teacher organizations, and individual student organizations.

Vocational Education Act of 1963

Even though the first career and technical education legislation was initiated at the turn of the 19th century, contemporary regulations have their roots in the 1960s. Congress recognized that vast numbers of youth considered it necessary and sought an

instructive program of study that incorporated training for the workforce. The purpose of the Vocational Education Act of 1963 was designed to reinforce and expand the value of vocational education and to provide more technical education opportunities in the country. Rojewski (2002) reported that “the passage of the Vocational Education Act of 1963 signified a major change in federal policy and direction for CTE, from an exclusive focus on job preparation to a shared purpose of meeting economic demands that included a social component” (p. 10). “While the 1963 act still supported the separate system approach by funding the construction of area vocational schools, it broadened the definition of vocational education to include occupational programs in comprehensive high schools, such as business and commerce” (Gordon, 2010, p. 2).

Federal funds authorized maintenance and improvement of existing programs, development of new programs of instruction, and part-time employment for students to gain finances and skills needed to continue their technical training. Shelby County Schools (2010) asserted, “another focus was to assist poor and disabled youth who needed help with academic, socioeconomic, or other disadvantages that prevented them from being successful in regular vocational programs” (p. 1). The 1963 act also provided monies for and provisions that incorporated programs related to commerce and the health occupation industry as well as people who had discontinued their education in order to prepare them for the labor market or for those who needed to advance their current skills set. “As originally envisioned, career and technical education was viewed as a sequence of courses and experiences that were designed to prepare individuals for paid and unpaid entry-level employment requiring less than a baccalaureate degree” (Gordon, 2003, p. 2). Tanner and Tanner (1980) believed that the act was the single most influential piece of

vocational education legislation since the Smith-Hughes Act: “this legislation encompassed virtually any occupation or occupational cluster short of the professions while removing restrictions that allowed schools to develop integrated programs of vocational and general education to improve the learning opportunities of those with socioeconomic handicaps” (p. 584).

The Vocational Education Act of 1963 was amended in 1968 and then again in 1976. According to Gordon (2003) these amendments stipulated that funds could be used for:

(1) high school and postsecondary students, (2) students that had completed or left high school, (3) individuals in the labor market in need of retraining, (4) individuals with academic, socioeconomic, or other obstacles, (5) individuals that were considered mentally retarded, deaf, or otherwise disabled, (6) construction of area vocational schools facilities, (7) vocational guidance, and (8) training and ancillary services such as program evaluations and teacher education. (p. 79)

The amendments of 1968 and 1976 authorized federal grants to states to maintain and improve existing vocational programs, and develop new occupationally related vocational programs. “Faced with initial evidence that localities were not responding to the new focus on improving programs and serving students with special needs, the 1968 Amendments to the Vocational Education Act backed each goal with specific funding” (Gordon, 2010, p. 1). Other mandates included in the 1968 amendment provided federal funds for counseling and special population teachers to provide remedial instruction for students with academic deficiencies.

The 1976 Vocational Amendment put emphasis on planning and accountability for local vocational programs. States were required to develop five year plans focused on improving the quality of instruction, evaluating the effectiveness of federally funded programs, implementing programs to overcome sex discrimination, and addressing issues related to students with limited English proficiency. “Limited English Proficient (LEP) students were addressed through provisions for bilingual vocational training. In 1976 LEP students were made eligible for part of the disadvantaged set-aside, and provisions to eliminate sex bias and stereotyping in vocational education were added” (Gordon, 2010, p. 2).

Carl D. Perkins Vocational Education Act of 1984 (Perkins I)

Education reforms beginning in early 1980s were initiated over concerns related to the U.S. Department of Education (1983), National Commission on Excellence in Education’s report *A Nation at Risk*. The report focused on the causes that led to the economic decline in the international markets, low student scores on state and national achievement tests when compared to scores of students from other countries, and the growing perception that high school graduates lacked the abilities needed to compete in the competitive workforce. According to Gordon (2010), this reform came in two waves:

The first, characterized as academic reform, called for increased effort from the current education system: more academic course requirements for high school graduation, more stringent college entrance requirements, longer school days and years, and an emphasis on standards and testing for both students and teachers.

The second wave called for changes in the way schools and the educational process were organized. While restructuring proposals included school choice and

site-based management, of particular interest in this report was the emphasis on improving the school-to-work transition for non-baccalaureate youth by creating closer linkages between vocational and academic education, secondary and postsecondary institutions, and schools and workplaces. (p. 3)

The Carl D. Perkins Vocational Education Act of 1984 provided federal support of vocational education for a five year period. Several features of this act emphasized funds aimed at providing marketable skills for special populations, including disabled, disadvantaged, and single parents. “The federal grants were specified with 57 percent for disadvantaged groups and 43 percent for program improvement” (Shelby County Schools, 2010, p. 1). The National Association of Parents with Children in Special Education (2007) concluded:

The law states that individuals who are members of special populations (including individuals with disabilities) must be provided with equal access to recruitment, enrollment, and placement activities in vocational education. In addition, these individuals must be provided with equal access to the full range of vocational education programs available to others, including occupationally specific courses of study, cooperative education, apprenticeship programs, and, to the extent practical, comprehensive guidance and counseling services. Under the law, vocational educational planning should be coordinated among public agencies, including vocational education, special education, and the state vocational rehabilitation agencies. The provision of vocational education to youth with disabilities should be monitored to ensure that such education is consistent with objectives stated in the student's IEP. (p. 1)

The 1984 act declared the position of Congress in that effectual vocational education programs were required to ensure the independent and self-governing future of the United States. The financial objective of the act was to advance the skill set of the labor force and prepare adults for employment opportunities, an inspiration developed during the Smith-Hughes era. The societal aim of Perkins was to make available equal educational opportunities in vocational education. Rojewski (2002) further noted that “the dual theme of responding to economic demands for a trained workforce with marketable skills and social concerns for accessible programs to CTE students were embedded in the Carl D. Perkins Vocational Education Act of 1984 (PL98- 524)” (p. 4).

In the most significant rewrite of vocational education legislation since the 1960’s, the United States General Accounting Office’s (GAO) appraisal of the 1984 Perkins Act evaluated CTE programs within six states. Manley (2010) observed, “the goal of the evaluation was to determine if Perkins funding was meeting the two overall objectives, which were to (a) provide quality CTE programs to underserved individuals, and (b) encourage program improvement and modernization” (p. 40-41). The report presented to Congress stated that,

In general, we found in the locations we studied that, although useful before and after data are not readily available, the [1984] Perkins Act likely brought about a major shift in federal emphasis from maintaining outdated [CTE] curricula and toward improving and modernizing local programs, and increasing the participation of targeted population groups. We believe that localities are providing programs and services for the special populations and for program improvement consistent with the activities specified in the law. Further, we

believe state-level efforts to use Perkins funds to improve and/or modernize [CTE] programs, through activities such as curriculum development or modernization and CTE teacher training, also are consistent with the act's intent. However, our work indicated that some Perkins Act allocation mechanisms tend to direct money to more affluent communities and away from poor communities. Specifically, vocational education students in economically depressed areas in some states are less likely to receive as much Perkins funding on a per-capita basis for improved or modernized activities as students outside such areas;

- some states designate relatively wealthy areas as "economically depressed" and provided greater per capita funding to these areas than to some poor communities;
- the allocation formula for disadvantaged population funds shift some funds from poor communities to more affluent ones because it includes non-poor academically disadvantaged students; and - disadvantaged and handicapped population funds, allocated by statutory formulas and returned to the states by some eligible recipients, can be reallocated from poorer to wealthier communities.

(U.S. Senate, 1989, pp. 44-47)

Carl D. Perkins Vocational Education Act of 1990 (Perkins II)

The passage of the Carl D. Perkins Act of 1990 (Perkins II) emerged with a broad theme that placed greater emphasis on academics. "While the commitment to special populations remained strong, it was tempered somewhat by the high level of publicity and effort devoted to increasing academic standards in career and technical programs" (Rojewski, 2002, p. 4). A number of educationalists believed this change in emphasis signaled one of the "most significant policy shifts in the history of federal involvement in

career and technical education, for the first time emphasis was placed on academic, as well as occupational skills” (Hayward & Benson, 1993, p. 3). Affirmed by the Career and Technical Student Organizations (CTSO) (2008), *Guide to Assessing Federal Perkins Funds*, “the 1990 Perkins Act was a turning point for CTE. Stronger emphasis was placed on the integration of contextual learning and academic instruction. It strengthened measures related to providing educational services to economically disadvantaged students and special populations” (p. 11). Perkins II “was grounded in the notion that the U.S. was falling behind other nations in its ability to compete in the global marketplace which in the end reflects the evolution of federal support for vocational education” (Threeton, 2007, p. 68). According to Gordon (1999), a United States General Accounting Office study examined strategies used to prepare work-bound youth for employment in the United States and four competitor nations: England, Germany, Japan, and Sweden. Among the findings were the following

1. The four competitor nations expect all students to do well in school, especially in the early years. U.S. schools accept that many will lag behind.
2. The competitor nations have established competency-based national training standards that are used to certify skill competency. U.S. practice is to certify program completion.
3. All four competitor nations invest as heavily in the education and training of work-bound youth as they do for each college-bound youth.
4. To a much greater extent than in the United States, the schools and employment communities in the competitor countries guide students' transition from

school to work, helping students learn about job requirements and assisting them in finding employment.

5. Young adults in the four competitor nations have higher literacy rates than the comparable population segment in the United States. (n.p.)

Perkins II was the first time emphasis had been placed on academics and included all segments of the population. The concept of nontraditional training (e.g., training women to be mechanics and men to be nurses) was also introduced with this revision to remove inequalities in what had typically been programs of study for only male or female students. Tech Prep was initiated by the Perkins II; the most noted revision was the coordination of CTE curricula from the secondary to the post-secondary level. The law also mandated that states begin tracking performance-based standards such as program completion and job placement for students enrolled in CTE programs of study. Perkins II required districts to track students from the time they were enrolled in a CTE program until they graduated high school and beyond. Districts had to document whether a student enrolled in a post-secondary institution or went into the work force or military. “This signified major developments in vocational education. Scholars suggest Perkins II represents a shift in vocational education policy since the inception of federal funding to secondary education because emphasis was placed on academics, occupational skill development, and learning” (Threeton, 2007, p. 69).

Carl D. Perkins Vocational Educational Act of 1998 (Perkins III)

According to the United States Department of Education (2002), Office of Vocational and Adult Education (OVAE), “the Perkins III Act defines vocational-technical education as organized educational programs offering sequences of courses

directly related to preparing individuals for paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree” (p. 1).

As with previous editions of Perkins legislation, the wide-ranging purpose of Congress in approving Perkins III was to make the United States more viable in the modern global economy and to enable workers to benefit from emerging opportunities. *The Illinois Center for Specialized Professional Support Special Populations Project*, (Grabill et al., 2000) acknowledged, “the intent of Perkins III was to ensure that all learners in the United States are educated for a more competitive world economy” (p. 16). With the emergence and rapid growth of information technology, it became critical that all learners were educated for the middle-skilled labor market. The Arkansas Department of Higher Education (2001) identified “four overarching goals of the Perkins III legislation: 1) challenging academic standards; 2) broadening services that integrate academic, vocational and technical instruction; 3) increasing linkages between secondary and postsecondary institutions; 4) providing additional resources in the classroom” (p. 7).

Furthermore, the United States Department of Education, OVAE (2002) asserted that, “under the Perkins Act, federal funds are made available to help provide vocational-technical education programs and services to youth and adults. The vast majority of funds appropriated under the Perkins Act are awarded as grants to state education agencies” (p. 1). The United States, OVAE continued: “The total appropriation for Perkins III was \$1.288 billion in 2002. States received these funds in the form of \$1.18 billion for their state basic grants and \$108 million for Tech Prep” (p. 1). “Tech Prep is based on the premise that good technical education can be provided and attained if students have a solid academic foundation: a thorough understanding of basic math,

science, and communication skills” (Leary, 2000, p. 2). The United States Department of Education, OVAE (2005) reported, “Perkins III required a continued federal and state commitment to performance measurement and accountability. Perkins III builds on significant past efforts to evaluate and improve vocational and technical education” (p. 1).

The reauthorization of the Perkins Act in 1998 changed the performance standards of the previous legislation with increased focus on accountability and greatly enhanced accountability for student achievement, provided more flexibility in how funds were spent, and called for even more integration. “This legislation called for a state performance accountability system in which the objective was to promote academic and technical performance, integration of academics in vocational education, as well as post-secondary placement of students” (Threton, 2007, p. 69).

Perkins III placed emphasis on improving academic achievement and prepared students for post-secondary education and work. Programs enacted through Perkins III consisted of core performance indicators. These performance indicators included “student attainment of identified academic and vocational proficiencies (state standards); attainment of a high school diploma or post-secondary credential; placement in postsecondary education, the military, or employment; student participation in and completion of nontraditional training and employment programs” (Lynch, 2000, p. 1). The new standards required states to report data relative to student attainment, credential attainment, placement and retention, and students in nontraditional programs of study. States could be placed on probationary status and denied federal funding if these indicators or a combination of the indicators were not met.

Carl D. Perkins Career and Technical Education Improvement Act of 2006 (Perkins IV)

The Perkins version after implementation of NCLB created a push to focus more attention on academically driven initiatives. “The 2005 Federal budget proposal recommended Perkins become a state grant program focused on higher academic standards and [the budget] barely acknowledges that career and technical education exists” (Shelby County Schools, 2010, p. 2). Under the 2006 edition of Perkins, the name was changed to the Carl D. Perkins Career and Technical Education Improvement Act. *Career and Technical* was added in order to begin to change the stigma that surrounded vocational education. “Vocational Education resonates with many as being representative of vocational education in the traditional sense and not academically focused or resulting in a college degree or high status occupations the way career and technical education can be perceived” (Browder, 2007, p. 1). Shelby County Schools (2010) contended:

Perkins IV also requires states to continue funding at the same or higher level as they have in the past. This is called maintenance of effort; if federal funds are eliminated then states will probably begin cutting CTE as well. These funds are critical in order for high-quality programs to be maintained to prepare students for higher education and the workplace. After educators lobbied for support of Perkins, the White House proposed a 23 percent cutback. The greatest changes were at the K-12 level where the focus would become more academic to assist meeting the goals of No Child Left Behind. (p. 2)

This legislation tied together NCLB standards and Perkins accountability. “The extensive accountability provisions included in the legislation reflect the continued congressional focus on holding school districts, community and technical colleges, and state authorities responsible for using federal funds for improving student achievement” (CTSO, 2008, p. 6). CTE programs began to be held accountable for academic attainment (proficiency in core academic courses) and graduation rates of students enrolled in CTE programs at the secondary level.

A major component of the Perkins IV legislation was the attempt to merge Tech Prep into the Perkins Block Grant. Intense debate on Congressional efforts to consolidate the two funding mechanisms of CTE leaned on the position of flexibility so that at the state and local levels leaders and administrators would have one less State and Local Plan to develop and oversee. Opponents of the block grant system argued that educational programs in the past that had been merged typically dismantled advocacy groups that often led to a loss of lobbying power which resulted in reduced funding to essential elements or cut programs out all together. As the final bill emerged, it did not maintain the status quo. The House decided in late July 2006 to go along with the Senate version of Perkins; this version permitted states to keep Tech Prep and the Basic Grant separate funding instruments for CTE. As a result, Brustein, Krvaric, and Manasevit (2007) stated, “important policy decisions must be made at the state and local levels, although we will be subject to greater accountability requirements, our graduates will have the academic and technical credentials to succeed in the 21st century workplace” (p. 5). The compromise reached by Congress did not maintain the continuum of previous Perkins legislation. If a state chose not to merge its Tech Prep funds into the Basic Grant, the

House—through increased accountability standards, requiring more burdensome data intense reports—demanded a price. According to Brustein et al. (2007), the new Tech Prep accountability requirements included:

1. The number of secondary and postsecondary Tech Prep students served;
2. The number and percent of such secondary Tech Prep students who:
 - (a) Enroll in postsecondary education;
 - (b) Enroll in the same field or major as when such students were at the secondary level;
 - (c) Complete a state- or industry-recognized certification or licensure;
 - (d) Successfully complete postsecondary credits as a secondary student;
 - (e) Enroll in a remedial math, writing, or reading course at the post-secondary level. (p. 4)

These indicators were in addition to other mandates required for postsecondary Tech Prep students as well as more defined secondary performance indicators described within section 113 of the Block Grant according to the Mississippi Department of Education (2007) and included:

1. Academic achievement-aligned to NCLB academic content and achievement standards
2. Graduation rates as determined in NCLB
3. Technical skill attainment, aligned to industry recognized standards if available and appropriate.
4. Student rates of attainment of
 - (a) Secondary school diploma

(b) GED

(c) Proficiency credential, etc.

5. Participation in and completion of non-traditional students.
6. Placement in postsecondary education, military, or employment. (p. 1)

The Carl D. Perkins Act of 2006 identified faculty members, administrators, and counselors as CTE professionals. “These professionals are integral members in accomplishing the mission of CTE. The role of the faculty member and administrator may be reasonably clear, recognizing a counselor as a CTE professional may be unfamiliar to CTE teachers and faculty members” (Threeton, 2007, p. 71). Gray and Herr (1998) found:

Career guidance systems and processes tend to appear under different names....Given this wide application of career guidance, there is no one definition that fits all settings or populations, although there are perspectives that have wide currency. One of these is that concepts such as career guidance, career development and placement, or career services include many processes that are combined in various ways to serve the needs of persons engaged in career planning and decision making. (p. 227)

The strength of the new law served to lead CTE into the 21st century by continually preparing students for global competition and ensuring modern, durable, and rigorous CTE programs. To accomplish these purposes, Perkins IV challenged CTE to develop demanding academic and technical standards and related exigent, integrated instruction; provided increased opportunities for individuals to help keep America competitive, while emphasizing high skill, high wage, and high demand occupations;

required the development of partnerships with workforce and business-related industries in order to make programs real-world applicable; and aided in areas of technical assistance and professional development. According to Threton (2007):

This legislation places greater accountability on integration of academic standards, which is aligned directly with the “No Child Left Behind” (NCLB) movement. Perkins IV is ultimately intended to strengthen the focus on responsiveness to the economy; while tightening up the accountability statement in regards to the integration of academics and technical standards. (p. 69)

Daggett (2010) concluded,

If the United States is to remain at the forefront in the high-tech global marketplace, the workforce must possess the requisite technological competencies and academic skills. As technology continues to influence vocational education, new and innovative educational approaches must be established to provide vocational education students with the enhanced skills and knowledge they will need to participate in the international marketplace. (p. 3)

Development of No Child Left Behind

Legislation that created major changes in academic education came about much later than CTE in the twentieth century; although the idea of a public education had been in place since the common school movement in the early 1800, there was no formal collaborative effort that framed what academia would look like on the secondary level. The Elementary and Secondary Education Act of 1965 provided the first federal structure and equalization of funding for poor school districts along with increased accountability standards. Several variations of ESEA were developed under numerous presidential

administrations since 1965, but the most far-reaching effort issued from the federal level occurred with the No Child Left Behind Act of 2001. The latest version of ESEA was reauthorized during in 2010 during the Obama administration. The influence and focus of each piece of legislation continued to shape what public education has evolved into as practitioners strive to maintain a transparent view of the educational system in the United States.

Goals of No Child Left Behind

Over the past several decades educational reform policies have evolved as often as the political administrations that promote their agenda during the election process. NCLB was no different and the goals set forth through this legislation were built around research that focused on academic proficiency. Sclafani (2002) described how NCLB was emerged,

In 1950, 20 percent of jobs were professional, 20 percent required skilled labor, and 60 percent required unskilled labor. Formal education wasn't a necessity. Children leaving high school with limited skills or even without a diploma could find jobs. The impetus for NCLB appears to have arisen from research conducted by staff members of President Bush's administration. For this 60 percent academic success was not a prerequisite for life success. Students who failed to achieve basic competencies could still expect to find gainful employment. They could acquire the limited training that they needed and earn enough to enjoy a middle-class life. That's no longer the case. In 2000, the job market is still 20 percent professional, but now it's 65 percent skilled, leaving only 15 percent unskilled. In a nation with a steady stream of immigrants who are willing to

accept very low wages, there is intense competition for a small number of unskilled jobs that don't even pay well. We know that if we want our young people to have the opportunity to earn a decent living, raise a family, and become active members of society, we must provide them with a good education. (pp. 1-2)

The American school system had fallen behind the tremendous growth of corporate America during the expansion of the technology age. Students who could not complete school in previous decades were no longer qualified to fill basic jobs or were having to compete with a growing population of immigrants for unskilled laborer positions. “Substantial increases in immigrants to the U.S. during this same time span created job markets in which competition was fierce for low-paying unskilled jobs. U.S. students who sought the American dream could no longer leave school without a diploma” (Kymes, 2004, p. 1).

To further reiterate the paradigm shift, the 21st century saw a demand from industry for the modern educational setting to produce career ready human capital that possessed the technological, occupational, and academic skills needed to be competitive and productive in a multitask environment. Dagget (2003) concluded, “while the workplace has required increasingly rigorous academic and technology related skill requirements as criteria for career success, NCLB will bring enormous pressures from within the test driven education system to raise the proficiency standards of all students” (p. 3). “January 8, 2002, President George W. Bush signed the No Child Left Behind Act. This landmark legislation punctuated the power of assessment in the lives of students, teachers, and parents with deep investments in the American educational

system” (Jorgensen & Hoffman, 2003, p. 6). In an uplifting letter to parents, Secretary of Education Rod Paige (U.S. Department of Education, 2003) laid the foundation for the new era in which American education would move by explaining:

No Child Left Behind puts the focus on instruction and methods that have been proven to work. It makes a billion-dollar annual investment to ensure every child learns to read by third grade. And it provides the resources for reform and unprecedented flexibility so states and local communities can get the job done.

(p. 1)

With NCLB, “a new era began where accountability, local control, parental involvement, and funding what works became the cornerstones of the nation’s education system. If our children aren’t learning, the law requires that we find out why” (Jorgensen & Hoffman, 2003, p. 6). “The NCLB policy purports to raise standards by testing, holding all students and schools accountable, increasing public awareness of schools’ progress, and ensuring all teachers are highly qualified” (Mantel, 2005, p. 3). According to Gordon et al., (2007):

Many believe that NCLB represents the most sweeping national education reform legislation in decades. The U.S. Department of Education noted that NCLB based on the principles of increased flexibility and local control, stronger accountability for results, expanded options for parents, an emphasis on effective teaching methods, and was scientifically proven to increase students’ academic achievements. The NCLB legislation totals more than 1,400 pages. The significant points, however, are fairly straightforward. They were as follows:

1. By 2004-2005 all students must reach a specified proficiency level in reading, writing, and mathematics and soon thereafter in science.
2. Beginning in 2002-03, schools were responsible to identify by selected subgroups (students with disabilities, limited English proficient, gender, ethnic minorities, low socioeconomic status, etc.) and demonstrate adequate yearly progress (AYP) for each subgroup for each of the next 12 years.
3. Beginning in 2002-03, schools were responsible to identify selected subgroups (students with disabilities, limited English proficient, gender, ethnic minorities, low socioeconomic status, etc.) based on their achievement status and then demonstrate adequate yearly progress (AYP) for each subgroup for each of the next 12 years until they all achieve 100 percent proficiency. This proficiency will be measured in large part by satisfactory performance—including demonstrable improvement—on state tests in reading, writing, mathematics, and science.
4. Any school that does not achieve AYP for all students two years in a row will face serious consequences from state and federal authorities. (p. 4)

The principal goal of the NCLB Act of 2001 was to hold the nation responsible for educating all students. NCLB brought to light the disparity between achievement and attainment gaps and shaped a sense of necessity for highly qualified teachers in all classrooms. Additional requirements by NCLB mandated that by the 2005-2006 school year, each student must be tested in grades three through eight in math, reading, and tested in science by the 2007-2008 school year to determine the student's level of proficiency. The Missouri Department of Elementary and Secondary Education (2006)

added, “NCLB includes significant accountability measures for all public schools. It is based on the ambitious goal that *ALL* children will be proficient in reading and math by 2014” (p. 1).

The law requires highly qualified teachers instruct all children. According to the Center on Educational Policy (2006), “NCLB’s requirement that districts and schools be responsible for improving not only the academic achievement of students as a whole but also the achievement of each subgroup of students is directing additional attention to traditionally underperforming groups of students” (p. 2). “Schools which do not demonstrate yearly progress in mathematics, reading, and science over two years must develop corrective plans. If these plans do not produce results, schools may face changes in staffing and curriculum, or a possible state takeover” (Donlevy, 2002, p. 257). NCLB also placed emphasis on improving communication with parents in order to provide more information for parents about their child’s progress. “Each state must measure every student’s progress in reading and math in grades 3 through 8 and once during grades 10 through 12. Access to the assessments will provide parents with objective data on where their child stands academically” (U.S. Department of Education, 2003, p. 1). Another provision under NCLB as it related to receiving federal funding required states to take part in the National Assessment of Educational Progress (NAEP) reading and mathematics assessments for fourth and eighth grade students beginning in 2002-2003 every other year. Concerning the implementation of NAEP the U.S. Department of Education (2003) revealed the following:

Since 1969, NAEP has been the only nationally representative and continuing assessment of what American students know and can do in major academic

subjects. Over the years NAEP has measured students' achievement in many subjects, including reading, mathematics, science, writing, history, civics, geography and the arts. Since 1992, the current NAEP reading assessment has been given in four different years (1992, 1994, 1998, and 2000) to a nationally representative sample of fourth-grade students. NAEP provides a wealth of data about the condition of education in the United States. (p. 20)

Due to the size and scope of the NCLB legislation, the federal government has initiated a more dynamic function in the American educational setting than in the past. As a result of the increased federal involvement that affects all public schools, state education departments have been required to implement more active functions in local education policies. Jorgensen and Hoffman (2003) conceptualized the maturation, development, and core intent of NCLB by stating:

In a fundamental way, NCLB was the next obvious step for a nation already committed to excellence and fairness in education. The legacy of reform preceding NCLB culminated in an opportunity for the country to put real muscle behind what had already been put into place. Funding is now tied directly to accountability expectations. Schools must ensure that all students learn the essential skills and knowledge defined by the state using grade-level standards and benchmarks. All means all, and data reporting required under NCLB must describe the learning journey of each student and the effectiveness of every school in that effort. (p. 6)

Adding to the muscle of former educational policies by the new mandates of NCLB, this law provided monetary supplements to districts for teacher professional

development programs. “NCLB will support and encourage schools to identify and use instructional programs that work. Scientifically based instructional programs will be supported and funds will be available so teachers can gain and strengthen skills in effective instructional techniques” (U.S. Department of Education, 2003, p. 3).

Adequate Yearly Progress

Rod Paige, Secretary of Education (U.S. Department of Education, 2002) stated, “Schools are held accountable for the achievement of all students, not just average student performance. The statute gives states and local educational agencies significant flexibility in how they direct resources and tailor interventions to the needs of individual schools” (p. 1). “Adequate Yearly Progress is one of the essential elements of NCLB and probably the most complicated, to achieve the goal of all children being ‘proficient’ by 2014, all schools must make satisfactory improvement each year toward that goal” (Missouri Department of Elementary and Secondary Education, 2006, p. 1). NCLB required state boards of education to delineate AYP for school districts and schools. The U.S. Department of Education (2003) explained in *No Child Left Behind: A Parents Guide*:

In defining adequate yearly progress, each state sets the minimum levels of improvement—measurable in terms of student performance—that school districts and schools must achieve within time frames specified in the law. In general, it works like this: Each state begins by setting a “starting point” that is based on the performance of its lowest-achieving demographic group or of the lowest-achieving schools in the state, whichever is higher. The state then sets the bar—or level of student achievement—that a school must attain after two years in order

to continue to show adequate yearly progress. Subsequent thresholds must be raised at least once every three years, until, at the end of 12 years, all students in the state are achieving at the proficient level on state assessments in reading/language arts and math. (p. 8)

By creating a starting point for local schools, the rate of school growth could be effectively monitored using the standards set forth through NCLB requirements.

“Standards provide an objective way for those in and outside schools to identify the areas of strength and weakness within each school. When results of standardized tests are received, schools and district performances are compared to the states’ standards” (Chadd & Drage, 2006, p. 82). “School districts and schools that fail to make adequate yearly progress (AYP) toward the state goals across all demographic groups will be subject to corrective action. Schools that meet or exceed AYP objectives will be eligible for awards” (Kozma, 2005, p. 1). “If schools and school districts failed to meet AYP goals for two continuous years, they are labeled ‘in need of improvement’ and may be given assistance in improving their performance and subjected to corrective and disciplinary measures” (Simpson, LaCava, & Graner, 2004, p. 82). The assessment of school AYP did not take into account factors that influenced educational achievement that are not school related such as parent education or resources at home. Schools were, however, held accountable for factors over which they have no control. As extensive as the NCLB legislation was in promoting positive school change through increasing academic rigor, states felt that certain mandates were disadvantageous in meeting the goals especially in regard to AYP. Kozma (2005) identified several of these shortcomings:

The Act is most punitive to those schools that are in the most challenging situations. Schools that fail to make AYP for three years are faced with restructuring measures that may include turning it over to the State, a private company, or even closure. The Act requires that all disabled students, except for the 1 percent with the most severe cognitive disabilities, be tested as measured by grade-level assessments, in order to show AYP. The Department recently provided states with opportunities to apply for waivers to this requirement (*Education Week*, May 18, 2005), if granted states would be allowed to exclude a maximum of 3 percent of their most disabled students, regardless of the number of such students in the system. The likelihood is that school districts with a high percentage of students with various disabilities will be judged as failing and be subject to the Act's punitive requirements. Again, such disabilities are unevenly distributed among school districts and this will negatively affect schools from high poverty areas. (pp. 2-3)

CTE programs offered as electives should be considered as an enhancement resource to be used to accommodate and provide assistance for students with disabilities to develop life skills, continuing to allow schools to achieve the goals of AYP. CTE programs have always attended to the differences in student's abilities and style of learning, while at the same time challenging and setting higher expectations.

Consequences for Not Achieving Adequate Yearly Progress

While NCLB left individual states to set their state goals regarding performance indicators, the multitude of consequences for schools that do not meet Adequate Yearly Progress (AYP) requirements were spelled out within the NCLB law. "AYP is used to

determine if schools are successfully educating students. NCLB requires a single accountability system for public schools to determine whether all students, as well as individual subgroups, are making progress toward meeting state academic content standards” (Education Week, 2004, p. 1).

The No Child Left Behind Act laid out an action plan and timetable for steps to be taken when a Title I school fails to improve. Title I Programs provide funds to districts to assist schools with the highest levels of economically disadvantaged students. The U.S. Department of Education (2003) explained how public schools and public school districts will be scrutinized if each fail meet their respective action plan timetables;

1. A Title I school that has not made adequate yearly progress, as defined by the state, for two consecutive school years will be identified by the district before the beginning of the next school year as *needing improvement*. School officials will develop a two-year plan to turn around the school. The local education agency will ensure that the school receives needed technical assistance as it develops and implements its improvement plan. Students must be offered the option of transferring to another public school in the district—which may include a public charter school—that has not been identified as needing school improvement.
2. If the school does not make adequate yearly progress for three years, the school remains in school-improvement status, and the district must continue to offer public school choice to all students. In addition, students from low-income families are eligible to receive supplemental educational services, such as tutoring or remedial classes, from a state-approved provider.

3. If the school fails to make adequate progress for four years, the district must implement certain *corrective actions* to improve the school, such as replacing certain staff or fully implementing a new curriculum, while continuing to offer public school choice and supplemental educational services for low-income students.
4. If a school fails to make adequate yearly progress for a fifth year, the school district must initiate plans for *restructuring* the school. This may include reopening the school as a charter school, replacing all or most of the school staff or turning over school operations either to the state or to a private company with a demonstrated record of effectiveness. (p. 9)

To continue building upon the requirements in NCLB of meeting AYP, schools are rated according to assessment results that are aligned with a school report card. These report cards allowed stakeholders to easily determine if a school met AYP requirements of NCLB. “Assessment results are reported on a uniform reporting mechanism for schools, districts, and states reports. Student proficiency data are typically reported on a ‘school report card’ with a rating in whether the school or district has met AYP benchmarks” (Cawthon, 2007, p. 5). “Progress in meeting AYP goals should be shared with the public through annual report cards. If any school fails to meet state standards for two consecutive years, parents may transfer children to a better performing school within the district” (Simpson et al., 2004, p. 82). However, according to a 2006 study by the Center on Education Policy, “only 2 percent of students have taken advantage of the option to transfer to another school” (p. 3). Even with a similar reporting format, certain elements among states contrasted significantly. “The numbers of schools not making

AYP vary greatly from state to state for a number of reasons. Mostly these reasons pertain to differences in states' tests and accountability systems, rather than their quality of education" (Center on Education Policy, 2004, p. 1). "Some states report large numbers of schools that are not making adequate yearly progress, including some schools considered high performing by other measures, causing considerable public confusion and concern" (*Education Week*, 2004, p. 1). This confusion caused many people to lose confidence in the educational system, forcing educational leaders to become more creative in producing public relation outreach programs.

Highly Qualified Teachers

Another major component of NCLB was the focus on highly qualified teachers. "The NCLB policy takes a holistic approach in improving student performance including ensuring that all teachers are highly qualified" (Fletcher, 2006, p. 3). A highly qualified teacher was considered one with full certification, bachelor's degree, and demonstrated competency in a subject area. "No Child Left Behind provides federal funding to states and districts for activities that will strengthen teacher quality in all schools, especially those with a high proportion of children in poverty" (U.S. Department of Education, 2003, p. 20). NCLB allowed schools and districts large amounts of flexibility in how the funding could be used for professional development activities, including teacher intervention for those who failed to meet requirements or continuously produced lower achieving students. These interventions must be derived from scientifically based research.

Beginning teachers were required to meet the qualifications of state standards that were scrutinized by the U.S. Department of Education. School districts have been

struggling with the requirement of teachers being highly qualified in core subject areas. Teachers already in the field had four years to meet the standards as well. “Schools and teachers have made considerable progress in demonstrating that teachers meet the law’s academic qualifications—but many educators are skeptical this will really improve the quality of teaching” (Center On Educational Policy, 2006, p. 2). This mandate includes CTE teachers who instruct courses where core credit was given for completion of a course or program of study. The NCLB legislation required that teachers meet state requirements for certification in a respective content or subject. According to Kymes (2004), “this takes issue with a key philosophy of CTE. Teachers are hired for their industrial proficiency, this experience and expertise are primary factors used to make staffing decisions. Teachers may not obtain certifications until several years into their career” (p. 2). However, the Center on Educational Policy (2006) reported, “with regard to teacher quality, 88% of school districts reported that by the end of the 2005-06 school year all their teachers of core academic subjects would have met the NCLB definition of ‘highly qualified’” (p. 2).

Even though CTE practitioners continued to advocate the point that demonstrated expertise should determine whether a teacher is qualified or not, the requirements of NCLB still left questions as to what standards were necessary for a teacher to be proficient in their particular content area. “There is a difference of opinion among behaviorists who advocate competency-based teacher education as to how a teacher can demonstrate competency. Most believe this should be determined by demonstrated skills and competencies” (Elias & Merriam, 1995, p. 41). “However, there is no consensus as to which competencies are essential. NCLB places greater emphasis on instructors than

do most competency-based proponents. Additionally, NCLB measures teacher effectiveness through student outcomes” (Kymes, 2004, p. 4). States have begun revising qualifications for teacher certification shortly after implementation of NCLB law. With the wide variance of CTE certification routes among states, most have begun to require CTE instructors to have, at a minimum, an associate’s degree or to maintain industry certification. “Revising the teacher certification process will ensure that teachers know the knowledge and skills of their profession. This approach is particularly effective when paired with an induction program to support the next generation of teachers’ entry into the profession” (National Governor’s Association Center for Best Practices, 2007, p. 9).

Secondary CTE Students Since Implementation of NCLB

Characteristics that once identified what typical CTE students exhibited have continued to evolve, creating a diverse and robust clientele from the public school setting. Secondary CTE students have changed as each reauthorization of ESEA requires implementation of the latest practices and methodologies for student engagement. Other influences of NCLB that affect who CTE students are, include student enrollment and student achievement requirements at the local, state, and federal levels. Of all recent legislation, implementation of NCLB has had the greatest impact on student populations, including how those students participated in secondary education.

Who are CTE Students?

For decades, CTE programs have been the dumping grounds for lower achieving students, and these programs typically contained a higher proportion of socioeconomically disadvantaged students. Furthermore, “it has been well documented that race/ethnic differences in achievement reflect conditions outside school, but also the

quality of schooling, since ‘what students bring to school from home greatly influences how they perform’ (Peng, Wright, & Hill, 1995, p. 20) and is related to educational processes like quantity of courses, aspirations, and tracking” (Stone & Aliaga, 2005, p. 126). In a study released in the fall of 2007, Gaunt and Palmer and reported that “research revealed that the typical CTE student performs somewhat lower academically, lives less often with both parents while more commonly residing without either parent present, and is more economically disadvantaged” (p. 6).

Another influence typical with NCLB legislation would be associated with students who have special needs. “CTE participants had less advantaged educational backgrounds than non participants. Among the public high school class of 2005, a greater percentage of occupational concentrators took lower levels of 9th grade mathematics courses compared to non-concentrators (15 vs. 11 percent)” (Levesque et al., 2008, p. 6). Due to NCLB legislation, school districts have been required to reduce the number of students with cognitive or behavioral deficiencies by including these students in a regular classroom setting without modifications to instruction or testing in order to meet the required mandates. In 2004, Kymes reported:

In order to satisfy NCLB, these special needs students would be required to take remedial courses until they could demonstrate proficiency in the designated way. The implications of this for CTE centers are clear. A substantial number of CTE secondary students are special needs students. Remedial courses for these students would preclude their participation in CTE programs. (p. 3)

However, in 2005 research suggested nearly 92% of high school graduates took at least one occupational course and that approximately 21% completed an occupational

concentration, earning three or more credits. Male students typically had a greater interest and higher placement in CTE courses. “Specifically, among public high school graduates in 2005, the majority of occupational concentrators were male (59%), while the majority of non-concentrators were female (54%)” (Levesque et al., 2008, p. 6). During the 1990’s and through the early 2000’s, a shift in the characterization of students with a CTE emphasis was discovered at the high school level. According to Levesque et al. (2008):

A larger percentage of the 2005 public high school graduates who took high level 9th grade mathematics courses completed an occupational concentration compared with their 1990 peers (an increase of 8% points), while a smaller percentage of 2005 graduates who took low level 9th grade mathematics courses completed an occupational concentration compared with their 1990 peers (a decrease of 9% points). (p. 7)

According to Ryken (2006) in *Goin’ Somewhere: How Career Technical Education Programs Support and Constrain Urban Youths’ Career Decision-Making*, “in the context of the CTE program studied, there is evidence of students’ learning about themselves, gaining experiences in college and biotechnology laboratory settings, and a complex set of interrelationships between students’ backgrounds, interpersonal relationships, and labor market demands” (p. 58). These findings were consistent with Chen’s (2003) concept of career, “students participating in CTE programs gain experiences, actively shape and are shaped by contextual factors, and learn about themselves” (p. 203). Ryken (2006) concluded,

Students are not passive recipients of information or program experiences, but rather are co-creators of their own knowledge. Students propel their own learning by asking questions and some students come to see the limits of program experiences by focusing on their own career goals, rather than a prescribed program pathway. Students make the goals of CTE attainable in a number of ways: by negotiating in a variety of contexts (e.g., high school, college, and work); by shaping their own learning by asking questions; by making choices to spend their time engaged in activities that emphasize educational and career development; by linking school and work (by providing feedback to teachers and employers about their experiences in each setting); and finally, by viewing adults and peers as learning resources and accessing allies who can provide academic and social support to reach educational and career goals. (p. 67)

Was the shift of student participation due to increased academic standards mandated by NCLB, or has the educational system blocked out certain populations of students from participating in CTE programs requiring them to remediate in core subjects to demonstrate proficiency? “Student success, rather than simple placement, will determine a student’s educational path” (Gaona, 2004, p. 3). Efforts have begun within CTE to increase academic content and appeal to a wide-ranging mix of student ability, but tremendous inequalities still remained between CTE and non-CTE students.

Student Enrollment in CTE Courses

CTE served many functions for secondary school students. It helped students to remain engaged in school, explore profession options, gain work-related skills, and enhance academic studies in order to prepare for postsecondary education. “CTE

programs are designed with the intent to help students align educational and occupational goals and are inclusive of initiatives such as Tech Prep, work-based learning, and school-to-career” (Bragg et al., 1997, p. 5). In recent years, the trend of students had been to use CTE courses as an exploration across program areas rather than to concentrate in a particular program area. In the *Career and Technical Education in the United States: 1990 to 2005 Statistical Analysis Report*, Levesque et al. (2008) reported:

Just over 90 percent of public high school graduates from the class of 2005 took at least one occupational course during high school and these graduates earned more credits on average in occupational education than they earned in fine arts and foreign language (3.0 vs. 2.0–2.1 credits). In addition, about one in five of the 2005 graduates concentrated in occupational education (21%), earning 3.0 or more credits in at least one of the 18 high school occupational programs examined in the report. Business, health care, and computer science were among the most common occupational programs. Specifically, business and computer technology were the most common occupational programs offered by public high schools in 2002. In 2005 high school graduates earned more credits in business services and in computer technology than in any other occupational program. Higher percentages of 2005 public high school graduates concentrated (earning 3.0 or more credits) in the areas of computer technology and agriculture than in any other occupational program area (3% vs. 2% or less of graduates). Thus, while graduates earned fewer credits on average in agriculture than in computer technology (0.2 vs. 0.6 credits), there was no measurable difference in the percentage of concentrators in these two areas (3 percent each). (p. 5)

The increase of student participation in CTE was brought about with the implementation of Tech Prep initiatives in Perkins legislation. Even though, more students are participating in CTE programs there are fewer students that concentrate in program sequences and become classified as program completers. “Data suggest fewer students may now view developing skills in a specific program area as their main objective for enrolling in vocational education. Focus group discussions with students in vocational courses suggest a variety reasons for their participation” (Silverberg et al., 2004, p. 28). Several factors played important roles in the transition of student viewpoints of academics began focusing toward enrolling in CTE courses. Schools were offering fewer sequences of connected courses. Programs were becoming more broad based and did not offer concentrated rigor. Another perceived factor was that students could be developing a foundation for future career aspirations combining functional skills from conceivably different areas of study.

Hans Meeder (of the Office of Vocational Education) believed “career and technical education should complement NCLB and be aligned because of the dynamics between the economic environment, global competition, and the influx of technology into the workplace” (Lewis, 2004, p. 1). However, with the implementation of NCLB, the CTE community anticipated a drop in enrollment numbers within CTE programs. The directives of NCLB required districts to ensure that all students had a score of proficient or above by 2014 and meet adequate yearly progress standards. “One hypothesis was that schools would increasingly focus students in the early high school grades on academic courses and preparation for the assessments, potentially crowding out vocational courses until later in the high school years” (Silverberg et al., 2004, p. 31).

Roey et al. (2001) illustrated how high school students are sorted into curriculum patterns. Imposing a template over transcript data, they found “the percentage of high school graduates from both public and nonpublic institutions that were CTE concentrators has decreased from 23.2% in 1982 to 4.4% in 1998, while academic concentrators increased from 42.5% in 1982 to 71% in 1998” (p. 5). However, the *Career and Technical Education in the United States: 1990 to 2005 Statistical Analysis Report* (Levesque et al., 2008) confirmed, “between 1990 and 2005, no measurable changes were detected in the overall occupational course taking patterns of public high school graduates. About 91-92 percent of students in both graduating classes took at least some occupational coursework during high school” (p. 26). However, in light of the stable student participation, the share of credits students received through CTE has become increasingly smaller with approximately one fifth of students concentrating in an occupational area. Another insightful finding by Levesque et al, (2008) affirmed:

Some course taking differences among student groups were evident, however. Graduates who were male, were disabled as of grade 12, or graduated from smaller schools generally participated more in the occupational curriculum than their classmates who were female, not disabled, or graduated from larger schools, respectively. Specifically, a larger percentage of male graduates than female graduates of the class of 2005 took any occupational coursework in high school (94% vs. 90%) and completed an occupational concentration (25% vs. 17%). Male graduates also earned more occupational credits on average (3.5 vs. 2.6 credits). (p. 30)

The number of required academic credits increased in 2000 from 14.3 to 18.8 credits, resulting in a decrease of 16.2% in the total number of credits earned through CTE courses. The National Assessment of Vocational Education: Final Report to Congress (Silverberg et al., 2004) reported a 2.8% decline in the number of students who were occupational concentrators. Contradicting the National Assessment of Vocational Education report to congress, Levesque et al. (2008) concluded:

Trends in student participation at the secondary level showed no measurable changes over the period studied in overall participation in occupational education. For example, no measurable changes were detected between 1990 and 2005 in the average numbers of total CTE credits and occupational credits that public high school graduates earned (4.0–4.2 total CTE credits and 2.9–3.0 occupational credits). Participation in academic education increased. Both the average numbers of total academic credits and core academic credits earned by public high school graduates increased between 1990 and 2005 (increases of 2.8 and 1.8 credits, respectively). (p. 5)

Boesel, Rahn, & Deich (1994) believed that the “vocational education enrollment decline started before the school reform movement” (p. 25). They believed that other factors, “such as reduced labor market demand for traditional vocational skills, may have been responsible for the vocational education enrollment decline” (p. 25). Regardless, if academic requirements were responsible for declining enrollment in CTE, the requirements of NCLB were certainly making it more difficult for students to track through the completion of CTE programs. “Many CTE supporters argue that these

course requirements and tests leave students less time for CTE” (Coetsee, 2001, p. 3). In fact, Kemple and Snipes (2000) reported:

The proliferation of testing and standards may threaten some of the most promising new CTE programs. For example, the evaluators of nine career academies say they fear that these institutions will have to choose between aligning their curricula and instructional strategies with rising academic standards and high-stakes tests and investing in an improved academic/vocational curriculum. Career academy advocates have complained that current assessment instruments do not capture the kinds of competencies that academy students may gain. (p. 33)

With a limited amount of data and even less current research focused on student participation in CTE courses, shifts in student enrollment may not be completely representative in relation to the prominence that school districts have placed on preparation for academic assessments in recent years. “It has been noted that the repercussions of this legislation to career and technical education, and agricultural education as a career and technical education area, are yet to be investigated” (Ruhland & Bremer, 2003, p. 291).

Career and Technical Education Student Achievement

The reputation that surrounded CTE as a less demanding track for secondary students was not encouraging through the midst of recent school reform initiatives. Typically, when students participated in CTE courses that lacked academic rigor, academic success did not improve. “Since enactment of federal mandates to improve the academic achievement of CTE participants, related research has focused on tracking

trends in the academic performance of CTE participants and analyzing the ‘value added’ of CTE participation to academic achievement” (Silverberg et al., 2004, p. 130).

“Students who develop goals and plans for high school and beyond, and see the relevance of academics to their career and educational goals will be more motivated to learn and demonstrate achievement” (Kaufman, Bradby, & Teitelbaum, 2000, p. 52). To further explain their findings, Kaufman et al. (2000) advocated, “research suggests that the more time vocational students are involved with teachers and counselors to develop and discuss their plans, the higher their academic performance” (p. 52). “Students are more motivated to learn and will persist in the face of difficulty when they find learning personally interesting and meaningful, or directly relevant to something that they value” (Gollub, Bertenthal, Labov, & Curtis, 2002, p. 198). Rosenbaum (1999) found a connection for:

Students who receive improved career prospects for demonstrated achievement, and advanced placement in further education or employment will be more motivated and engaged in learning, and have more incentives to demonstrate achievement. Students with better and more diverse career and further-education opportunities in their communities will be more motivated to learn and demonstrate attainment of vocational and technical skills. Students will exert more effort in school if they see a clear connection between achievement in school and access to further education or employment opportunities. (p. 17)

Having knowledgeable and qualified teachers increase student participation, creating an environment where students become more focused and are more familiar with academic expectations. “Student motivation and engagement are increased, and students

perform better when schools and teachers provide clear expectations that students will meet academic standards. Students respond by showing more engagement, and effort, and work harder to meet teacher expectations” (Visher, Emanuel, & Teitelbaum, 1999, p. 27). “Research consistently shows that the instructional practices of teachers in classrooms, as measured by indirect quality indicators (e.g., experience, qualifications, ability), have large and consistent effects on academic achievement” (Whitehurst, 2002, p. 2). “Although research shows that students taking more rigorous academic courses have higher levels of academic achievement, the research on applied academics remains mixed” (Visher et al., 1999, p. 32). “Research suggests that vocational students who perceive that their academic and vocational teachers are working together to support student academic achievement have higher levels of academic achievement” (Kaufman et al., 2000, p. 52). While research was varied, gaps still remained between students who participate in CTE programs and those that do not.

As more academic emphasis was being incorporated into CTE courses, the inclination that CTE was less demanding began shifting in a positive direction. Contrary to research that defined a relationship between student achievement and relevance of course work and involvement with teachers, “other analyses have shown that the academic achievement of CTE participants as measured by standardized tests has increased over time, particularly in reading and math” (Silverberg et al., 2004, p. 25). Bishop (2001) contended, “moderate- to high-stakes external examinations that have real consequences for students and schools have an impact on academic achievement because they clarify goals, raise expectations, and motivate both students and teachers to meet academic standards” (p. 9). “One result of the CTE reform is the emergence of another

concentration, comprised of students who follow both a rigorous academic sequence of courses and a rigorous sequence of CTE courses (dual concentration)” (Stone & Aliaga, 2005, p. 127). “The current major focus of CTE is to require all students to participate in a combination of CTE and academic courses and to focus on broad career clusters instead of specialized jobs in CTE courses” (Fletcher, 2006, p. 5).

The result that CTE produced in closing the achievement gap between occupational concentrators and students who received limited or no vocational education significantly narrowed, according to the National Assessment of Vocational Education (Silverberg et al., 2004) on the 12th grade National Assessment of Educational Progress.

Scores showed an increase of 8 scale points for reading (1994 compared to 1998) and an increase of 11 scale points for math (1990 compared to 2000) for students that were considered occupational concentrators. While students with limited or no CTE training improved their scores by 4 scale points in reading and failed to show an increase in math. Comparing students from 1990 to 2005 there was a 28 percent increase between students meeting core academic standards and completing college preparatory courses. (p. 22)

As reported by the *Career and Technical Education in the United States: 1990-2005 Statistical Analysis Report* (Levesque et al., 2008),

In 1990, a lower percentage of public high school graduates who accumulated 4.00 or more occupational credits in high school than their classmates who took no occupational coursework met the New Basic core academic standards (18 vs. 55 percent) and completed 4-year college preparatory coursework (10 vs. 45 percent). The percentage of graduates meeting these two course taking

benchmarks increased between 1990 and 2005 regardless of graduates' level of occupational course taking in high school. In fact, the magnitude of the gains in the percentage of graduates meeting these benchmarks over the decade increased as the number of occupational credits earned in high school increased. For example, graduates who accumulated 4.00 or more occupational credits in high school exhibited a 42 percentage point gain between 1990 and 2005 in meeting the New Basics core academic standards, compared with a gain of 17 percentage points among graduates who took no occupational coursework in high school. (p. 47)

No indication was evident that participation in CTE courses will improve a student's academic achievement. The National Assessment of Vocational Education (Silverberg et al., 2004) contended, "the noted improvements in academic performance are likely due to higher academic graduation requirements and increased emphasis on academic reforms, vocational programs do not themselves 'add value' to academic achievement as measured by test scores" (p. 23). Advocates of CTE disagreed that increasing the rigor in programs has not had an effect on student achievement.

According to a press release by the National Association of State Directors of Career Technical Education Consortium (2005), the Southern Regional Education Board noted, "students who complete a rigorous academic core coupled with a career concentration have test scores that equal or exceed college prep students. These students are more likely to pursue postsecondary education and be less likely to quit" (p. 1). More recently, the National Center for Educational Statistics (Levesque, Wun, Green, & MPR Associates, Inc., 2010) reported, "these studies have shown that gaps in academic course

taking and achievement between CTE participants and their non-participating classmates have narrowed” (p. 1). Furthermore according to Levesque et al. (2010):

Among the public high school graduating class of 2005, occupational concentrators overall earned, on average, fewer credits in core science subjects (biology, chemistry, and physics) and scored lower on the 12th-grade NAEP science test than non-concentrators. Patterns varied across occupational program areas, however, with graduates who concentrated in agriculture business finance communications and design, computer and information science, and engineering technology scoring higher than or not measurably different from non-concentrators. When comparing students who earned similar numbers of core science credits, occupational concentrators generally scored higher than or not measurably different from non-concentrators at lower credit levels (2.00 core science credits or fewer, in 22 out of 25 possible comparisons), and generally scored lower than or not measurably different from non-concentrators at higher credit levels (more than 2.00 credits, in 19 out of 19 possible comparisons). In addition to differences in the number of science courses taken, occupational concentrators sometimes differed from non-concentrators in terms of the types and levels of core science courses they took. (p. 7)

The creation of NCLB caused an overbearing inclination toward student achievement and academic proficiency, leaving in its wake a diminished value of technical instruction. “Although ‘college for all’ has become the mantra in today’s education system, this single-minded focus shortchanges larger numbers of students: including those who drop out of school and those who complete high school and do not

continue to college” (Cohen & Besharov, 2004, p. 7). CTE promoted and motivated students through contextual teaching showing them the relationship between what they were learning and the real world. Research suggested that this form of instruction lead to lower dropout rates. “Work-based learning initiatives have contributed to youth development by providing opportunities for students to learn about themselves and their interests, and encouraging students to think in new ways not generally available to them in school classrooms” (Bailey, Hughes, & Moore, 2004, n.p.).

As the title suggest NCLB’s intent was to ensure the education of every child and create an environment where each student graduated from high school. However, research indicated that high school dropouts wanted instruction more relevant to what students were actually facing as they prepared to enter the workforce. “High school dropouts shared that one way schools can help prevent students from dropping out is improving teaching and curricula to make school more relevant, engaging, and enhancing the connection between school to work” (Bridgeland et al., 2006, p. 4). CTE is a viable option to students who were considering dropping out of high school; however, no current measurable data was found that provided a numerical correlation. Investigating CTE student’s likelihood of participating in post-secondary education also revealed several interesting facts. Research conducted by the National Research Center for Career and Technical Education (DeLuca et al., 2006) determined, “CTE participants were significantly more likely to attend a two-year college than non participants” (p. 29). While the research concluded that CTE participants were more likely to attend a two-year institution, the data revealed, “a negative relationship exists between CTE participation and enrolling in a four-year institution” (p. 29).

Looking past academic attainment of students, more difficult-to-measure advantages of CTE come to light. Typically, CTE classes were smaller and provided students with more one-to-one time with the instructor in the particular content area. More personal contact gave students an increased self-esteem and made them feel more positive about their potential as students. This sense of worth, noted by Spring (2004), “increases a community’s wealth through a concept called human capital. Human capital is a society resource of people educated and trained to produce the goods and services that society requires” (n.p.). Aided by career guidance and counseling programs offered through CTE, students were more capable of and prepared to add human capital to their communities by being productive citizens. This sense of belonging resulted in students who did not make the jump into college too soon, but entered straight into the job market, military, or technical college, saving time and money. For students who financially or intellectually did not achieve academic success at the post-secondary level, communities should make available opportunities for this student clientele to make a successful transition into the labor market by providing adequate resources that catch the attention of business and industry leaders to entice businesses to locate in the area. .

Other Implications of NCLB on CTE

Implications that have influenced CTE include mandates that require teachers to become highly qualified, loss of CTE courses, and the integration of academics into CTE programs of study. Several of these mandates take aim directly at CTE. Meeting the highly qualified requirements drew much fire from CTE advocates because most CTE teachers come directly from industry and use their experience in the field to educate students. The potential loss of CTE courses have become an unintended consequence of

state and federal mandates and became a contentious point at the implementation of NCLB; however, as the focus and incorporation of academic standards became increasingly common, CTE programs have adapted and state departments of education have actually allowed students to receive academic credit for participation in CTE programs.

Loss of CTE Courses

The NCLB requirement that students become proficient according to state assessments by 2014 will enable all schools to meet the Adequate Yearly Progress (AYP) provisions. With the focus of these assessments on student proficiency solely in math, science, and reading, the AYP provision had profound effects on CTE programs. “Some have forecasted the focus on academics will result in a reduction of secondary CTE programs. Some states are already seeing increased academic courses for graduation, therefore, reducing the time available to students to take career and technical courses” (Phelps, 2002, p. 7). Because CTE courses did not meet the core accreditation requirements of most states, school districts lessened the worth of CTE programs. Because the intent of NCLB was to increase proficiency in core academic areas, most believe that directives of NCLB did not have any effect on CTE.

However, in a study conducted by Martin et al. (2006) participants agreed, “there will be elimination of career and technical education programs at the local level because of the requirements and effects of the NCLB legislation” (p. 107). The funding mechanisms associated with NCLB had other implications that many believed would have an impact on the survivability of CTE programs. “NCLB legislation, the back to basics movement, suggested cuts in educational funding for non-traditional programs that

have traditionally helped to fund career and technical education” (Gentry, Rizza, Peters, & Hu, 2005, p. 78). Efforts have been made by past presidential administrations to channel Perkins funding into other educational reform programs, including NCLB initiatives. Moreover, while in the midst of an economic recession, local and state budgets were being scrutinized by respective leaders. Maintenance of effort must be continued in order for states to receive federal funding through the Carl D. Perkins grants. If states failed to adequately fund CTE, the overall impact would be tremendous, causing school districts to close CTE programs. The combination of decreased student numbers due to the increased focus on core academic subjects and the dependency of CTE programs on state and federal money would potentially force school districts to take a closer look at CTE’s place in the modern educational setting.

Integration of Academics into CTE

The Carl D. Perkins Career and Technical Education Improvement Act of 2006 tied the NCLB accountability standards to CTE and began hold programs responsible for academic attainment and proficiency in core courses. With the shifting focus to academics the intent of CTE may have lost its relevance to technical application and students who excel with hands on training. “Current educational trends seem to have forgotten students who have career and technical interests and talents, or students who may be more successful learning by doing in an applied, real-world context” (Gentry et al., 2005, p. 78). “One problem of conventional vocation education has been that it provides preparation for specific entry-level jobs, but not preparation for more advanced jobs or life-long careers” (Grubb, 1996, p. 537). “Some researchers have argued that school-to-career programs fragment high school curriculum and may not prepare students

academically for demanding 4-year colleges” (Kantor, 1994, p. 451). “Academically, early research indicates CTE and School to Work can help decrease dropout rates and increase college enrollment, as well as improve attendance and grades, although there are no studies available about the impact on test scores” (Hughes, Bailey, & Mechur, 2001, p. 17). Rojewski (2002) stated, “more recent laws have kept pace with educational reform seeking to integrate CTE with academic education with an understanding of accountability” (p. 12).

In 2006, Congress reauthorized the Perkins Act until 2012. This legislation required states to develop a more rigorous curriculum and implement programs that allowed students to expand academic skills. Perkins required states to assist CTE students in meeting the requirements of academic proficiencies by state. “Federal vocational policy now places priority on ensuring that students in vocational programs are academically well prepared for success in both postsecondary education and the labor market” (Silverberg et al., 2004, p. 86). However, with the increasing demands of NCLB legislation on academic courses, were school districts prepared to remain open to the idea of CTE programs providing instruction for key academic areas? “CTE centers in most states depend heavily upon common schools’ cooperation for recruiting students. In order to maintain this cooperation, CTE institutions additionally may have to assume responsibility for the academic growth of their students in mathematics and science” (Kymes, 2004, p. 2).

The complete influence of high school reform policies was unclear; however, several strategies have been implemented in recent years to negotiate the increased rigor of these policies. Career academies, block scheduling, articulation agreements with post-

secondary institutions, and eliminating low-level academic courses were efforts that have been made to increase opportunities for students to participate in CTE programs. “In some states, academic content has been made explicit in CTE courses and CTE teachers understand and teach to each state’s academic standards” (ACTE, 2006, p. 14).

Interestingly, the Association for Career and Technical Education (ACTE) (2006) also reported, “CTE students in these states have outperformed the general high school population on the standardized high school exist exams” (p. 14).

CTE programs must continue to incorporate academics and implement successful teaching strategies into traditional CTE courses in order to remain a viable program of study for secondary school students. “Preparing students for life in the 21st century must extend beyond basic skills, beyond reading and math, beyond a traditional high school education that generally prepares students for college” (Gentry et al., 2005, p. 78).

Fletcher (2006) stated, “it is imperative that CTE programs not only emphasize these new 21st century objectives, but also be accountable through empirical research that shows a positive relationship between students who enroll in CTE programs and successful graduation from postsecondary institutions” (p. 7).

Student Perceptions of CTE

Along with the increased emphasis on academics, the perceptions of students were likely guided by what was perceived to be important. While recruitment for CTE programs primarily continued to be guided by CTE teachers, the fact remained that students were required to choose enrollment in CTE programs within a societal function that was placing increased importance on a “college education.” In 2005, Gaunt and Palmer reported, “unlike mathematics, English and science, CTE programs are electives

within the high school curriculum. If students choose not to elect CTE programs, then enrollment declines, and if that erosion continues, those affected programs are ultimately discontinued” (p. 1). To compound the effect that academic placement was having on student participation, CTE program offerings had been considered a track for low achieving and socioeconomic students who have no intention of attending college. While efforts have increased in recent years to help students envision a path to college through CTE as a viable option, understanding the prototypical students who enroll in CTE programs can prove to be a valuable resource during student recruitment. Likewise, having an understanding of students who choose not to enroll in CTE programs can allow CTE personnel to target particular subgroups of students where recruitment strategies can be applied to encourage participation by all student populations.

To determine how students received their information about CTE programs, in 2007 Palmer conducted research to determine what students knew about CTE programs. Included in the study was how the surveyed students obtained information in regards to CTE, students attitudes toward CTE, and factors that influenced student’s perceptions toward CTE. Interestingly, “more than 70% of all students surveyed agree that CTE serves students of all ability levels” (p. 27). Palmer (2007) continued by reporting, “44% of students surveyed said that friends were a major influence associated with enrollment in CTE programs and 49% of respondents said the opportunity to meet new people was a major factor” (p. 27). Another major influence attributed to student participation in CTE focuses on parental influences. Regarding participation in CTE programs for students, Palmer (2007) asserted, “58% of students that responded affirmed that their parents or guardian influenced their decision and 16 percent of students not participating in a CTE

program said that their parents or guardian had an influence” (p. 27). An exit survey disseminated to completers of a Wisconsin Youth Apprenticeship program concluded that “students were more interested in learning because they were motivated by their own work, and could make the connection between their current education and their future careers” (Scholl & Smyth, 2000, n.p.).

A major area of focus in CTE has been aimed toward nontraditional students. Students who were considered nontraditional concentrate on career paths where less than 25% of individuals from one gender comprise the total number of individuals employed in that field or occupation. Participation in CTE programs by women has had an encouraging result in relation to their performance in school programs leading to greater personal growth by continued engagement in post-secondary programs of education. “Often the training that young women receive in non-traditional fields leads to more career options: CTE can increase their employment opportunities and wages” (Scott et al., 2003, p. 7). Female students realized that in order to participate in high wage employment opportunities they must remain in school to receive training. Statistics show “female dropouts are more likely to be unemployed: 44 percent of young women without a high school diploma are unemployed” (Milgram & Watkins, 1994, pp. 12-14). However, with proper training female students can become as competitive for the workforce as male students by obtaining high skill, high wage positions.

CTE Educator Perceptions

With highlighted attention being placed on academic gains for students, educators often found themselves struggling to create innovative ways that continue to nurture their students academically. CTE was seldom considered to be a trailblazer in the educational

setting and is often perceived to be more traditional and complacent. Therefore, educational leaders often did not consider the effect that decisions concerning implementation of remedial programs or that requiring students to block out certain periods for state test preparation would have on CTE programs. Furthermore, to accommodate the requirements of the NCLB legislation, many states have implemented collaborative academic principles into their curriculums. This academic reform was requiring CTE educators to change their attitudes toward including academic principals in CTE classrooms. In the National Assessment of Vocational Education (Silverberg et al., 2004), teachers identified other “effects of reform that included (1) more use of vocational course time for academic test preparation; (2) reduced vocational enrollments where ‘high-stakes’ assessments have been implemented and (3) efforts by administrators to promote smaller learning communities and alternative scheduling” (p. 19). The full effect has not been completely felt in the classroom; however, more and more CTE educators have begun to realize their responsibility to incorporate academics. In a study investigating CTE teacher perceptions of the NCLB Act, Gordon et al. (2007) reported:

1. Over 50% of the respondents neither opposed nor favored the use of Perkins funds for NCLB teacher programs.
2. forty-six of the teachers neither agreed nor disagreed that the NCLB Act hinders the job of teaching.
3. Over 37% of CTE teachers neither agreed nor disagreed that professional development programs prepare teachers to meet the provisions of NCLB.

4. Nearly 80% of the respondents disagreed that only CTE teachers who teach core academic courses are required to meet the definition of a highly qualified teacher.
5. Over 60% of the responding CTE teachers disagreed that the NCLB Act is perceived as a means of reducing pressure on struggling schools.
6. A majority, 57% of the respondents neither opposed nor favored that parents of children in low performing schools are given new options under the NCLB Act. (n.p.)

The results confirmed that CTE teachers, more often than not, were less likely to support requirements mandated by the NCLB legislation and less likely to agree that more accountability be placed on students and parents. Facing the fact that many CTE teachers disagreed with the incorporation of academics into vocational curricula and the perceived importance that academic teachers have placed on meeting state standards makes it difficult for the two groups to collaborate. The National Assessment of Vocational Education (NAVE) (Silverberg et al., 2004) reported that "case studies suggest that integration suffers because the two groups of teachers who can best move it forward are not strongly committed to doing so" (p. 51). The report continued, "vocational teachers agree that some fundamental math, reading, and science knowledge is required for student success in vocational courses, but [they] do not believe that vocational courses should bear significant responsibility for delivering academic content and improving academic achievement" (p. 51). On the other hand, academic teachers were required to meet demands of increased academic attainment standards. This pressure made those in academia argumentative over integrating lessons with CTE

teachers. The NAVE (Silverberg et al., 2004) report went on to point out “vocational teachers have stronger connections to postsecondary faculty than do academic teachers. For example, 35.3% of vocational teachers, compared to 20.9% of academic teachers, reported having worked with postsecondary faculty” (p. 57).

Public Perceptions

Even with the growth of and attention toward academia during this time of reform in education, the Bureau of Labor Statistics (2001) reported, “of the job openings between 2000 and 2010 that approximately 7% will not require any type of postsecondary degree, while only 9% and 21% will require an associates or bachelors degree respectfully” (p. 1). “Overall, we argue that the demand for workers to fill jobs in the middle of the labor market—those that require more than high—school, but less than four-year degree will likely remain quite robust relative to its supply” (Holzer & Lerman, 2007, p. 3). The Bureau of Labor Statistics (2006) noted “nearly half (about 45%) of all job openings between 2004 and 2014 will be in middle-skill occupations. Compared with one-third (33%) of job openings in the high-skill occupational categories and 22 % in the service occupations” (p. 2).

However, more current research by The Georgetown University Center on Education and the Workforce (GUCEW) (Carnevale, Smith, & Strohl, 2010) indicated “by 2018 the United States will need 22 million new college degrees but will fall short of that number by at least 3 million” (p. 1). The research also projected only a 3% decrease in the percentage of the workforce that had a high school education or had dropped out of high school. While the share of the labor market had increased on each end of the spectrum, the middle-wage job-skill market still remained near 50% of the total

employment. “Substantial demand remains for individuals to fill skilled jobs in the middle of the labor market, with many of these jobs paying high wages, particularly for jobs that require an associate’s degree or some particular vocational training and certification” (Holzer & Lerman, 2007, p. 4). In Holzer and Lerman’s (2007) report *America’s Forgotten Middle-Skill Jobs* it is suggested:

A strong public consensus now supports enhancing the skills of America’s workers, especially through more and higher-quality education and training. It is beyond dispute that high-level skills are more valued in the labor market than ever before, and that skills must increase the most among least-educated workers to reduce poverty and inequality in the United States. (p. 6)

The center of attention for an increased number of workers with degrees has been brought about by a stronger voice of policymakers and industry leaders in the areas of science, technology, engineering, and math (STEM). The intent of this attention toward STEM was to help keep their organizations competitive and innovative in the world economy.

The expectations and demands of business and industry leaders focused all resources and attention on improving everyone academically; educational priorities for the middle working class the backbone of America’s workforce have been forgotten. Holzer and Lerman (2007) noted “in our view, researchers are underestimating middle-skill job prospects in labor markets, and policymakers are paying too little attention to strengthening skill development for these positions” (p. 6). Furthermore, Holzer and Lerman (2007) “argue that the demand for middle-skill workers will likely remain quite robust relative to its supply, especially in key sectors of the economy” (p. 7). In 2008,

The Council on Competitiveness released a study, *Thrive: The Skills Imperative*, that focused on “how the United States can harness its intellectual, financial, entrepreneurial and human capital to ensure prosperity for all Americans in the 21st century” (p. 5). The report concluded:

Middle-skilled jobs represent the largest number of total openings in the United States until 2016, and the United States is failing to adequately train Americans to take advantage of this opportunity. These jobs do not always require a college degree, but most require training, technical sophistication and initiative. They pay well and do not offshore easily. (p. 7)

Employers believed that new employees were not prepared to enter the workforce at any level of training. Along with the disparity of data and the disproportionate balance between supply and demand, graduates at every level may be forced to develop skills not obtained through a course of study in order to be competitive within the labor market.

Summary

No Child Left Behind legislation has had a philosophical effect on education reform as we moved from the 20th to the 21st century. Many of these effects have yet to be felt by school districts, local schools, administrators, teachers, and even the students. NCLB increased student expectations and academic attainment for every child in America’s classrooms. However, Dewey in 1916 described an educational setting where “students benefit when schools enable them to take part in learning opportunities beyond the traditional classroom that can transform their minds and build their personal capacity toward future possibilities” (p. 322). Yet, with over nine decades of educational reform, policy moved from one extreme to another. Like most stakeholders associated with

education, CTE leaders and educators alike strived to produce productive students who had the capability to embrace education at all levels and who were prepared for participation in the workforce. Even with a shared vision, the ability of CTE to remain an integral part of secondary education “has lost popularity in the United States due to an increased emphasis on academic skills and a belief in college for all, coupled with a perception that vocational education was becoming an educational backwater for the disadvantaged” (Cohen & Besharov, 2004, p. 7).

Advocates, however, remained optimistic concerning the impact that CTE can have on students in the secondary educational setting. CTE continued to support a diverse range of students as they participated throughout their high school careers in a complex array of performance-oriented program offerings that were designed to enable the alignment of education and work-related goals. According to Ryken (2006), students can make the goals of CTE attainable “by negotiating a variety of contexts, shaping their learning through asking questions, making choices to spend their time engaged in activities emphasizing educational and career development, linking school and work, and by viewing adults and peers as learning resources” (p. 67). Notwithstanding this body of knowledge and a seemingly steady enrollment in CTE programs through the past decade, students were beginning to focus more time and attention on academic subjects that enhanced their post-secondary opportunities. Consequently, the institutional body of CTE would have to validate that it can contribute not only to training youth in the technical aspects of business and industry, but that it also can incorporate academic skills needed by students to remain proficient as measured by high stakes testing.

Student's perceptions of CTE were potentially the most important aspect of program validity moving into the next era of educational reform. If students perceived that CTE programs have a positive impact on their future career options, then they were naturally more inclined to participate in CTE courses. Student perceptions are extremely important to the future of CTE. In order to have a studied understanding of how students recognized the benefits of CTE and more importantly to gain knowledge about the students who choose not to enroll in CTE programs, CTE leaders should continue to document research that proves CTE's value. Insightful information provides CTE personnel with valuable resources and enables educators to focus their attention on students who are often considered non-traditional CTE students.

CHAPTER III

METHODOLOGY

Introduction

The NCLB legislation mandated that states set comprehensive standards that encompassed criteria for the information that each child should achieve and maintain local school accountability for the progress of their students in core academic subjects, such as language arts, science, and mathematics. According to Chadd & Drage (2006), “the NCLB Act is at the forefront of all decisions being made at the secondary level in regard to which programs to support. The future of CTE programs rests on those who make decisions regarding which programs to cut” (p. 43). Furthermore, “in order for CTE to survive, these individuals must recognize the contribution CTE programs and classes make in achieving NCLB objectives” (Chadd and Drage, 2006, p. 43).

Over the last decade, the advice most frequently given to young people more often than not was to get a college education. This advice was founded in relevant evidence due to the fact that the job earnings of adults with a four-year degree were substantially higher compared to adults with only a high school diploma. However, educators realized college for all was not and would likely continue to be a reality because every year many graduates did not go to college, while others enrolled and simply dropped out or failed. Many factors contributed to the lack of students successfully attending college, including: ability, socioeconomic limitations, and interest. Many students found that career opportunities were available through CTE programs and considered a vocational track for graduation, an enhanced path to developing work place skills necessary to receive a good job. However, opponents to

CTE continued to consider that this route prevented young people from participating in post-secondary education, and it inhibited them from reaching their educational potential. Additionally, the perceived history that CTE programs did not provide adequate rigor and was often considered a dumping ground for lower achieving students has affected stakeholder acceptance of CTE programs of study. The intent of this research was to provide a compelling look at the effect that NCLB has had on CTE programs and CTE students, specifically in Mississippi, and to provide a link between what CTE has produced in terms of helping school districts achieve the goals of NCLB. The constant pull between academic-oriented instruction and technical-oriented instruction remained a highly contested debate among educational practitioners as implementation of NCLB pushed on. This research is meant to add to the body of knowledge so that future educators can apply this information in potential decision-making conditions that will aid in the development of a student-centered curriculum that leads to an increased acknowledgement of the benefits of providing for and meeting the diverse needs of our students.

Hypotheses

The rationale of this study was to determine the effect(s) of No Child Left Behind Legislation on Career and Technical Education. Two main areas of focus pertained to student enrollment in CTE courses and the comparison between students enrolled in CTE courses and students not enrolled in CTE courses via students' scores on the Mississippi Subject Area Test. The following hypotheses and research questions guided the study in order to derive a purpose-driven outcome:

H₁ There will be no difference between the means on the Mississippi Subject Area Test (Biology, Algebra, and Language Arts), for student completers in Career and Technical Education courses versus non Career and Technical Education completers from the 2008-2009 and 2009-2010 school years.

H₂ Student placement in skilled jobs, military, or postsecondary education (two or four years) does not increase for program completers, as reported in the Mississippi Office of Career and Technical Education Carl Perkins Annual Report by local Career and Technical Education Centers in Mississippi.

H₃ There is no difference in the Mississippi Subject Area Biology Test scores for students who do not enroll in a Career and Technical program of study versus those who enrolled in the Agricultural Environmental Science Technology (Agricultural Concepts) course during the 2006-2007, 2007-2008, and the 2010-2011 school years.

Research Questions

R₁ Were students who completed CTE course sequences in high school not as likely to be competitive in the workforce or college compared to students who did not complete CTE course sequences in high school?

R₂ How has student enrollment in Career and Technical Education in Mississippi changed between the fall semester of 2002 and the fall semester of 2010?

Research Design and Procedures

The primary focus of this research was to determine if the implementation of NCLB influenced student participation in CTE programs. Quantitative data were used to help determine the implications of NCLB on CTE. Data pertaining to student enrollment and participation in CTE programs, CTE student completer placement, and student scores

from the MS-CPAS2 were compiled from archived records from the Mississippi Department of Education (MDE), Office of Vocational and Technical Education (OVTE). Mississippi Biology Subject Area Test scores for the state were compiled from the Mississippi Department of Education, Office of Student Assessment archived records.

CTE student enrollment records as reported by school districts to the MDE, OVTE for reporting on the Federal Carl Perkins Reports were used to determine student enrollment for CTE Programs in Mississippi since the implementation of NCLB legislation. These data established whether enrollment decreased, increased, or remained the same from 2002 through 2010.

Student scores on the Mississippi Subject Area Tests (Biology, Algebra, and Language Arts) for student completers in CTE courses and non-CTE completers for the 2008-2009 and 2009-2010 school years for the entire state of Mississippi were compared to determine if there were differences between their state test scores. The results of these data showed whether CTE programs had an influence on student achievement on state proficiency exams for students who were enrolled in CTE.

The fact that CTE has been a major component of the educational setting in the United States for nearly 100 years ensured that it could withstand continued scrutiny and provided an important venue for students from all aspects of societal and economic levels of modern culture to develop career and employability skills. The Bureau of Labor Statistics (2006) estimated that “15.6 million jobs will be added to the labor force between 2006 and 2016, with population shifts and new technologies fueling job growth. These new jobs will require higher communication, math, technology, and employability skill levels than ever before” (p. 1). Mississippi OVTE local school district summary

reports for the entire state were used to determine if CTE made a valuable contribution by tracking program completers in skilled jobs, military, or post-secondary education (two or four years).

Students' scores on the Mississippi Subject Area Biology Test and the Agricultural Concepts MS-CPAS2 (at a public high school in rural Southeast Mississippi) were compared with scores on the Mississippi Subject Area Biology Test of students that were only on academic tracks. These data showed if differences existed that demonstrated whether CTE contributed to or had sufficient rigor compared to academic courses. In the school selected for comparison, Agriculture Concepts (along with other preparatory or remedial science classes) had been approved by local school leadership as a prerequisite for enrollment in biology. All students, except the 20-25% that met the requirements for advanced placement (which is also determined by state test scores from the junior high school) were required to take two science classes during their ninth or tenth grade years before enrollment in Biology the spring semester of their tenth grade year. Prerequisite or remedial courses for state-tested subjects have become commonplace throughout the state in order to build a stronger foundation and prepare students for state tests. Requiring students to participate in remedial courses prohibited students from entry into CTE programs, especially for students enrolled in what was often considered an extracurricular course (athletics or band) during their tenth grade year. Agriculture Concepts is part of Mississippi's Agriculture and Environmental Science Technology (AEST) curriculum that was implemented with a series of pilot programs during the 1999 and 2000 school years and underwent statewide implementation during the 2000-2001 school year. MS-CPAS tests were developed and

given to students enrolled in Agriculture Concepts during the 2006 and 2007 school years. Agriculture Concepts testing was discontinued for to reasons that were beyond the scope of this study. However, during the 2010-2011 school year, Mississippi OVTE resumed testing of Agriculture Concepts students. Therefore, this study compared not only students enrolled in CTE with those who were not; it also compared test scores between Agriculture Concepts students in different testing years.

To answer the research questions posed by this study, a focus group of former CTE and academic students was developed from a school in Southeast Mississippi to determine whether students who were enrolled in CTE programs developed additional skills during their secondary education that enabled them to be competitive sooner in the workforce than academic students. This focus group was used to study student perceptions on the implications of school reform policies on non-enrollment into CTE programs, as well as to provide valid proof of the contributions that CTE provided to the educational process.

Sample/Participants

The sample information was retrieved with the permission of the Mississippi Department of Education from archived data. All participants remained anonymous and were protected from identification. On the Federal Carl Perkins Reports, student enrollment records were reported by school districts to the Mississippi Department of Education, Office of Vocational and Technical Education. The data was used to determine student enrollment trends for CTE programs in Mississippi since implementation of NCLB legislation.

For the quantitative portion of the study, all Mississippi Subject Area Test scores in Biology, Algebra, and Language Arts for CTE completers and non-CTE completers statewide were retrieved with permission of the Mississippi Department of Education (see Appendix A) from archived data for the 2008-2009 and 2009-2010 school years. All participant data remained anonymous and protected students from identification. Prior to contacting the Mississippi Department of Education for usage of the data, permission was gained from The University of Southern Mississippi's Institutional Review Board for Human Subjects (IRB) Office (Appendix B).

Each year CTE centers track students upon their completion of a CTE course of study. This information provided valuable insight into what career options students choose or chose to participate in and whether CTE had any influence on those decisions. Data was collected with permission of the Mississippi Department of Education Office of Vocational and Technical Education for the entire state and was divided into tracking subgroups of skilled job placement, military, and post-secondary education (two or four years). All reported data or results remained anonymous and protected students from identification. All archival data received from MDE was formatted and coded in a manner that protected all individuals from identification. All student scores were listed in sequential order beginning with the number 1 and ended with the total number of participants. Because only the mean scores between the total non-completers and total completers for the SATP and MS-CPAS2 in Mississippi the previous two years were used, no individual student information was identified in the scope of this research. The data have been stored on a personal CPU that only the writer had access to for the

duration of this study. The data were stored in a secure technological format for other potential studies that may be derived from the same data.

To narrow the focus and actually measure if CTE contributed to or had sufficient rigor as an academic course area, Mississippi Subject Area Biology test scores and scores from students enrolled in Introduction to Agricultural Concepts at a high school in rural Southeast Mississippi were collected for students enrolled during years both tests were administered. Data was collected with permission of the school district and the Mississippi Department of Education. All reported data or results remained anonymous and protected students from identification.

A focus group of former CTE and academic students was developed from a school in Southeast Mississippi to determine if students who were enrolled in CTE programs developed more skills during their secondary education that enabled them to be competitive sooner in the workforce than the academic students. The researcher facilitated the focus group session. Notes of specific statements of the participants were recorded during the discussion, employing qualitative focus group methodology in the collection and analysis of data for this study. The questions that were asked of the focus group can be found in Appendix C.

Data Analysis

All quantitative data were retrieved in an electronic format from the Mississippi Department of Education and downloaded into SPSS-18 (©) for statistical calculation. Data was collected from all career and technical centers in Mississippi, including CTE completer placement after high school graduation.

In order to evaluate the first hypothesis that there is no difference between means on the Mississippi Subject Area Test (Biology, Algebra, and Language Arts) for students who were completers in Career and Technical Education courses versus non-Career and Technical Education completers in the 2008-2009 and 2009-2010 school years, a two way ANOVA was conducted with one grouping variable, subject area as one multiple measures variable, and year as another grouping variable.

In order to evaluate the second hypothesis that student placement does not increase for program completers as reported in the Mississippi Office of Career and Technical Education Carl Perkins Annual Report by local Career and Technical Education Centers from Mississippi in skilled jobs, military, or post-secondary education (two or four years), a two-way Chi square analysis was employed.

In order to evaluate the third hypothesis that there is no difference in the Mississippi Subject Area Biology Test scores for students who did not enroll in a Career and Technical program of study versus those who enrolled in the Agricultural Environmental Science Technology (Agricultural Concepts) course during the 2006-2007, 2007-2008, and the 2010-2011 school years, a two-way ANOVA was conducted with biology scores as the dependent variable, enrollment status as one grouping variable, and years as another grouping variable.

In order to test the research question concerning whether students who complete CTE course sequences in high school were not as likely to be competitive in the workforce or college compared to students who did not complete CTE course sequences in high school, a focus group discussion was conducted with former students from a high school in Southeast Mississippi that completed CTE course sequences and students who

chose or were advised not to enroll in CTE programs. The focus group responded to questions related to the impact that participating or not participating in CTE programs had on their careers. Respondents' perceptions were recorded during discussions and reported individually, so that responses reflected the former student's feeling toward their high school career.

In order to gather information concerning how student enrollment in Career and Technical Education in Mississippi has changed since implementation of NCLB legislation, a trend analysis was employed on Career and Technical Education enrollment numbers reported to the Mississippi Department of Education by local CTE centers.

Summary

In light of all the challenges faced in the educational process, especially CTE, vocational leaders found themselves in a distinctive situation in terms of providing students with a strong career-oriented background, engaging them in a more personalized and applied-learning setting. Meeting the diverse needs of today's student population was an ever-increasing dilemma for educational leaders. The results of this research will provide valuable insight to school leaders that can enable them to develop well-planned comprehensive educational programs that will help ensure student success to meet the educational needs of the 21st century. This study is also intended to assist CTE leaders in providing the tools that allow decision makers to make positive changes to meet the demands of NCLB requirements and open new doors for academic and career and technical education.

CHAPTER IV

RESULTS

Introduction

The focus of this research was to reflect on the impact that NCLB had on CTE programs and students during the last decade. The mandates created by federal and state agencies have created continued evolvement of educational, policy producing varied effects on local educational agencies. The reauthorization of ESEA in 2011 has replaced the content of NCLB. However, the expectations and mandates continue to remain strong in terms of student growth, maintaining a focus of keeping effective teachers and administrators in every school, and graduating every student College and Career Ready (CCR). Ironically, by February of 2012, 37 states (including Mississippi) and the District of Columbia had submitted ESEA Flexibility Requests in order to be given waivers from key provisions of NCLB.

The decade following NCLB brought along a significant era in school funding. The Great Recession required state and local departments of education to analyze and reduce budgets. The recession also required them to implement changes in policy that potentially had unprecedented effects on many of the mandates brought about by the reform policies of NCLB and ESEA. This research was aimed at showing how Mississippi CTE programs have influenced student, teacher, and educational policies during the NCLB era by creating more academic and technical opportunities for all stakeholders.

Two main focal points were the driving force behind this research: a) how the implementation of NCLB influenced student participation on CTE programs and b)

comparing student achievement for secondary students who completed such a CTE program of study and secondary students who had not completed a program of study. The quantitative data represented in this research were collected from the Mississippi Department of Education and a school district from South Mississippi. Student CTE participation and enrollment data were compiled from the Mississippi Annual State Superintendent's Report (years 2002-2010). One area of concern focused on CTE student completion placement data. This information was not presented in a manner that afforded itself to analysis and will be discussed in greater detail later in this report. The data from the school district level were relatively easy to secure, due to the fact that this information was not as detailed and because of the smaller number of participants compared to statewide data. The hypotheses were presented in the same order as in Chapter I. SPSS-18 (©) was the statistical analysis software used to complete all quantitative analysis.

Descriptive

This study used a combination of data analysis. Most components employed a quantitative approach aligned with descriptive statistics to report outcomes. Specifically, mean differences were used to make comparisons between student test scores. All of the archival data required to complete this study were a matter of public record. The archived data represented in this study were derived from student scores on the Mississippi Subject Area Testing Program in the areas of language arts, biology, and algebra. These test instruments were used by MDE for all students enrolled in/attending publicly funded high schools to measure student proficiency in the tested secondary subjects. Statistics employed compared the mean differences of biology, algebra, and

language arts subject area test scores for Mississippi of CTE program completers and students who were not enrolled in CTE programs for the 2008-2009 and 2009-2010 school years.

Descriptive statistics for the dependent variables in Hypothesis 1 revealed that the mean score of non-CTE completer students was higher than CTE completers on the 2008-2009 (year 1) state algebra SATP (non completer $m = 571.01$, $sd = 131.23$, $n = 54,973$), completer $m = 474.91$, $sd = 146.23$, $n = 7664$), biology SATP (non completer $m = 378.61$, $sd = 91.37$, $n = 54973$, completer $m = 367.01$, $sd = 67.33$, $n = 7664$), and English SATP (non completer $m = 591.02$, $sd = 124.17$, $n = 54973$, completer $m = 505.63$, $sd = 161.15$, $n = 7664$).

Similarly, in 2009-2010 (year 2) algebra SATP (non completer $m = 607.28$, $sd = 103.90$, $n = 55772$, completer $m = 580.29$, $sd = 124.50$, $n = 7531$), and biology SATP (non completer $m = 389.20$, $sd = 100.38$, $n = 55772$, completer $m = 378.10$, $sd = 87.47$, $n = 7531$), was higher, except for year 2 of the English SATP (non completer $m = 646.76$, $sd = 31.37$, $n = 55772$, completer $m = 647.92$, $sd = 19.59$, $n = 7531$), where the CTE completers' mean score was higher than non completers. See Table 1.

Table 1

2008-2009 and 2009-2010 School Years Mississippi SATP Mean Scores

Source	Year	Non-Comp/ Completer	Mean	Std. Deviation	n
Algebra	2008-2009	Non-Comp	571.01	131.23	54973
		Completer	474.91	146.23	7664
		Total	559.33	136.84	62637
	2009-2010	Non-Comp	607.28	103.90	55772
		Completer	580.29	124.50	7531
		Total	604.07	106.91	63303
	Total	Non-Comp	589.32	119.63	110745
		Completer	527.14	145.75	15195
	Biology	2008-2009	Non-Comp	378.61	91.37
Completer			367.09	67.33	7664
Total			377.20	88.86	62637
2009-2010		Non-Comp	389.20	100.38	55772
		Total	387.88	99.00	63303

Table 1 (continued).

	Total	Non-Comp	383.94	96.16	110745
		Completer	372.55	78.16	15195
		Total	382.57	94.24	125940
Language Arts	2008-2009	Non-Comp	591.02	124.17	54973
		Completer	505.63	161.15	7664
		Total	580.57	132.25	62637
	2009-2010	Non-Comp	646.76	31.37	55772
		Completer	647.92	19.59	7531
		Total	646.90	30.21	63303
	Total	Non-Comp	619.09	94.47	110745
		Completer	576.15	135.46	15195
		Total	613.91	101.28	125940

The data needed to analyze Hypothesis 2 were not available in a format that allowed any type of investigation to be completed. This information was presented in mixed numbers for which no correlation between could be compared from year to year. Also, for the period of time that data were requested (2002-2010), two years of data were

missing from the set. There was no report available for the 2007-2008 school year student placements due to the fact that a waiver was granted to Mississippi from the U.S. Department of Education. The U.S. Department of Education in a report to Congress (2009) stated, “the Secretary of Education is given authority to grant waivers of certain requirements of federal education programs in cases where a waiver will likely contribute to improved teaching and learning” (p. 2). These waivers were typically used to adjust federal programs to accent or meet local state or district needs; however, the additional flexibility brought an increase in accountability for enhancing student achievement. Likewise, data for the 2008-2009 school year were not obtainable. This information was not reported in the state documentation presented to the researcher.

Descriptive statistics for the dependent variables in Hypothesis 3 revealed that the mean biology SATP test scores for students ($m = 354.79$, $sd = 38.57$, $n = 66$) at a school district in Southeast Mississippi who did not enroll in a CTE program of study were less than students ($m = 364.68$, $sd = 32.72$, $n = 28$) who enrolled in the Agricultural Environmental Science Technology (Agricultural Concepts) during the 2006-2007 school year. Likewise, during the 2007-2008 school year, Agriculture Students ($m = 373.37$, $sd = 59.21$, $n = 52$), scored higher than non-CTE enrollment ($m = 352.87$, $sd = 54.86$, $n = 91$) achieving the same results as the previous year where Agricultural Environmental Science Technology (Agricultural Concepts) students' mean scores were higher. Comparing 2006-2007 and 2007-2008 school years, the mean score for students enrolled in AEST (Ag. Concepts) ($m = 370.33$, $sd = 51.45$, $n = 80$) was higher than students not enrolled ($m = 353.68$, $sd = 48.55$, $n = 157$) in a CTE program. (See Table 2)

Table 2

Comparison of SATP Biology Scores for 2006-2007 and 2007-2008

Dependent Variable: Score				
Year	Agriculture/ Biology	Mean	Std. Deviation	n
2006-2007	Agriculture	364.68	32.72	28
	Biology	354.79	38.57	66
	Total	357.73	37.03	94
2007-2008	Agriculture	373.37	59.21	52
	Biology	352.87	54.86	91
	Total	360.32	57.13	143
Total	Agriculture	370.33	51.45	80
	Biology	353.68	48.55	157
	Total	359.30	50.06	237

When comparing the SATP biology scores of students who enrolled in Agricultural Environmental Science Technology and students who did not enroll in CTE programs of study at a school district in Southeast Mississippi for the 2009-2010 school

year, the AEST students' ($m = 652.17$, $sd = 9.13$, $n = 23$) mean score was less than students ($m = 654.86$, $sd = 7.76$, $n = 121$) who did not enroll in CTE programs. (See Table 3)

Table 3

Comparison of SATP Biology Scores for 2009-2010

Dependent Variable: Score			
Agriculture/Biology	Mean	Std. Deviation	n
Agriculture	652.17	9.13	23
Biology	654.86	7.76	121
Total	654.43	8.02	144

Statistical

The following Hypotheses and Research Questions guided the study in order to derive a purpose driven outcome:

H₁: There is no difference between the means on the Mississippi Subject Area Test (biology, algebra, and language arts) for student completers in Career and Technical Education courses versus non-Career and Technical Education completers for the 2008-2009 and 2009-2010 school years.

The archived data represented in this study were derived from student scores on the Mississippi Subject Area Testing Program in the areas of language arts, biology, and algebra. The Mississippi Department of Education (MDE) used these test instruments for all students enrolled in/attending publicly funded high schools to measure student

proficiency in the tested secondary subjects. In order to evaluate the first hypothesis, that there was no difference between means on the Mississippi Subject Area Test (biology, algebra, and language arts) for students who were completers in Career and Technical Education courses versus non-Career and Technical Education completers in the 2008-2009 and 2009-2010 school years, a two-way ANOVA was conducted with one grouping variable, subject area as one multiple measures variable, and year as another grouping variable. The reported interaction of the multiple variables revealed that there was a statistically significant effect for year, $F(3,125934)=6312.57, p<.001, \eta^2=.131$ as well as a significant effect for being a completer, $F(3,125934)=2020.386, p<.001, \eta^2=.046$. There was also a significant main effect for the interaction of year and completer $F(3,125934)=1270.23, p<.001, \eta^2=.029$. In both years, the effect for non completers was higher than for completers. (See Tables 4 and 5)

Table 4

Comparison of SATP Biology, Algebra, and Language Arts Scores for 2009 and 2010

Effect	Test	Value	F	Hypothesis df	Error df	Sig.
Year	Pillai's Trace	.131	6312.573 ^b	3.000	125934.000	<.001
Complete	Pillai's Trace	.046	2020.386 ^b	3.000	125934.000	<.001
Year * Complete	Pillai's Trace	.029	1270.230 ^b	3.000	125934.000	<.001

Table 5

Comparison of Interaction Between Year and Completer on the SATP Biology, Algebra, and Language Arts Scores for 2009 and 2010

Source	Subject	F	df	p
Year	Algebra	4608.12	1,125936	<.001
	Biology	176.01	1,125936	<.001
	Language Arts	14938.85	1,125936	<.001
Completer	Algebra	3489.31	1,125936	<.001
	Biology	193.38	1,125936	<.001
	Language Arts	2702.2	1,125936	<.001
Interaction	Algebra	1100.99	1,125936	<.001
	Biology	.068	1,125936	.795
	Language Arts	2853.40	1,125936	<.001

A closer examination of the statistical analysis revealed interesting findings that were considered important to characterize the impact that NCLB legislation has had on student achievement. Students' scores in Mississippi for the 2008-2009 and 2009-2010 school years increased for both CTE completers and non completers at the same rate on the biology test. Considering the increased focus that NCLB legislation created toward

individual student achievement, the results were actually not very surprising. The graphical representation of the mean scores for the 2008-2009 and 2009-2010 Mississippi SATP biology test showed what typical growth would be expected to appear like, both lines moving on a parallel plane, in a positive direction. (See Figure 1)

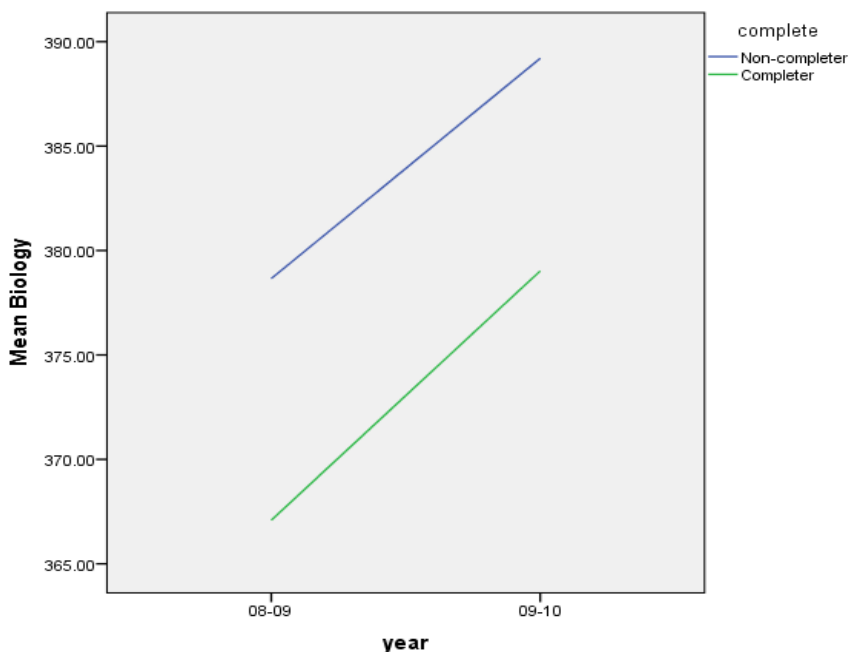


Figure 1. Mean SATP Scores for Biology 2008-2009 and 2009-2010.

However, the interesting fact that made this information important to document for the purpose of this study was that in both algebra and language arts student scores increased at a faster rate for students enrolled in CTE programs than the scores of students who were not enrolled in a technical CTE program, with students enrolled in CTE programs surpassing non completers on the 2009-2010 state language arts SATP. (See Figures 2 and 3)

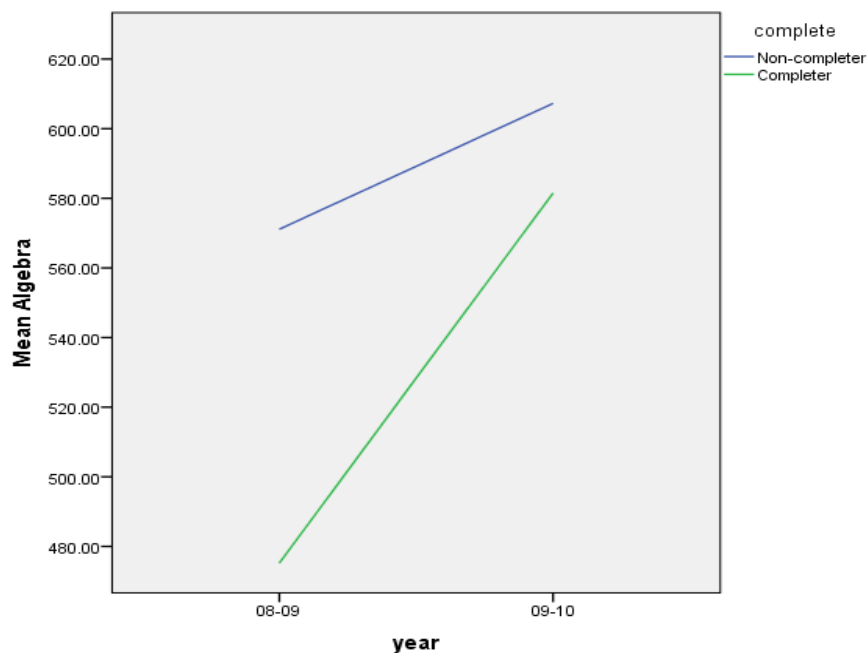


Figure 2. Mean SATP Scores for Algebra 2008-2009 and 2009-2010.

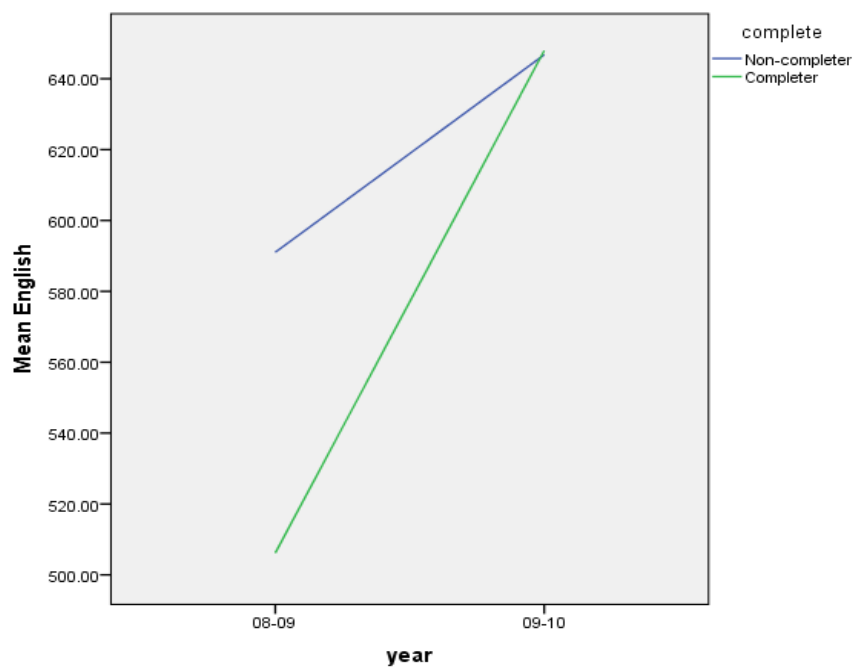


Figure 3. Mean SATP Scores for Language Arts 2008-2009 and 2009-2010.

The purpose of this research was not to determine what caused these scores to increase at a higher rate, but it should be noted that during this time frame much attention in education was placed on highly qualified teachers, increased teacher accountability,

student remediation, double-scheduling students, and a lower participation rate of students in technical CTE programs. These influences on student achievement were all brought about by the NCLB legislation requiring that a greater emphasis be placed on student academic achievement to reach the goal of every student performing at a higher level.

H₂: Student placement does not increase for program completers, as reported in the Mississippi Office of Career and Technical Education Carl Perkins Annual Report by local Career and Technical Education Centers from Mississippi in skilled jobs, military, or postsecondary education (two or four year). No statistical analysis was completed, due to insufficient data.

H₃: There is no difference in the Mississippi Subject Area biology Test scores for students who do not enroll in a Career and Technical program of study versus those that enrolled in the Agricultural Environmental Science Technology (Agricultural Concepts) course during the 2006-2007, 2007-2008, and 2010-2011 school years.

In order to evaluate the third hypothesis that there was no difference in the Mississippi Subject Area biology Test scores for students who do not enroll in a Career and Technical program of study versus those who enroll in the Agricultural Environmental Science Technology (Agricultural Concepts course) during the 2006-2007, 2007-2008, and the 2010-2011 school years, a two-way ANOVA was conducted with biology scores as the dependent variable, enrollment status as one grouping variable, and years as another grouping variable.

The reported interaction of the multiple variable for the 2006-2007 and 2007-2008 school years revealed that there was no statistical significant effect for year $F(1,$

233)=.229, $p=.633$, $\eta^2=.001$. However, a significant effect was discovered with Agriculture Concepts students' mean scores being greater than students enrolled only in biology $F(1, 233)=4.613$, $p=.033$, $\eta^2=.019$. There was also no significant main effect for the interaction of year, agriculture, and biology $F(1, 233)=.562$, $p=.454$, $\eta^2=.002$. (See Table 6)

Table 6

Interaction Between Agriculture Students and Biology Students, Biology SAPT Mean Scores for 2006-2007 and 2007-2008.

Dependent Variable: score

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	16205.712 ^a	3	5401.904	2.188	.090
Intercept	25775832.96	1	25775832.96	10440.029	.000
Year	564.751	1	564.751	.229	.633
Agriculture/biology	11388.304	1	11388.304	4.613	.033
Year * agriculture/biology	1387.412	1	1387.412	.562	.454
Error	575263.613	233	2468.943		
Total	31186547.00	237			
Corrected Total	591469.325	236			

Note: R Squared = .027 (Adjusted R Squared = .015)

The analysis for the 2009-2010 school year had to be completed separately. The scoring rubric changed, and the student scores were represented by different figures. The reported interaction of the multiple variables for the 2009-2010 school year revealed that

there was no statistically significant interaction between Agriculture Concepts student and students not enrolled in CTE $F(1, 142)=2.184, p=.142, \eta^2=.015$. (See Table 7)

Table 7

Interaction Between Agriculture and Biology Mean Scores 2009-2010.

Dependent Variable: score					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	139.390 ^a	1	139.390	2.184	.142
Intercept	33015972.72	1	33015972.72	517359.482	.000
Agriculture/biology	139.390	1	139.390	2.184	.142
Error	9061.916	142	63.816		
Total	61681428.00	144			
Corrected Total	9201.306	143			

Note: R Squared = .015 (adjusted R Squared = .008)

Research Question 2: How has student enrollment in Career and Technical Education in Mississippi changed between the fall semester of 2002 and the fall semester of 2010?

CTE student enrollment records as reported by the Mississippi Department of Education's State Superintendent's Annual Report (2002-2010) were used to determine participation in CTE programs administered by the Office of Career and Technical Education since the implementation of NCLB legislation. Analysis of these data

established the trends or changes in student enrollment that existed during the era of NCLB (2002-2010). No differentiation was made for the purpose of this study between program areas, ethnicity, or gender.

Examining student enrollment trends in Mississippi CTE programs from the implementation of NCLB, student participation started at 28,325 students being served by 1,000 CTE programs across Mississippi. Student participation in CTE the next four years fluctuated, peaking in the 2006 school year at 29,137 students being served by 1,081 technical programs in the state. From this point, student participation Mississippi CTE programs plummeted to a low in 2009 of 23,178 students being served by the highest number of technical programs ever recorded in the state at 1,289. (See Figure 4)

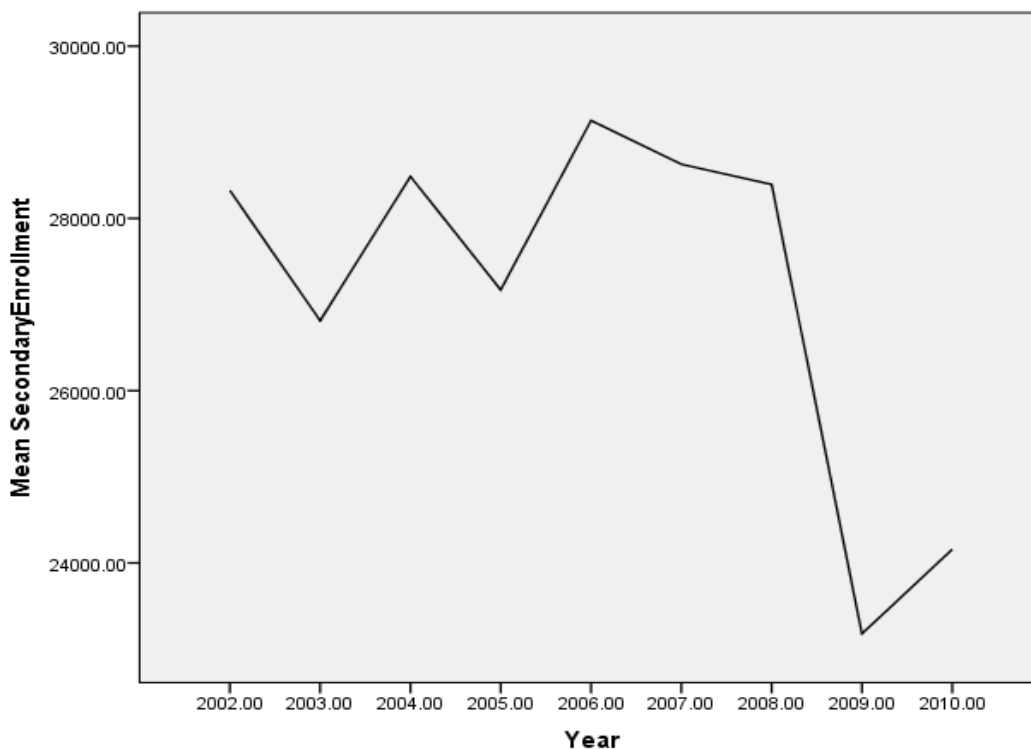


Figure 4. Trend Analysis Representation of Student Enrollment in CTE Programs 2002-2010.

Qualitative

Research Question 1: Were students who completed CTE course sequences in high school not as likely to be competitive in the workforce or college compared to students who did not complete CTE course sequences in high school?

A focus group of former CTE and academic students was developed from a school in Southeast Mississippi to determine student perceptions of their secondary education and to establish whether students who were enrolled in Mississippi CTE programs developed more skills during their secondary education that enabled them to be competitive sooner in the workforce or postsecondary education than academic-oriented students from the same school.

Participants for the focus group were selected from a list of former CTE students identified through Carl Perkins reporting as attending college immediately following graduation from high school and were enrolled or had recently completed a post-secondary program of study. The Carl D. Perkins Career and Technical Education Improvement Act mandated that states track performance-based standards such as program completion and job placement for students enrolled in CTE programs of study. This required school districts to track students from the time they were enrolled in a CTE program until they graduated high school. Districts have to document whether a student enrolled in a post-secondary institution or went into the work force or military. Non-CTE completers were identified by the high school counselors and met the same post-secondary completion criteria. Three individuals participated in the focus group, from a total number of eight students who were contacted. Of the three, two were former CTE students and one never enrolled in a CTE technical program through high school. All

three individuals are white female students who have either completed a post-secondary degree or, at the writing of this research, was a senior at the post-secondary level.

The focus group responded to questions that related to the impact that participating or not participating in CTE programs had on their educational careers. Respondents' perceptions are reported below and were recorded by a third party during discussions.

Participant 1

CTE Completer

1. Did you complete a CTE program of study? If so, what made you want to participate in such courses?

I have always been interested in agriculture and health care; therefore, I completed all of the agriculture and allied health classes that were available to me in order to learn more about my interest and to help me to achieve my future goals.

2. Do you feel that your participation in CTE prepared you for the workforce and/or college? Explain your answer.

Yes, I am now a Registered Nurse and Allied Health helped me to understand the basics of nursing and what to expect. In my Agriculture classes, I was a member of the FFA, which taught me to be a leader, responsibility, and team work, which is now helping me in my career.

3. If you participated in CTE, which group of teachers (CTE or Academic) had the greatest impact on you in terms of preparing you for the workforce and/or college? Explain your answer (provide examples).

I would have to say my CTE teachers had the greatest impact on me just because their classes were beneficial to my future goals, and they taught me skills that I will have for a lifetime. For example, my Applied Health prepped me to become a nurse, which I am now.

4. Do you feel that your high school academic courses better prepared you for the workforce and/or college? Explain your answer.

Most of my academic courses from high school did prepare me for college, such as algebra, Chemistry, and English, just because I had to take those classes in college, so I did have a background in those subjects. These academic courses could have better prepared me, though, because I did have to teach myself how to study in college in order to make the grades that I needed.

5. Did you participate in a student organization (FFA, HOSA, FBLA, etc)? If so, what impact, if any, did your participation have on your career choice or major in college?

I participated in FFA and HOSA. FFA did not impact my career choice, but it is helping in the career that I have chosen just because the FFA taught me how to be a leader, work with others, and learn responsibility, which are all vital in the nursing field. HOSA helped me to choose nursing, and it did help me to learn the basics of nursing and what to expect once becoming a nurse.

6. Do you feel that your participation in CTE or not had an influence on your career choice? Explain your answer.

Yes, I think that being in Allied Health had an influence on me becoming a nurse. My teacher was a nurse so she was able to teach and relate it to real-life situations and also helped prepare me for what to expect not only for college but for the career field.

7. What is your current status concerning progress toward a degree or employment? (If you have completed a college degree, list the major.)

I have completed a bachelor's degree in nursing and have passed my state board exam. I am currently employed at a local hospital as a Registered Nurse.

Participant 2

CTE Completer

1. Did you complete a CTE program of study? If so, what made you want to participate in such courses?

Yes, I did complete a CTE program of study. My reasoning for enrolling in this course was its appeal to many different learning styles through the use of the modules (i.e., students were able to learn from hands-on experiences, textbooks, and many other sources).

2. Do you feel that your participation in CTE prepared you for the workforce and/or college? Explain your answer.

I do not feel I was adequately prepared for college or the workforce upon graduating high school. One of the main arguments I have regarding college preparedness is that the high school I attended did a poor job in teaching study habits. Also, my high school did not offer any type of

accelerated class, which I believe put me at a disadvantage. As for being prepared for the workforce, I believe my high school did a poor job of teaching the importance of work ethic and attendance. In my opinion, CTE courses were the ones that came closest to preparing me for a lifetime career. While enrolled in these courses, I was able to join a student organization that taught me leadership skills and the importance of personal growth. The course allowed me to develop my communication and team work skills.

3. If you participated in CTE, which group of teachers (CTE or Academic) had the greatest impact on you in terms of preparing you for the workforce and/or college? Explain your answer (provide examples).

In my opinion, the CTE teachers had the greatest impact on my development as a student. More often than not, CTE classes were smaller than academic classes. I believe the class sizes allowed for more individualized attention. I also believe that this greater impact was a direct result of the passion that my CTE teachers had for their jobs.

4. Do you feel that your high school academic courses better prepared you for the workforce and/or college? Explain your answer.

I feel that my high school academic courses could have better prepared me for the workforce and/or college. I believe more attention needs to be given to career exploration. I also believe that academic classes need to be more challenging. More focus needs to be put on research and team projects.

5. Did you participate in a student organization (FFA, HOSA, FBLA, etc.)? If so, what impact, if any, did your participation have on your career choice or major of college?

I participated in many student organizations. I was a member of FFA, HOSA, and FBLA. Most of my time was devoted to being a member in the FFA. Although I did not choose a career in agriculture, the FFA did prepare me for my career by teaching me how to work in a team environment, how to communicate effectively, and how to manage projects.

6. Do you feel that your participation in CTE or not had an influence on your career choice? Explain your answer.

I do not believe my participation in a CTE course influenced my career decision. However, I think skills I learned through my participation in Vo-Tech courses enabled me to be a better employee.

7. What is your current status concerning progress toward degree or employment? (If you have completed a college degree, list your major.)

I completed my Bachelor's of Science in Business Administration, with an emphasis in Accounting in the spring of 2011 from The University of Southern Mississippi. Currently, I am working on my Master's of Professional Accountancy at The University of Southern Mississippi.

*Participant 3**Non-CTE Completer*

1. Did you complete a CTE program of study? If not, what made you choose not to participate in such courses?

I did not choose to complete any CTE courses because none of the courses that I was interested in fit my schedule and allowed me to play sports.

2. Do you feel that your participation in CTE prepared you for the workforce and/or college? Explain your answer.

Not applicable

3. If you did not participate in CTE, what impact did your academic teachers have on you in terms of ensuring you were prepared for the workforce and/or college? Explain your answer (provide examples).

My academic teachers prepared me not only mentally, but [they also] gave me an outlook on what to expect at the next level. I learned college-level vocabulary and took extra classes that helped me prepare for the ACT.

4. Do you feel that your high school academic courses better prepared you for the workforce and/or college? Explain your answer.

Yes, I believe that some did prepare me; however, I do believe that I was not as prepared as I should have been in some subjects.

5. Did you participate in a student organization (FFA, HOSA, FBLA, etc.)? If so, what impact, if any, did your participation have on your career choice or major in college?

Not applicable.

6. Do you feel that your participation in CTE or not had an influence on your career choice? Explain your answer.

No response.

7. What is your current status concerning progress toward degree or employment? (If you have completed a college degree, list your major.)

I currently have an associate's degree and [am] working on my Bachelor's in Health Informatics in hopes of being able to apply for the Occupational Therapy program at a local university.

Summary

This research represented an in-depth look at the impact of NCLB on CTE in Mississippi and can be used as a valuable tool as initiatives move forward, such as "Common Core" and other mandates being implemented into public education, so that leaders and educators alike can develop programs of study that meet the needs of schools and provide students with technical training. Collaboration between skilled educators results in a more complex and learner-rich environment that helps meet the assorted requirements of student growth and development. This research will help inform readers in terms of the perceptions of school reform policies and the extent to which CTE has enabled students to become more competitive not only in the workforce, but also as students enrolled in secondary and post-secondary programs of study.

While the research showed that there were no effects between CTE and non-CTE students in biology on subject area test for Mississippi, there were interactions between CTE and non-CTE students in language arts and algebra. The relationships were significant for completers and the years in which language arts and algebra courses were

taken. A more refined evaluation of students in a particular school district offered the point that students enrolled in Agriculture Concepts courses scored higher than students only enrolling in biology on the state test, but there was no effect for the year or on the interaction between year being enrolled in agriculture or in biology. Student enrollment trends in CTE programs varied from year to year beginning with NCLB legislation in 2002 and reaching a high during the 2006 school year. From that point until the 2009 school year, CTE programs in Mississippi experienced a continuous drop, with the greatest decrease between the 2008 and 2009 school years. This time frame coincided with when the mandates of NCLB were being implemented in Mississippi, and one of the major impacts was on student participation in CTE programs.

In terms of the focus group participants, overall each participant believed they could have been better prepared for college through their high school experience; however, the individuals who participated in CTE programs felt that CTE prepared them better for their choice of career than academic courses. The CTE completers also expressed their reasoning for CTE participation was they had interest in careers that were represented by particular CTE programs. The non completer had scheduling conflicts due to athletics and advanced placement that prevented her participation in CTE.

Exposing students to work and career-ready experiences enabled the students to develop opportunities for learning that gave them the capacity and knowledge required to remain competitive in a global economy. Understanding the influence that an increased focus on academic courses has had on CTE programs will enable school leaders and district planners to become better prepared as redesign models and career pathways begin to transform public education in the future. Educational organizations that use this

research to embrace and promote CTE should see reduced class sizes, increased attendance, and decreased dropout rates, as well as the development of performance-driven curricula that reach across a variety of skilled areas and conceptualize the goals of CTE and academic programs alike.

CHAPTER V
SUMMARY OF STUDY

Introduction

Career and Technical Education (CTE) can have a tremendous influence on filling the skill gap between school and work, placing emphasis on work ethics, self-motivation, personal accountability, punctuality, time management, and professionalism—all qualities that have driven American capitalism. The reputation surrounding CTE as a less demanding track for secondary students has not encouraged CTE program growth through the midst of recent school reform initiatives. Typically, it was considered that, when students participate in CTE courses that lack academic rigor, academic success did not improve.

The rationale for this study was to determine the effect(s) of No Child Left Behind legislation on Career and Technical Education. Two main areas of focus pertained to student enrollment in CTE courses and the comparison between students enrolled in CTE courses and students not enrolled in CTE courses on the Mississippi Subject Area Test scores. The primary focus of this research was to determine if the implementation of No Child Left Behind (NCLB) has influenced student participation in Career and Technical Education (CTE) programs in Mississippi. The data gave insight into:

1. CTE student enrollment decreases, increases, or remaining the same over this time period.
2. CTE programs' influence on student achievement on state proficiency exams for students who were enrolled in CTE and those who were not.

3. CTE's ability to track the number of program completers in skilled jobs, military, or post-secondary education (two or four years).
4. Relationships that demonstrate if CTE contributes to or has sufficient rigor compared to academic courses.
5. Students who were enrolled in CTE programs developed additional workplace skills during their secondary education that enabled them to be more efficient or have an advantage sooner in the workforce or college than academic students.

This study used a combination of data analysis. Most components instituted a quantitative approach aligned with descriptive statistics to report outcomes. Specifically, mean differences were used to make comparisons between student test scores. All quantitative data were retrieved in an electronic format from the Mississippi Department of Education for statistical calculation. All of the archival data required to complete this study were a matter of public record. The archived data represented in this study were derived from student scores on the Mississippi Subject Area Testing Program in the areas of language arts, biology, and algebra. These test instruments were used by MDE for all students' enrolled in/attending publicly funded high schools to measure student proficiency in the tested secondary subjects.

Statistical analysis was used to compare the mean differences of biology, algebra, and language arts subject area test scores for Mississippi of CTE program completers and students who were not enrolled in CTE programs for the last two years. Second, data were collected to maintain CTE's validity at providing a meaningful contribution to the educational process. Data from a high school located in Southeast Mississippi were used

to compare students' biology scores on the Mississippi Subject Area Test to determine if there was a relationship between the two exams.

All archival data received from MDE were formatted and coded in a manner that protected all individuals from identification. Because only the mean scores between the total non completers and total completers for the SATP and MS-CPAS2 in Mississippi the previous two years were used, no individual student information was identified in the scope of this research.

Finally, a focus group discussion was conducted with former students from a high school in Southeast Mississippi, two of who completed CTE course sequences and one of whom chose not to enroll in CTE programs. The focus group participants responded to questions related to the impact that participating or not participating in CTE programs had on their careers. Respondents' perceptions were recorded by a third party during discussions and reported appropriately.

Conclusions and Discussion

Since the implementation of NCLB in January of 2002, a tremendous amount of finances, attention, and focus have been placed on increasing student academic performance. A large amount of research has been conducted on the NCLB Act; however, in relation to the effects on CTE programs the research was limited and has been primarily conducted at the beginning implementation stages of the new initiative. Still, effects were being felt as a result of this legislation that should and need to be addressed. This research attempted to reflect on the effects that NCLB had or will continue to have on CTE programs. Several important components have been identified that have had an impact on CTE programs and educators. This research presented a

unique review of how the NCLB legislation has impacted CTE programs in Mississippi during the first decade of the 21st century. Two main focal points that are the driving force behind this research are a) how the implementation of NCLB has influenced student participation in CTE programs and b) comparing student achievement for secondary students who have completed a CTE program of study and secondary students who have not completed a CTE program of study.

The trends toward what CTE students look like were beginning to change as prerequisite programs that required students to take remedial course offerings in many instances were preventing participation in CTE programs. With a limited amount of data and even less current research focusing on student participation in CTE courses, shifts in student enrollment were not completely representative of student participation in relation to the prominence that school districts have placed on preparation for academic assessments in recent years.

The sharp decline in student participation in CTE programs that began in 2006, culminated with the lowest student enrollment across the last decade in the 2009 school year, while the total number of programs offered throughout the state increased. This decrease in student enrollment was directly influenced by the emphasis being placed on state-tested subject areas. Mississippi has continuously lagged behind the nation on most, if not all, indicators related to student performance. NCLB forced the academic world to adjust, all the while never taking into consideration what the implications on CTE would be or, more importantly, what skills students acquired through CTE. While research was varied, gaps still remained between students who participated in CTE programs and those who did not. As more academic emphasis was being incorporated into CTE courses, the

reputation of such courses as less demanding was shifting in a positive direction. “The current major focus of CTE is to require all students to participate in a combination of CTE and academic courses and to focus on broad career clusters instead of specialized jobs in CTE courses” (Fletcher, 2006, p. 5).

The data in this study suggested that with the decreased enrollment, Mississippi was caught in the tidal wave of NCLB mandates. Student enrollment appeared to be making a transition back to a positive trend. The upward trend was happening due to several factors. First, Mississippi, like most states in recent years, had been under the pressure of reduced budgets. This strain on the education system caused school districts to cut back on the number of teacher units, which in turn increased class size. While student populations continued to grow, it became more difficult for school leaders to create schedules where student needs were met. The overflow more often than not had been aimed into CTE programs that allowed a more open scheduling process and created opportunities for CTE leaders to expose students to what CTE programs provided in terms of student preparedness.

Secondly, CTE centers became more receptive of different student demographics. Many CTE centers in Mississippi were now allowing ninth graders into their programs. Allowing this demographic to participate in CTE was a transition that has long been debated and often brought contention into the discussion, due to the fact that ninth graders typically have not matured to a level where they are ready to focus on the skilled training that accompanies CTE programs. Curriculum transitions that focus on College and Career Readiness and Career Academies are two other areas that allow CTE programs to consider different demographics. Mississippi was in the process of

undergoing major curriculum overhauls within CTE. This shift was moving the curriculum toward meeting the standards that the Common Core will impose over the next decade. As Career Academies allowed students the option to merge with CTE course offerings that make meaning of their academic studies, more emphasis was placed on Career Academies as the evolution of student achievement pushes forward.

Student achievement remained at the forefront of school reform; CTE's ability to provide and demonstrate a rigorous contribution toward meeting the requirements of academic courses will determine how integration and cross-curriculum training will be implemented. "Federal vocational policy now places priority on ensuring that students in vocational programs are academically well prepared for success in both postsecondary education and the labor market" (Silverberg et al., 2004, p. 86). In a press release by the National Association of State Directors of Career Technical Education Consortium (2005) the Southern Regional Education Board stated that, "students who complete a rigorous academic core coupled with a career concentration have test scores that equal or exceed college prep students. These students are more likely to pursue postsecondary education and be less likely to quit" (p. 1). More recently, the National Center for Educational Statistics (Levesque et al., 2010) reported, "these studies have shown that gaps in academic course taking and achievement between CTE participants and their non-participating classmates have narrowed" (p. 1).

Subsequently, this research produced similar findings. When considering students' scores from across the entire state, minor differences were found in terms of those students who completed a CTE technical program and students who on average scored higher on standardized tests but were considered non completers with one

exception. Students' scores on the Mississippi SATP language arts test for the 2009-2010 school year were higher for CTE completers, as was a common trend within CTE research. As more academic emphasis continued to be incorporated into CTE courses, the inclination of less demanding was shifting in a positive direction. Contrary to research that defines a relationship between student achievement and relevance of course work and involvement with teachers, "other analyses have shown that the academic achievement of CTE participants as measured by standardized tests has increased over time, particularly in reading and math" (Silverberg et al., 2004, p. 25). Findings within this research agreed, showing that in Mississippi students who participated in technical CTE programs of study had higher rates of growth in language arts and algebra between the 2008-2009 and 2009-2010 school years.

At a more local level, students at a school district in Southeast Mississippi produced similar results on the Mississippi SATP biology exam. When student state test scores were compared based on whether the students were enrolled in the local agriculture program or not, the CTE students' scores were greater than those of the non completers two out of three years that results were given. Scores indicated that students enrolled in CTE programs can produce satisfactory, even exemplary, results in terms of standardized tests.

More importantly, when looking at former secondary student perceptions of the impact CTE had in making them competitive in the workforce or college compared to students who did not complete CTE course sequences in high school, the answers present important results. In the focus group, none of the three participants felt like their high school experience prepared them adequately for the workforce or college. For the two

respondents who participated in CTE, the main reason for enrolling was because of program interest and the varied teaching and learning styles that are involved in technical programs. Both respondents attributed much of their success to participation in student organization programs designed to build student leadership, communication, and workplace skills. Also, the students who enrolled in CTE programs expressed that their CTE instructors had the greatest impact on their development as a student.

While most educators agreed that academic standards providing students with the best opportunity to develop skills that lead to post-secondary degrees should increase, educationalists tended to overlook the vast majority of students who never attended college or only chose to complete certification levels of education after secondary graduation. CTE promoted and motivated students through contextual teaching, showing them the relationship between what they were learning and the real world. Consequently, the institutional body of CTE should validate that it can contribute not only to training youth in the technical aspects of business and industry, but that it could also incorporate academic skills needed by students to remain proficient as measured by high stakes testing and academic performances.

Limitations

Several limitations were identified as known limiting factors that could impact the results of this research. However, all precautions were taken to protect the integrity of this research so that it may be used in the advancement of the field of education and, more particularly, Career and Technical Education.

1. Researcher bias was discouraged throughout the research, due to prior experiences as an agriculture instructor and as currently serving in the capacity of Career and Technical Education Director.
2. Career and Technical Education programs have been perceived as not having adequate academic rigor compared to other programs of study as determined by high stakes test scores.
3. Career and Technical Education students are viewed as being less likely to be competitive in the workforce or in post secondary educational setting than students that were not enrolled in Career and Technical Education.
4. Generalizations should be made only to the participants of this study. In no way do the results infuse a visualization that can be applied to all educational situations. These results are intended only to add to the body of knowledge so that collaboration between pedagogy can become more effective and efficient.

Recommendations for Policy or Practice

The intent of this research has been to provide a compelling look at the effect NCLB has had on CTE programs and CTE students in Mississippi and to provide a link between what CTE can produce in terms of helping school districts achieve the goals of NCLB. The constant tension between academic-oriented instruction and technical-oriented instruction remained a highly contested debate among educational practitioners. This research was solely meant to add to the body of knowledge so that future educators can apply this information to decisions that will aid in the development of a student-centered curriculum that leads to an increased acknowledgment of the diverse needs of students. The results of this research can provide valuable insights to school leaders that

enable them to develop well-planned comprehensive educational programs and help ensure student success to meet the educational needs of the 21st century.

This study was also aimed at providing answers for CTE leaders and to provide tools that allow decision makers the ability to make positive changes that meet the demands of current legislation requirements and open new doors for academic and career and technical education. The potential impact this research can have was placed in the theory that CTE provided a valuable contribution to secondary education. The potential impact this research can have is situated within theory that CTE provides a valuable contribution to the body of secondary education. Exposing students to work and career-ready experiences enables teachers to provide a more robust opportunity for learning that gives students the capacity and knowledge required to remain competitive in a global economy

This research can/will also help inform readers in terms of the perceptions of school reform policies and the extent to which CTE has enabled students to become more competitive not only in the workforce, but also as students enrolled in post-secondary programs of study. This in-depth look at the impact of NCLB and CTE can prove to be a valuable tool for leaders to use in developing College and Career Ready programs of study for students and in providing a link between what CTE can provide students, while at the same time helping school districts meet the demands and goals set forth by NCLB mandates.

Secondary students no longer conform to normal expectations; therefore, every avenue must be used to encourage students to develop into well-rounded and productive citizens. In order for an education to meaningfully contribute to student growth and

present them with advantaged opportunities to develop entry-level skills in a changing workforce or to be successful in a post-secondary setting, educational leaders must consider all options and become less one-dimensional in relation to curriculum development.

Recommendations for Future Research

With the shortage of skilled workers and a decreased emphasis on students learning performance-oriented skills, the potential vacuum that NCLB has imposed on CTE makes it important to begin a process where educational professionals begin to really determine what the final product looks like. Advocates of CTE must begin to document and provide evidence of CTE's ability to provide a meaningful contribution to the educational process that enriches and enhances academic student achievement.

Student perceptions of CTE are potentially the most important aspect of program validity as we move forward into the next era of educational reform. If students perceive that CTE programs can have a positive impact on their future career options, then they are naturally more inclined to participate in CTE courses. CTE stakeholders should have a studied understanding of how students recognize the benefits of CTE and, more importantly, should have a perceptive understanding of students who choose not to enroll in CTE programs. This insightful information will provide CTE leaders with a valuable resource and enable educators to focus their attention toward students that are often considered an unlikely CTE student.

Consideration should be given to the impact that CTE will have on the College and Career Readiness and Common Core as educational reform moves forward. Evidence is mounting that the current educational setting does not produce students of

whom prospective employers are confident in a universal economy. “Nearly two-thirds of employers—62 percent—said that they have difficulty in finding qualified applicants to fill vacancies. The skill shortage is having a detrimental effect on business operations” (Schoeff, 2009, p. 1). Research also indicates that the United States will fall short of both the number of college degrees and the number of skilled workers over the next decade. The Georgetown University Center on Education and the Workforce (GUCEW) (Carnevale et al., 2010) indicated, “by 2018 the United States will need 22 million new college degrees but will fall short of that number by at least 3 million” (p. 1). The research also projects only a 3% decrease in the percentage of the workforce that has a high school education or has dropped out of high school.

While the share of the labor market has increased on each end of the spectrum, the middle wage job skill market still remains near 50% of the total employment. “Substantial demand remains for individuals to fill skilled jobs in the middle of the labor market, with many of these jobs paying high wages, particularly for jobs that require an associate’s degree or some particular vocational training and certification” (Holzer & Lerman, 2007, p. 4). The desire for an increased number of workers with degrees has been brought about by a stronger voice of policymakers and industry leaders in the areas of science, technology, engineering, and math (STEM).

Finally, several recommendations for potential investigation can be derived from this study. Follow up research of the same students within the parameters of this study could be used to determine how many and which graduation track of students attended a post-secondary school. Another potential research topic could address what effect remedial programs have on students test scores. The source of the growth recognized in

this research by students participating in CTE programs should be determined. Relevant application of the current state of the economy on the increase of skilled training and student participation in CTE programs of study can lead to research on how CTE can continue to meet the demands of skilled training while providing support to challenge the academic needs of student populations. Finally, the relationship between students and teachers and the subsequent success or failure in post-secondary education could potentially be a very informative research topic leading to a deeper understanding of the influences on student achievement. While most employment opportunities in the future will require some type of advanced postsecondary training, not all will require a college degree. Finding where CTE accommodates this need will be interesting as the evolution of secondary education continues to change face.

APPENDIX A

MDE REQUEST FOR DATA

July 29, 2011

Jean Massey, Associate State Superintendent
Mississippi Department of Education

I have been enrolled at the University of Southern Mississippi, completing the Executive Doctoral Cohort Program. Throughout this process, I have been working on my dissertation titled *Implications of the No Child Left Behind Legislation on Career and Technical Education*. I have completed the first three chapters of this research and have anxiously been awaiting approval from the University's Institutional Review Board to grant permission to proceed with my research. I was given this approval on July 21, 2011 and request the assistance of your office to help collect the needed archived data to complete my research. Listed below are the groups and sub-groups of data that will be needed to help achieve my research goals.

- Mississippi Subject Area Test Scores (Biology, Algebra, and Language Arts) for student completers in CTE during the 2008-2009 and 2009-2010 school years. Statewide.
- Mississippi Subject Area Test Scores (Biology, Algebra, and Language Arts) for non student completers in CTE during the 2008-2009 and 2009-2010 school years. Statewide.
- Reported Carl Perkins student placement records since 2002. (To see what trends if any exist). Statewide.
- Student enrollment in CTE Statewide 2002-2010
- Individual Subject Area Biology Test Scores for students from the Greene County School District. I need these broken down by students who were enrolled and not enrolled in the AEST Agricultural Concepts course at Greene County Vo-Tech. For the 2006-2007, 2007-2008, and the 2010-2011 school years or whatever years both of these groups tested at Greene County.

I will fax a copy of the Institutional Review Board approval letter and appreciate your cooperation in helping me complete the requirements for my dissertation. If you have any questions or need clarification of data parameters, please feel free to contact me at any time. Also, I am dealing with a limited timeframe in order to meet my planned graduation date in December. In order to meet that objective, I have to defend my dissertation by October 15, 2011. I also need to allow a couple of weeks for committee review and corrections to the final two chapters.

Best regards,

Tom Wallace

APPENDIX B

IRB APPROVAL

**INSTITUTIONAL REVIEW BOARD**

118 College Drive #5147 | Hattiesburg, MS 39406-0001

Phone: 601.266.6820 | Fax: 601.266.4377 | www.usm.edu/irb

**HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
NOTICE OF COMMITTEE ACTION**

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the “Adverse Effect Report Form”.
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **11062202**PROJECT TITLE: **Implications of the No Child Left Behind
Legislation on Career and Technical Education**PROPOSED PROJECT DATES: **07/01/2011 TO 03/15/2012**PROJECT TYPE: **New Project**PRINCIPAL INVESTIGATORS: **Thomas Kyle Wallace**COLLEGE/DIVISION: **College of Education & Psychology**DEPARTMENT: **Educational Leadership**FUNDING AGENCY: **N/A**HSPRC COMMITTEE ACTION: **Exempt Approval**PERIOD OF APPROVAL: **07/21/2011 to 07/20/2012**

Lawrence A. Hoseman, Ph.D.

HSPRC Chair

APPENDIX C

IRB RENEWAL



THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD

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- The risks to subjects are minimized.
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- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the “Adverse Effect Report Form”.
- If approved, the maximum period of approval is limited to twelve months.

Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **R11062202**

PROJECT TITLE: **Implications of the No Child Left Behind Legislation on Career and Technical Education**

PROJECT TYPE: **Renewal/Continuation of a Previously Approved Project**

RESEARCHER/S: **Thomas Kyle Wallace**

COLLEGE/DIVISION: **College of Education & Psychology**

DEPARTMENT: **Educational Leadership**

FUNDING AGENCY: **N/A**

IRB COMMITTEE ACTION: **Exempt Approval**

PERIOD OF PROJECT APPROVAL: **07/19/2012 to 07/18/2013**

Lawrence A. Hosman, Ph.D.
Institutional Review Board Chair

APPENDIX D

FOCUS GROUP QUESTIONS

*Implications of the No Child Left Behind Legislation On
Career and Technical Education
Focus Group Discussion Questions*

Investigator

This study will be conducted by Tom Wallace a student in the College of Educational Leadership and School Counseling at The University of Southern Mississippi.

Focus Group Questions

Please answer the following questions:

Do you feel that you were prepared for the workforce and/or college upon graduating high school? Explain your answer.

Did you complete a CTE (Vo-Tech) program of study?

If so, what made you want to participate in such courses?

If not, what made you choose not to participate in such courses?

Do you feel that your participation in CTE (Vo-Tech) prepared you for the workforce and/or college? Explain your answer.

If you participated in CTE (Vo-Tech), which group of teachers (Vo-Tech or Academic) had the greatest impact on you in terms of preparing you for the workforce and/or college? Explain your answer (provide examples).

If you did not participate in CTE (Vo-Tech), what impact did your academic teachers have on you in terms of ensuring you were prepared for the workforce and/or college? Explain your answer (provide examples).

Do you feel that your high school academic courses better prepared you for the workforce and/or college? Explain your answer.

Did you participate in a student organization (FFA, HOSA, FBLA, etc.)? If so, what impact, if any, did your participation have on your career choice or major in college?

Do you feel that your participation in CTE (Vo-Tech) or not had an influence on your career choice? Explain your answer.

What is your current status concerning progress toward degree or employment (if you have completed a college degree, list your major)?

REFERENCES

- Arkansas Department of Higher Education. (2001). The Carl D. Perkins Career and Technical Education Improvement Act of 1998: Perkins coordinator handbook. Retrieved from <http://www.act.adhe.edu/History.htm>
- Arkansas Department of Workforce Education. (2004). Program policies and procedures for career and technical education. Retrieved from <http://ace.arkansas.gov/CareerandTechEducation/2004Policiesapproved10-04.pdf>
- Association for Career and Technical Education. (2006). *Reinventing the American high school for the 21st Century: A position paper by the Association for Career and Technical Education*. Retrieved from <http://www.acteonline.org>
- Association for Educational Communications and Technology. (2001). Elementary and Secondary Education Act of 1965. Retrieved from <http://www.aect.org/About/History/esea.htm>
- Bailey, T. R., Hughes, K. L., & Moore, D. T. (2004). *Working knowledge: Workbased learning and education reform*. New York, NY: Routledge Falmer.
- Bishop, J. (2001). What should be the federal role in supporting and shaping development of state accountability systems for secondary school achievement? United States Department of Education, Office of Vocational and Adult Education. Washington, DC: U.S. Government Printing Office.
- Boesel, D., Rahn, M., & Deich, S. (1994). *National assessment of vocational education: Final report to Congress*. Washington, DC: U.S. Department of Education. Washington, DC: U.S. Government Printing Office.

- Bragg, D. D., Puckett, P. A., Reger, W., Thomas, H. S., Ortman, J., & Dornsife, C. (1997). *Tech prep/school-to-work partnerships: More trends and challenges* (MDS-1078). Berkeley, CA: National Center for Research in Vocational Education.
- Bridgeland, J. M., Dilulio, J. J., Jr., & Morison, K. B. (2006). The silent epidemic: Perspectives of high school dropouts. Retrieved from <http://www.civicenterprises.net/pdfs/thesilentepidemic3-06.pdf>
- Browder, A. (2007). Students' views of career and technical education a qualitative study. Unpublished doctoral dissertation, University of Missouri-Columbia.
- Brustein, M., Krvaric, S., & Manasevit, L. (2007). *The tech prep guide to perkins IV: Beyond the status quo*. Waco, TX: CORD.
- Bureau of Labor Statistics. (2001). *2001-2010 employment projections*. USDL 01-443, U.S. Department of Labor. Washington, DC. Retrieved from http://www.bls.gov/news.release/history/ecopro_12032001.txt
- Bureau of Labor Statistics. (2006). *Occupational projections and training data*. Bulletin 2602, U.S. Department of Labor. Washington, DC. Retrieved from http://www.bls.gov/news.release/history/ooh_12182007.txt
- Career and Technical Student Organizations. (2008). *Guide to assessing federal Perkins funds: For the support of career and technical student organizations*. Retrieved from <http://www.skillsusa.org/downloads/PDF/perkins.pdf>

- Carnevale, A. P., Smith, N., & Strohl, J. (2010). Help wanted: Projections of jobs and Education requirements through 2018. Executive Summary, Georgetown University, Center on Education and the Workforce. Washington, DC: Georgetown University Press.
- Cawthon, S. W. (2007). Hidden benefits and unintended consequences of No Child Left Behind policies for students who are deaf or hard of hearing. *American Educational Research Journal*, 44(3), 460-492. doi: 10.3102/0002831207306760
- Center on Education Policy. (2004). From the capital to the classroom: Year 2 of the No Child Left Behind Act. Washington, DC: U.S. Government Printing Office.
- Center on Educational Policy. (2006). Ten big effects of the No Child Left Behind Act on Public Schools. Retrieved from <http://www.education.uiowa.edu/cea/documents/NCLB-TenBigEffects.pdf>
- Chadd, J., & Drage, K. (2006). No Child Left Behind: Implications for career and technical education. *Career and Technical Education Research*, 31(2), 43-82. Retrieved from <http://scholar.lib.vt.edu/ejournals/CTER/v31n2/pdf/chadd.pdf>
- Chen, C. P. (2003). Integrating perspectives in career development theory and practice. *Career Development Quarterly*, 51(3), 203-216.
- Coetsee, R. (2001). Supporters want to revive vocational classes. *Contra Costa Times*. July 26.
- Cohen, M., & Besharov, D. J., (2004). The role of career and technical education: Implications for the Federal Government. U.S. Department of Education, Office of Vocational and Adult Education. Washington, D C

- Council on Competitiveness. (2008). Thrive: The skills imperative. *Compete 2.0*. Retrieved from http://www.acteonline.org/uploadedFiles/About_CTE/files/Thrive.pdf
- Dagget, W. R. (2010). Vocational and technical education: Current trends. Retrieved from <http://www.education.com/reference/article/vocational-and-technical-education-history/>
- DeLuca, S., Plank, S., & Estacion, A. (2006). *Does career and technical education affect college enrollment?* University of Minnesota, National Research Center for Career and Technical Education.
- Dewey, J. (1916). *Democracy and education*. New York, NY: MacMillian Company.
- Donlevy, J. (2002) No child left behind: In search of equity for all children. *International Journal of Instructional Media*, 29, 257-259.
- Education Week*. (2004). Adequate yearly progress. Online Edition, September 10, 2004. Retrieved from <http://www.edweek.org/ew/issues/adequate-yearly-progress/>
- Elias, J., & Merriam, S. (1995). *Philosophical foundations of adult education*. Malabar, FL: Krieger Publishing Company.
- Fletcher Jr., E. C. (2006). No curriculum left behind: The effects of the No Child Left Behind Legislation on Career and Technical Education. *Career and Technical Education Research*, 31(3), 3-7. Retrieved from Virginia Tech Digital Library and Archives.

- Gaona, J. (2004). The effects of the No Child Left Behind Act on Career and Technical Education: Implication for students with special needs. *Journal of Industrial Teacher Education, 41*(2) 1-3. Retrieved from Virginia Tech Digital Library and Archives.
- Gaunt, D., & Palmer, B. L. (2005). Positive student attitudes toward CTE. *Techniques*. Retrieved from <http://www.highbeam.com/doc/1G1-139206504.html>
- Gaunt, D., & Palmer, L. B. (2007). Current profile of CTE and non-CTE students: Who are we serving? *Journal of Career and Technical Education, 23*(1) 6. Retrieved from Virginia Tech Digital Library and Archives.
- Gentry, M., Rizza, M. G., Peters, S., & Hu, S. (2005). Professionalism, sense of community and reason to learn: Lesson from an exemplary career and technical education center. *Career and Technical Education Research, 30*(1) 78. Retrieved from Virginia Tech Digital Library and Archives.
- Gollub, J., Bertenthal, M., Labov, J., & Curtis, P. (2002). *Learning and understanding: Improving advanced study of U.S. high schools*. Washington, DC: National Research Council.
- Gordon, H. (2003). *The history and growth of vocational education in America* (2nd ed.). Prospect Heights, IL: Waveland.
- Gordon, H. R. (2010). Vocational and technical education: History of. Retrieved from <http://www.education.com/reference/article/vocational-and-technical-education-history/>
- Gordon, R. D. (1999). *The history and growth of vocational education in America*. Needham Heights, MA: Allyn and Bacon.

- Gordon, H. R., Yocke, R. J., Maldonado, C., & Saddler, S. J. (2007). Selected career and technical education teachers' perceptions of the No Child Left Behind Act (Public Law 107-110): An exploratory study. *Journal of Career and Technical Education*, 23(1), 121-132.
- Grabill, D. H., Bueno, S., Reabe, L., Heuberger, S., Coppenbarger, I., & Borowski, C. (2000). Illinois Center for Specialized Professional Support Special Populations Project: Road Map to Perkins III the Carl D. Perkins vocational and technical education Act of 1998. Retrieved from http://www.icsps.ilstu.edu/showcase/publications/RoadMap/03_acknowledgement.pdf
- Gray, K., & Herr, E. (1998). *Workforce education the basics*. Needham Heights, MA: Allyn and Bacon.
- Grubb, W. N. (1996). The new vocationalism: What it is, what it could be. *Phi Delta Kappan*, 77(8), 535-546.
- Hawkins, L. S., Prosser, C. R., & Wright, J. C. (1951). *Development of vocational education*. Chicago, IL: American Technical Society.
- Hayward, G. C., & Benson, C.S. (1993). Vocational technical education: Major reforms and Debates, 1917—present. Washington, DC: U. S. Department of Education, Office of Vocational and Adult Education. (ERIC Document Reproduction Service No. ED 359 959)
- Holzer, H. J., & Lerman, R. I. (2007). America's forgotten middle-skill jobs: Education and training requirements in the next decade and beyond. *The Workforce Alliance*. Retrieved from http://www.acteonline.org/uploadedFiles/About_CTE/files/ForgottenJobs.pdf

- Hughes, K., Bailey, T., & Mechur, M. (2001). *School-to-Work: Making a difference in education*. New York, NY: New York Institute on Education and the Economy.
- Jorgensen, M.A., & Hoffmann J. (2003). *History of the No Child Left Behind Act of 2001 (NCLB)*. San Antonio, TX: Pearson Inc.
- Kansas State Department of Education. (2008). Career and technical education. Retrieved from <http://www.ksde.org/Default.aspx?tabid=249>
- Kantor, H. (1994). Managing the transition from school to work: The false promise of youth apprenticeship. *Teachers College Record*, 95(4), 442-461.
- Kantor, H., & Tyack, D. (1982). *Work, youth, and schooling: Historical perspectives on vocationalism in American education*. Stanford, CA: Stanford University Press.
- Kaufman, P., Bradby, D., & Teitelbaum, P. (2000). High schools that work and whole school reform: Raising academic achievement of vocational completers through the reform of school practice. National Center for Research in Vocational Education, University of California at Berkeley.
- Kemple, J. J., & Snipes, J.C. (2000). *Career academy impacts for students at high risk of dropping out*. New York, NY: Manpower Demonstration Research Corporation.
- Kozma, R. B. (2005). Education policy statement No Child Left Behind. Retrieved from <http://pdamerica.org/policy/edu/docs/NCLB.pdf>
- Kymes, N. (2004). The No Child Left Behind Act: A look at provisions, philosophies, and compromises. *Journal of Industrial Teacher Education*, 41(2) 1-4. Retrieved from Virginia Tech Digital Library and Archives.

- Leary, M. (2000). *Turning students into employees: The school to work pay-off*. Waco, TX: CORD.
- Levesque, K., Laird, J., Hensley, E., Choy, S. P., Cataldi, E.F., & Hudson, L. (2008). *Career and technical education in the United States: 1990 to 2005 (NCES 2008-035)*. National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.
- Levesque, K., Wun, J., Green, C., & MPR Associates, Inc. (2010). *Science achievement and occupational career/technical education course taking in high school (NCES 2010-021)*. National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.
- Lewis, A. (2004). Career tech and NCLB. *Tech Directions*, 63(10), 6. Retrieved from <http://www.techdirections.com/>
- Lynch, R. L. (2000). *New directions for high school career and technical education in the 21st century* (Information Series No. 384). Columbus, OH: The Ohio State University, ERIC Clearinghouse on Adult, Career, and Vocational Education
- Manley, R. A. (2010). The intended and unintended consequences of the 1990 Carl D. Perkins vocational and applied technology act within-state funding formula change: A modified policy delphi study. Retrieved from http://scholar.lib.vt.edu/theses/available/etd-04092010-161241/unrestricted/Manley_RA_D_2010.pdf
- Mantel, B. (2005). No Child Left Behind: Is the law improving student performance? *The CQ Researcher*, 15(20), 469-492.

- Martin, M. J., Fritzsche, J. A., & Ball, A. L. (2006). A Delphi study of teachers' and professionals' perceptions regarding the impact of the No Child Left Behind legislation on secondary agriculture education programs. *Journal of Agriculture Education, 47*(1), 100-109.
- Milgram, D., & Watkins, K. (1994). Ensuring quality school-to-work opportunities for young women. Retrieved from http://eric.ed.gov/ERICDocs/data/ericdocs2/content_storage_01/0000000b/80/25/99/32.pdf
- Mississippi Department of Education. (2007). Office of Vocational and Technical Education block grant budget summary. Retrieved from <http://www.mde.k12.ms.us/vocational/OVTE/>
- Mississippi Department of Education. (2010). Office of Vocational and Technical Education: Tech Prep. Retrieved from <http://www.mde.k12.ms.us/vocational/techprep/>
- Mississippi Department of Education. (2011). Office of Student Assessment subject area test program. Retrieved from <http://www.mde.k12.ms.us/ACAD/osa/satp.html>
- Missouri Department of Elementary and Secondary Education, (2006). Questions & answers about No Child Left Behind. Retrieved from <http://dese.mo.gov/divimprove/nclb/QandA.html>
- National Association of Parents with Children in Special Education. (2007). Special Education and the law for parents: Perkins Vocational Education Act. Retrieved from <http://www.napcse.org/specialeducationlaw/perkinsvocational.php>

- National Association of State Directors of Career Technical Education Consortium. (2005). Bush budget dismantles Career and Technical Education. Retrieved from http://careertech.org/press_releases/show/2
- National Governor's Association Center for Best Practices. (2007, June). Retooling Career Technical Education (Issue Brief). Washington, DC. Retrieved from <http://www.nga.org/Files/pdf/0706TECHED.PDF>
- North Carolina State Board of Education. (2010). No Child Left Behind: Words and terms to know. Retrieved from <http://www.ncpublicschools.org/nclb/glossary#as>
- Palmer, J. (2007). Measuring for marketing. *Techniques* (Online Edition). Retrieved from http://www.acteonline.org/uploadedFiles/Publications_and_E-Media/files/files-techniques-2007/Measuring-for-Marketing.pdf
- Peng, S. S., Wright, D. A., & Hill, S. T. (1995). *Understanding racial-ethnic differences in secondary school science and mathematics achievement*. Washington, DC: National Center for Education Statistics.
- Pennsylvania State University. (2012). University undergraduate advising handbook. Retrieved from <http://dus.psu.edu/handbook/carnegieunits.html>
- Phelps, D. J. (2002). The No Child Left Behind Act of 2001: Opportunities for Career Technical Education. Retrieved from <http://www.eric.ed.gov/PDFS/ED469212.pdf>
- Prentice Hall Documents Library. (n.d.). Smith-Hughes Act 1917. Retrieved from <http://cwx.prenhall.com/bookbind/pubbooks/dye4/medialib/docs/smith917.htm>

- Reeves, C. (2003). Implementing the No Child Left Behind Act: Implications for rural schools and districts. Retrieved from <http://www.ncrel.org/policy/pubs/html/implicate/>
- Roey, S., Caldwell, N., Rust, K., Blumstein, E., Krenzke, T., Legum, S., Kuhn, J., Waksberg, M., & Haynes, J. (2001). *The 1998 high school transcript study tabulations: Comparative data on credits earned and demographics for 1998, 1994, 1990, 1987, and 1982 high school graduates*. Washington, DC: National Center for Education Statistics.
- Rojewski, J. W. (2002). Preparing the workforce of tomorrow: A conceptual framework for career and technical education. *Journal of Vocational Education Research*, 27(1) 4-12. Retrieved from <http://scholar.lib.vt.edu/ejournals/JVER/v27n1/rojewski.html>
- Rosenbaum, J. (1999). *Preconditions for effective school-work linkages in the United States: International perspectives on the school-to-work transition*. Cresskill, NJ: Hampton Press, Inc.
- Ruhland, S., & Bremer, C. (2003). Perceptions of traditionally and alternatively certified career and technical education teachers. *Journal of Vocational Education Research*, 28(3), 285-302.
- Ryken, A. E., (2006). Goin' somewhere: How career technical education programs support and constrain urban youths' career decision-making. *Career and Technical Education Research*, 31(1). Retrieved from <http://scholar.lib.vt.edu/ejournals/CTER/v31n1/pdf/ryken.pdf>

- Schoeff, M. (2009). Companies report difficulty finding qualified employees. Retrieved from <http://www.workforce.com/section/00/article/26/72/07.php>
- Scholl, L., & Smyth, C. (2000). Exit survey of 1999 Wisconsin youth apprenticeship graduates. Retrieved from http://www.voced.edu.au/search/index.php?docnum=td%2Ftnc+81.271&searchtype=full&quantity=1&sort_by=d_publication_year_tx&hitstart=1
- Sclafani, S. (2002). No Child Left Behind. *Issues in Science & Technology*, 19, 43-47.
- Scott, M., Ordover, E., Esters, L., Bowen, B., Reeve, E., & Annexstein, L. (2003). Clearinghouse on adult, career, and vocational education. Retrieved from <http://www.calpro-online.org/ERIC/index.asp>
- Shelby County Schools. (2010). *History of career/technical education*. Retrieved from <http://www.shelbyed.k12.al.us/instruction/careertech/aboutct.htm>
- Silverberg, M., Warner, E., Fong, M., & Goodwin, D. (2004). National Assessment of Vocational Education: Final Report to Congress. U.S. Department of Education. Washington, DC. Retrieved from <http://www2.ed.gov/rschstat/eval/sectech/nave/navefinal.pdf>
- Simpson, R. L., LaCava, P. G., & Graner, P. S. (2004). The No Child Left Behind Act: Challenges and implications for educators. *Intervention in School and Clinic*, 40(2), 67-75.
- Spring, J. (1998). *Education and the rise of the global economy*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Spring, J. (2004). *American Education*. (11th ed). Boston, MA: McGraw-Hill.

- Stone III, J. R., & Aliaga, O. A., (2005). Career & technical education and school-to-work at the end of the 20th century: Participation and outcomes. *Career and Technical Education Research* 30(2) 126-127. Retrieved from <http://scholar.lib.vt.edu/ejournals/CTER/v30n2/pdf/stone.pdf>
- Support for Families of Children with Disabilities. (2007). The No Child Left Behind Act (NCLB) of 2001. Retrieved from <http://www.supportforfamilies.org/nclb.html>
- Tanner, D., & Tanner, L. (1980). *Curriculum development: Theory into practice*. New York, NY: Macmillan.
- Threeton, M. D. (2007). The Carl D. Perkins Career and Technical education (CTE) act of 2006 and the roles and responsibilities of CTE teacher and faculty members. Retrieved from <http://scholar.lib.vt.edu/ejournals/JITE/v44n1/pdf/threeton.pdf>
- Trahan, C. (2002). Implications of the no child left behind act of 2001 on teacher education. Retrieved from <http://www.ericdigests.org/2004-1/2001.htm>
- US Legal. (2011). Definitions. Retrieved from <http://definitions.uslegal.com/c/career-academy/>
- U.S. Congress. (1917). The National Vocational Education (Smith-Hughes) Act (Section 8 and 12). (Public Law 347, Sixty-fourth Congress – S. 703). Washington, DC: U.S. Printing Office.
- U.S. Congress. (2006). Carl D. Perkins Career and Technical Education Act of 2006 (Public Law 109-270, One hundred and ninth Congress). Washington, DC: U.S. Printing Office.

- U.S. Department of Education. (2002). Elementary & secondary education, key policy letters signed by the education secretary or deputy secretary. Retrieved from <http://www2.ed.gov/policy/elsec/guid/secletter/020724.html?exp=2>
- U.S. Department of Education. (2003). *No Child Left Behind: A parents guide*. Retrieved from <http://www2.ed.gov/parents/academic/involve/nclbguide/parentsguide.pdf>
- U.S. Department of Education. (2009). U.S. Department of Education report to Congress. Retrieved from <http://www2.ed.gov/nclb/freedom/local/flexibility/waiverletters/209waiverreport.pdf>
- U.S. Department of Education (2010). A blueprint for reform the reauthorization of the elementary and secondary education act. Retrieved from <http://www2.ed.gov/policy/elsec/leg/blueprint/blueprint.pdf>
- U.S. Department of Education. (2011). National Center for Educational Statistics: Career/Technical Education (CTE) Statistics. Retrieved from http://nces.ed.gov/surveys/ctes/tables/glossary_secondary.asp
- U.S. Department of Education, Office of Vocational and Adult Education. (2002). The Carl D. Perkins Vocational and Technical Education Act: Public Law 105-332. Retrieved from <http://www2.ed.gov/offices/OVAE/CTE/perkins.html>
- U.S. Department of Education, Office of Vocational and Adult Education. (2005). Perkins III accountability primer. Retrieved July 25, 2010 from <http://cte.ed.gov/docs/DQI/Primer%206-30-05.pdf>
- U.S. Department of Education. (1983). *A nation at risk: the imperative for educational reform*. Washington, DC: U.S. Government Printing Office

U.S. Government. (2011). Track the money. Retrieved from <http://www.recovery.gov/Pages/default.aspx>

U.S. Senate. (1989). Reauthorization of the Carl D. Perkins Vocational Education Act: Hearings before the subcommittee on education, arts, and humanities of the committee on labor and human resources. 101st Congress. First session on S. 1109 (S.HRG.101-317). Washington, DC: U.S. Government Printing Office.

Visher, M., Emanuel, D., & Teitelbaum, P. (1999). Key high school reform strategies: An overview of research findings. Washington, D.C.: U.S. Department of Education.

Whitehurst, G. (2002). Research on teacher preparation and professional development. White House Conference on Preparing Tomorrow's Teachers. Retrieved from <http://www.ed.gov/inits/preparingteachersconference/whitehurst.html>

