

RIGOR AND ACADEMIC ACHIEVEMENT: CAREER ACADEMIES VERSUS
TRADITIONAL CLASS STRUCTURE

By

Linda L. Kyees

A Dissertation Proposal Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University, Lynchburg, VA

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ABSTRACT

The purpose of this study was to determine if students who attended high school Career Academy classes, as part of Career and Technical Education, showed greater academic achievement than students who attended traditional high school classes. While all participants attended schools in the same school district, and were seeking the same goal of graduation with a standard diploma, the Career Academy students had the benefit of all classes being directed by a team of teachers who helped them connect their learning to their desired career through collaborative learning projects and assignments. The traditional high school classes taught each subject independent of other subjects and did not have specific connections to desired career goals of the students. The study used a causal-comparative research design and the participants included 1,142 students from 11th and 12th grades who attended 9 high schools in a diversely populated area of central Florida with 571 enrolled in the Career Academies and 571 enrolled in traditional classes. The 10th-grade FCAT scores served as the dependent variable. All students attended similar classes with similar content, making the primary variable the difference in academic gains between students participating in the Career Academy design and the traditional design classes. Using the Man-Whitney *U* Test resulted in the Career Academy group achieving the higher scores overall. This resulted in rejection of the first null-hypothesis. Further examination determined that the 10th-grade FCAT scores were greater for the average students group, which comprised the largest portion of the participant group, also resulted in rejection of the second null-hypothesis. The gifted and at-risk student group scores resulted in failure to reject the third and fourth null-hypotheses.

Descriptors: Career Academies, Career and Technical Education, Academic Achievement, Causal-Comparative Design, Mann-Whitney *U* Test, average students, gifted students, at-risk students, standardized test scores

DEDICATION

This dissertation is dedicated, in loving memory, to my mother, Ruth M. Price and her unfailing faith in my ability.

August 17, 1926 – March 28, 2012

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LIST OF ABBREVIATIONS

AAFCS – American Association of Family and Consumer Sciences

ACTE – Association of Career and Technical Education

CTE – Career and Technical Education

FCAT – Florida Comprehensive Assessment Test

FLDOE – Florida Department of Education

IRB – Internal Review Board

MDRC – Manpower Demonstration Research Corporation

Mann-Whitney *U* Test – Nonparametric test for comparing the central tendency of two independent samples

NCLB – No Child Left Behind

PSAT – Preliminary Scholastic Aptitude Test

SPSS – Statistical Package for the Social Sciences

t-Test – For the difference between Means

Three Rs – Rigor, Relevance, and Relationships

VCSB– Volusia County School Board

CHAPTER ONE: INTRODUCTION

Background

When it comes to educating children, parents are on the frontline. According to Hammond (2010), “Parenting is the process of nurturing, caring for, socializing and preparing one’s children for their eventual adult roles” (p. 126). Hammond added that “parents teach their children at every age and mentor them through example and actions into successful roles of their own” (p. 127). Although parents seek to provide children with the skills and knowledge needed to thrive in the adult world, they often rely on schools to help in that endeavor. Most teachers wish for their students to achieve and working with students gives teachers “the potential to affect some part of our students’ self-worth, of their futures and of the ways in which they engage in our society” (Schoenfeld, 2009, p. 29). Jane Addams, who educated immigrants and urban children at the turn of the 20th century during America’s Industrialization period, “like Dewey, believed that children, as part of their education, should be introduced to a range of vocations” (Gutek, 2011, p. 336). “Addams believed that industrial occupations needed to be infused with social purpose... [because, unlike children in the farming community] in an industrial society, work, done away from the home and usually out of the child’s neighborhood environment, became a remote concept for many children” (p. 336). Although, in the 21st century, many school districts offer some career-based programs, the need to incorporate more programs was noted in President Barack Obama’s 2013 State of the Union address, where he stated that high schools need to “better equip graduates for the demands of a high-tech economy” (U.S. Department of Education, 2013, p. 1). Additionally, “the Obama administration has laid out plans to redesign high schools and Career and Technical Education (CTE), to ensure that young people graduate with the skills and abilities that are aligned with the needs of a global

economy” (p. 1).

In American education between the end of the Civil War and the end of World War I, when the nation was changing from an agrarian economy to an industrial one, Booker T. Washington emerged as an innovator in agricultural and industrial education which was designed to educate the now free slaves of the South. At the beginning of the 20th century, educators focused on the need for vocational education “to meet the labor force needs consistent with the shift from an agrarian to an industrial economic base” (Gordon, Daggett, McCaslin, Parks, & Castro, 2002, p. 1). This ushered in the beginning of “vocational education... in the 19th century in the United States, [and] ...became Career and Technical education (CTE) in the 1990s” (Castellano, Stringfield, Stone, J., & National Dissemination Center for Career and Technical Education, January 1, 2002, p. 4) along with the growth of school-to-work initiatives like Career Academies.

“A Career Academy is a high school model that integrates school-to-work elements in a personalized learning environment... Academies have three essential features: school-within-a-school... partnerships with employers... [and] integrated academic and occupational curriculum centered on a career theme,” (Kerka & National Dissemination Center for Career and Technical Education, 2000, p. 3). Career Academies are schools within the larger school that focus on the training needs of a particular career-oriented program. Unlike the traditional structure of high school classes that work independently of each other, the Career Academy’s CTE and core subject teachers work together to offer career training in conjunction with academic classes to demonstrate the relevance of academic courses to the career goals of their students. Additionally, Career Academies draw students of all academic abilities, unlike the tracking structures of the mid-20th century vocational classes. Academic abilities are identified by the

categories average, gifted and at-risk students.

The average students are generally thought to be “the group between the students of high intellectual ability... and the lower echelon which is composed of students who are low and under achievers, as well as those who drop out from high school (Jantzen, 1965, p. 279). Gifted students are identified by the National Association for Gifted Children (NAGC) as “those who demonstrate outstanding levels of aptitude (defined as an exceptional ability to reason and learn) or competence (documented performance or achievement in top 10% or rarer) in one or more domains” (NAGC, 2014, para. 4). The term at-risk is used to describe “students who are considered to have a higher probability of failing academically or dropping out of school” (Glossary of Education Reform, 2014, para. 1). CTE works to include more academics and to prepare all students for the workplace and for college or technical school, while helping them develop critical thinking skills, and apply what they have learned to new and different situations. By providing students with opportunities to apply knowledge to real-world scenarios, it is expected that their scores will increase on standardized testing.

Problem Statement

High schools include students with a high degree of variance in learning style and ability. While some students survive and even thrive in independent classes that focus on a particular academic or career-oriented curriculum, many students struggle to show adequate progress in academic achievement despite their academic ability. In light of the push by the No Child Left Behind Act of 2001 (NCLB) legislation to close “the achievement gap between high- and low-performing children - especially the achievement gaps between minority and non-minority students, and between disadvantaged children and their more advantaged peers” (U.S. Department of Education, 2004, Sec. 101. Statement of Purpose # 3), it has become apparent that

the continuing gap is a problem in need of a solution. Therefore, it is important to find key elements to school reform that show promise in closing the achievement gap while improving individual student academic achievement. With constant change in demands for America's workforce, it is important to focus more attention on preparing young people for that workforce (Gordon, et al, 2002).

Purpose Statement

In order to close the achievement gap it is necessary to improve student academic achievement. With academic or student achievement being defined as the ability of students to earn passing scores on standardized testing designed to meet minimum standards as outlined by the Florida Department of Education (Race to the Top Definitions, 2010, para. 26), the purpose of this study is to determine if the achievement gap and student academic achievement show greater improvement with participation in Career Academies than with traditional high school classes. The development of subgroups will determine if changes in academic achievement differ for average students, gifted students, or at-risk students.

Significance of the Study

With the institution of the No Child Left Behind (NCLB) Act (2002, PL 107-110), there has been a push to reform education to ensure that all students succeed. The Quaglia Institute's survey results indicated that only when students "have a sense of belonging... are actively engaged... [and] are deeply connected to their learning will the larger goal of narrowing the achievement gap be met" (McNulty & Quaglia, 2006-2010). When teachers encourage students and develop positive relationships, students will rise to the higher expectations (p. 4). One aspect of Career Academies is that "students stay with a group of teachers over three or four years in high school" (Kemple & Snipes, February 2000, para. 10) which naturally develops

positive relationships. These relationships help students develop a sense of belonging that encourages better attendance and greater participation. With better attendance and greater participation it is believed that greater student achievement will result.

Real school reform has to come from sound practices that work. The use of data about individual students and trends is a helpful tool in assisting students to improve. “Throughout the school, the effective use of data allows administrators, teachers, parents and students to bring about change... [the results are that] students know where they are and where they are going academically” (Lujan, 2010, p. 39). By using shared data, or information, about the strengths and weaknesses of students, the students will not just survive, but actually thrive. With improved academic achievement, students have a much better chance of feeling confident to pursue higher education, and higher paying jobs.

Research Questions

The questions dealt with in this study range from the general question whether anyone may benefit from participation in a Career Academy to the more narrow possibility that only certain groups may benefit from participation in a Career Academy setting. Therefore, discovering relationships that show specific causal-comparative aspects allows for more accurate reporting. The questions designed to help focus this study and determine the outcome are as follows:

Research Question #1. Will all high school students who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than high school students who do not participate in a Career Academy?

Research Question #2. Will average students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive

Assessment Test than average students who do not participate in a Career Academy?

Research Question #3. Will gifted students in high school who participate in a Career Academy receive higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than gifted students who do not participate in a Career Academy?

Research Question #4. Will at-risk students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than at-risk students who do not participate in a Career Academy?

Research Hypotheses in Null Form

Hypothesis #1. There will be no significant difference in standardized test scores between high school students who participate in a Career Academy in high school and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Hypothesis #2. There will be no significant difference in standardized test scores between average students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Hypothesis #3. There will be no significant difference in standardized test scores between gifted students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Hypothesis #4. There will be no significant difference in standardized test scores between at-risk students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive

Assessment Test scores.

Definitions of Core Terms

The following are definitions of core terms relating to this study.

1. At-risk students – Students who evidence “failure to thrive in school,” (Castellano, Stringfield, Stone, & Lewis, 2002, p. 7) and are in “a state or conditions marked by a high level of risk or susceptibility” (*Merriam-Webster Online*, 2010) of dropping out of school before graduation. Students who are struggling to achieve academic success. For this study, the operational definition follows the Florida Department of Education Bureau of Exceptional Education and Student Services publication stating that,

exceptional student means any student who has been determined eligible for a special program in accordance with rules of the State Board of Education. The term includes students who are gifted and students with disabilities who have an intellectual disability; autism spectrum disorder; a speech impairment; a language impairment; an orthopedic impairment; another health impairment; traumatic brain injury; a visual impairment; an emotional or behavioral disability; or a specific learning disability. (Florida Department of Education, 2013, p. 53)
2. Average students – Students with “a level (as of intelligence) typical of a group, class, or series” (*Merriam-Webster Online*, 2010) not possessing gifted, or at-risk tendencies. Students who do not demonstrate the risk of dropping out of school or great ability of academic achievement. For this study, the operational definition of the average student is all students not included in the definition of the exceptional student as outlined by the Florida Department of Education Bureau of Exceptional Student Services. The

majority of students in this study are identified as average students.

3. Core Academic Classes – According to the NCAA Core Course Requirements, “A core course must: be an academic course in one or a combination of these areas; English, mathematics, natural/physical science, social science, foreign language, non-doctrinal religion or philosophy; be four-year college preparatory; and be at or above your high school’s regular academic level (no remedial, special education or compensatory courses)” (NCAA, 2005).
4. Gifted students – The term gifted is “generally associated with a child whose potential in one or more areas of skill would place him or her in the top 2-5% of children of the same age” (NSW Associations for Gifted and Talented Inc.). Also, “having great natural ability” (*Merriam-Webster Online*, 2010) in intellectual endeavors. For this study, the operational definition follows the Florida Department of Education Bureau of Exceptional Education and Student Services publication stating that “exceptional students include children who are gifted and children who have disabilities. Children who are considered gifted are those children with superior intellectual development and who are capable of high performance” (Florida Department of Education, 2011, para. 1).

Identification of Variables

The dependent variable in this study is the 10th-grade standardized Florida Comprehensive Assessment Test (FCAT) scores for Career Academy students and Non-Career Academy students. The independent variables are the participation in the Career Academy and non-participation in the Career Academy, or Non-Career Academy. Additional examination of the data will determine if there is a greater advantage for various learning abilities, rather than all students, as is indicated by past research within the second chapter of this document.

Research Plan

Because the causal-comparative research design has the “purpose of explaining educational phenomena through the study of cause-and-effect relationships,” (Gall, Gall & Borg, 2007, p. 306) it was implemented to evaluate the data in this study. The study began with the collection of base data for all participants. The data consisted of the 10th-grade FCAT scores in reading as the dependent variable data. The primary goal of the study was to determine if students in the Career Academy attain higher scores on standardized tests than students taking similar classes without the Career Academy structure. Secondary goals of the study were to determine if students of particular learning abilities make higher scores than other students.

The causal-comparative model allows the investigator to “examine the possible effects of variables that are difficult or impossible to manipulate experimentally” (Gall, Gall & Borg, 2005, p.185). This model permitted the researcher to allow all students meeting the required criteria, attending the target schools to be included in the study. All data was provided by the research data department of the local school district. The process allowed for a broader diversity among participants, including a larger number of participants in the study, with a broader diversity of ethnic backgrounds, and socio-economic standings to reduce the probability of a Type II error.

This quantitative study utilized a causal-comparative design with the 10th-grade FCAT scores as the dependent variable. A large participant pool, broad ethnic diversity and students enrolled in a Career Academy or in traditional class structures. Additionally, students were previously classified as average students, gifted students or at-risk students. The larger participant pool helped to lower possible errors due to the non-experimental structure.

CHAPTER TWO: REVIEW OF LITERATURE

In a time when the government has mandated that all students have the right to be educated in the least restrictive environment, and that all students will make measurable gains in learning, educators face the task of making it happen. Additionally, there may be students diagnosed as at-risk with learning disabilities, students identified as gifted and, still, others with physical and/or intellectual issues, all in the same classroom with average students. Teachers must provide a learning environment that meets the needs of everyone. Therefore, school districts are scrambling to discover the best practices necessary to ensure schools accomplish these goals.

Schools act in conjunction with parents to prepare children to be productive adult members of society. School districts have sought ways to reform secondary schools to make them more relevant to students' interests and needs, and "educators see expanded and rigorous Career and Technical Education as a way to make high school more relevant" (Vail, 2007, p. 2). Career and Technical Education (CTE) and Career Academies are the new face of the old vocational education of the 20th-century.

Career Academies are providing a new face to education, one that offers students interesting career-related subjects, relevance to the real-world, rigorous academic assignments, and a working relationship with teachers based on mutual respect and understanding. Drage (2009) stated that "high-quality Career and Technical Education (CTE) programs can launch America's future competitiveness through increased student engagement" (p. 32). The structure that is identified as CTE is one that educates the entire student, not just one aspect of the entire academic requirements. "CTE courses are academic courses taught using applied methods. CTE students do go on to higher education and are more focused on their education" (Katz, T., 2012,

para. 2). This chapter will look at the history of the American school system and the introduction of vocational training programs in schools. The introduction of CTE, the Career Academy structure and how students with various learning abilities benefit from the CTE programs will also be examined.

Theoretical Framework

Vocational education began in the late 19th century in the United States, to help support the career exploration and preparation of adolescents. “There were women and men of great vision who believed in people and the rights of people to be prepared for the world of work as a part of their basic educational experience” (Barlow, 1976) who helped establish career training in public schools. Before 1917 career training took place as part of an apprenticeship with an expert in the desired field, as part of the parent-child training to take over the family business, or as a form of observation and imitation (Barlow, 1976, p. 7). As America began to industrialize, unions realized there was an advantage to educating their workers and their children. “As a result, the comprehensive school movement realized its full force as a factory model of vocational education designed to generate human capital to establish America as a global economic power” (Boers, 2007, p. 138).

Bret Lovejoy (2000) stated that “industry will continue to need highly educated and skilled employees” (para. 4). Lovejoy listed a three-pronged skill set that many companies seek in their employees. “First, they have strong academic and thinking skills. Second, they have strong technical skills in the field in which they will work. Third, they have employability skills such as the ability to work in teams and communicate effectively” (para. 6). CTE and Career Academies are an avenue to provide business with the skilled workers needed for the future.

A survey conducted by Deloitte and the Manufacturing Institute, “a nationally

representative sample of 1,123 executives at manufacturing companies... revealed that 5 percent of current manufacturing jobs are unfilled due to a lack of qualified candidates” (Rucket & Wilkins, 2011, para. 2). To stay in tune with the changing job market, vocational education evolved into the category now called CTE in the 1990s (Castellano, et al, 2002, p. 2). High school CTE programs include “Family and Consumer Sciences education, general labor market preparation, and occupational education” (Levesque, Laird, Hensley, Choy, Cataldi, and Hudson, 2008, p. iii). Instead of the familiar elective classes that taught girls how to cook and sew and taught boys how to build a birdhouse, the focus of CTE broadened to prepare students both for the workplace and for college or technical schools. Additionally, Career Academies, which combine core curriculum and career training in a school-within-a-school environment, began to emerge. Career Academies offer field certification for students to open the door to entry-level employment. For example: students enrolled in health occupations may earn a Certified Nursing Assistant certification; and Early Childhood Education students may earn a day care worker certification (Career Connections Volusia/Flagler Consortium, 2009, p. 1). This not only provides a number of opportunities for internships in their chosen field, but it also allows students to accept entry-level employment while they continue their education.

The approach to American education has changed in many ways but has stayed much the same in other ways. The basic academic subjects of reading, writing, and mathematics have remained the primary focus of education. The common thread was one of necessity to equip children to become well-adjusted, and productive adult citizens in their own society.

Regarding the historical philosophers’ views of education, Plato believed that children should be encouraged to seek the path for which they were best suited, much like the directions given in Proverbs 22:6 that a child is to be taught “in the way he should go” (KJV). In his debate

between liberal education and technical education, Plato felt that “the skill acquired by technical training will make the student a well-paid and valuable contributor to society” (Gutek, 2005, p. 40). However, he also believed that a liberal education was necessary because, “those who possess such general knowledge will be able to make informed decisions and choices” (p. 40). Thomas Aquinas felt that the influence a teacher had on his or her students was of utmost importance. “Aquinas’s model teacher was a person who integrated knowledge and virtue as two interpenetrating elements of professional life. A person was ‘called’ to teaching in a way that was similar to the priest’s vocation, or call to service. [He also believed that] the teacher’s service to humanity was an act of love” (Gutek, 2005, p. 88).

Concerning Moses’ encouragement to the Israelites, in Deuteronomy 4:32-40, John Maxwell (2007) wrote, “Leaders project passion for their vision” (p. 210). Because teachers hope to see their students do more than survive in the world, it is important the students receive help to find their sense of destiny. In Jeremiah 29:11, God said, “I know the plans that I have for you... plans for welfare and not calamity to give you a future and a hope” (NKJV). Adults and mentors must see that children have opportunity to discover those plans for their own lives. Childhood is a time of discovery, and they need to discover their passions.

In response to the need for freed slaves to earn a living, Booker T. Washington implemented what became known as industrial education at the Tuskegee Institute in Alabama, to help improve “health principles, literacy, and fundamental skills” (Gutek, 2005, p. 401). According to Gutek (2005), the eras of Reconstruction and post-Reconstruction in the late 19th and early 20th centuries “were crucial decades in establishing the social, political, economic, and educational patterns that governed racial relations in the South” (p. 399) as well as what would be offered to public school students. The idea of training children for their future in the

American workforce became an accepted educational goal.

To help in organizing vocational education, and setting goals for education, teacher organizations were developed. “On June 9, 1906, Haney and Richards met with thirteen other persons at the Engineers Club in New York City to discuss the formation of an organization to promote the ideas involved in vocational education... [that later] joined the Vocational Education Association” (Barlow, 1976, p. 11). Additionally, although Ellen Richards was known for her contributions to the field of science, and her goal to offer “low-cost and nutritious food to working class families” (Bois, 1997, p. 1), she is ultimately remembered, from 1909, as the founder and first president of “the American Home Economics Association (AHEA), which became the most influential professional association for home economists” (AAFCS, 2014, p.1). With the help of the professional organizations -- the Association for Career and Technical Education (ACTE) and the American Association of Family and Consumer Sciences (AAFCS, formerly known as AHEA), vocational or Career and Technical Education (CTE) “has played an important role in preparing students for jobs” (Pierce & Education Commission of the States, June 1, 2001, p. 3) throughout the 20th century.

Although many attempts were made to further strengthen the vocational education aspect of public school those attempts were often two sided. The Smith-Hughes Act of 1917 was one such action. This act set aside Federal funds to cover the expense of supplies and teachers’ salaries in the vocational arena. “Although the Act’s intent was to avoid ‘raiding’ of vocational funds by other segments of the comprehensive high school, the result was to separate the vocational education program from the mainstream of a school’s operations” (Prentice Hall Documents Library: Smith-Hughes Act 1917, para. 7). This separation of vocational and academic tracks continues into the 21st century. One study on tracking (Lewis and Cheng, 2006)

supported the continued existence of the divide between the two categories. Although “student choice is the criterion rated by principals as the most important determinant of track status” (p. 90), it also noted that “students receiving free/reduced price lunches predicted the dominant track in schools” (p. 91).

By 1960s, industrial arts programs were incorporating “practical applications of scientific principles” (Foster, 1997, p. 4). Shop class and Home Economics began the transition into Career and Technical Education (CTE). Unfortunately, the decision to place students in vocational training, or to block them, was based on perceived abilities. This practice, known as tracking, had the goal of helping students enter the work force, or continue to post-secondary education. Although well intentioned, it also created a perception of intellectual class. “Students whose parents have achieved high levels of education know from experience the importance of proper tracking. Those students, are almost by their very definition part of the privileged class (predominantly white, middle- and upper-class students)” (Hill, 1998, p. 2). To the benefit of the educational community the desire to “implement ‘detracking’ reform [was] to question existing track structures and promote greater access to challenging classes for all students” (Wells & Serna, 1996, p. 94). This led to the desire to treat all students equally, and offer all learning opportunities to all students allowing them to choose their academic and vocational courses.

With the changes taking place in technology and the jobs available in American society, schools are once again looking at the ways they are educating children for their future. With issues such as inclusion that requires all children be placed in the least restrictive educational environment, and the NCLB legislation that insists all students reach a specified level of proficiency within a particular time frame, schools are under pressure to insure that all students are given the best opportunity to excel. Since the 1990s, CTE programs have attempted to work

hand-in-hand with the academic side of education in order to increase “positive outcomes in terms of attendance, grades, credits earned, and graduation rates” (Kerka & National Dissemination Center for Career and Technical Education, 2001, p. 3). The goal is to provide all students with a strong academic foundation in conjunction with job preparation skills that may lead to additional post-secondary training.

At the beginning of the 21st century, a growing element of CTE is the Career Academy model. Although there are several approaches to the Career Academy, the ultimate goal is to provide an integrated program that combines academic rigor with the relevance of career training in an environment that provides connection to the world outside the school walls. Some studies show that “Career Academies based on integrated paths have been found effective in improving high-school students’ performance and post-graduation options” (Stern, & Mid-Atlantic Laboratory for Student Success, 2001). According to Stern, students who are enrolled in Career Academies are just as likely to enroll in a 4-year post-secondary school as those students who are enrolled in an academic track. Another positive result of the Career Academy is that the students with the highest risk of failure show improved attendance, reduced criminal behavior, and increased extracurricular participation over at-risk students who do not participate in a Career Academy (Stern & Mid-Atlantic Laboratory for Student Success, 2001). The structure and connection between academic subjects and career training create purpose and understanding for participating students.

Throughout history, from the era of learning a trade through apprenticeship to modern-day Career Academies, providing opportunities for young people to learn what they need to be well-educated, functioning citizens who can provide needed goods and services in their own society has been the primary goal of education. Career Academies have the ability to focus on

smaller groups of students who share interest in the same or similar career goals. Although not all career paths can be addressed at any given school, the opportunities exist for variance through requesting to be allowed to attend schools outside the area (Volusia County Schools 2010-2011, p. 3) that offer the subjects in which they find interest. Additionally, Career Academies can, and do, offer an opportunity to cultivate research and investigate a number of related career paths that stem from the basic offerings.

Review of Historical Data

Development of American Education

The purpose of this literature review is to examine the structure and development of the Career Academy and how previous studies have shown a connection between academic success and participation in CTE programs. Additionally, this review will demonstrate the need for a comprehensive study to determine if an overall relationship does exist between the Career Academy concept and gains in student standardized test scores for all students.

American schools. Learning to read, write, compute mathematically, and understand our environment and society are the basics of education. According to Adler (1993), “The first settlers came to America with a firm belief in the necessity and desirability of education... [and] parents bore the responsibility for seeing that children were literate, educated in the faith, and able to provide for themselves in society” (p. 1). As the country grew and a need for organized education developed, a variety of approaches were introduced. Horace Mann, “a lawyer and politician shaped his belief that the common school was directly related to civic competency and to public service” (Guttek, 2005, p. 226). Mann chose to avoid “segregating students according to socioeconomic class as in Europe... [and]... saw the U.S. common school as an integrative social agency for bringing children of different social and economic classes and religions

together in one institution” (p. 227). The “U.S. Supreme Court in *Brown v. Board of Education* in 1954 struck down laws that justified and supported racially segregated schools... [and]... legislation pertaining to the education of handicapped persons created the movement for mainstreaming handicapped children in regular classrooms whenever possible” (p. 227) thus maintaining the integrity of the common school. Unlike European schools where “children of middle school age take tests and either move on to apprenticeships or a university preparation route” (Bidwell, 2014, para. 6), American students make their own decision to enter CTE or Career Academy programs upon entrance to high school and can change their minds along the way.

A precursor to vocational education in the public schools was the establishment of trade schools for the newly freed slaves in America. Opening in 1868, the Hampton Normal and Agricultural Institute in Virginia was established by Brigadier General Samuel Armstrong “on the Wood Farm, also known as ‘Little Scotland’” (Hampton University, 2013, para 4). The purpose of the Institute was: “to train selected Negro youth who should go out and teach and lead their people first by example, by getting land and homes; to give them not a dollar that they could earn for themselves; to teach respect for labor, to replace stupid drudgery with skilled hands, and in this way to build up an industrial system for the sake not only of self-support and intelligent labor, but also for character” (para. 4).

The school is still operating and has undergone much growth, under the name of Hampton University, and maintains Armstrong’s goal of providing the “Standard of Excellence, An Education for Life” (para. 22). The goal of teaching students the value of their work helps to build pride in their accomplishments. This educational model, along with the industrialization of America opened the door to vocational training for the general population.

Elementary and middle schools. Basic literacy is of utmost importance to all Americans and seeing that all children achieve literacy is the primary goal of education. However, children will progress to adulthood, and most will face the need to find employment. Thus, another recurrent goal for education is “to be accountable for the future occupations of students” (Foster, 1997, p. 1). Elementary schools take the primary responsibility of educating children in the basic mechanics of reading, language arts, history, science and mathematics, while secondary schools build on the basics and provide opportunities for exploration, research and career planning.

“Middle schools... [have] a different grade organization and a more developmentally responsive program” (MacIver & Ruby, 2011, p.2) than elementary schools. Middle schools are designed to transition young adolescent students from the elementary environment to the high school setting. Middle schools often mimic the high school model by having students move from classroom to classroom throughout the day, studying a number of topics with teachers who are prepared to teach more in-depth curricula.

In order to ease the distress of young adolescent students in their move from the elementary school to the high school environments, some schools use an educational approach known as “looping (assigning teachers the same students for two or three years), semi-departmentalization (assigning a teacher to teach two subjects to three class sections rather than one subject to six class sections), and interdisciplinary teaming with a common planning period” (MacIver & Ruby, 2011, p. 4). The team approach has students move between the teachers on a particular team. The teachers can share strategies, and discuss difficulties the students may have, and consider ways to help them achieve (Mitchell, 2010, para. 2). This method gives added support to students, and eases them into the more hectic and even larger high school

environment. Additionally, students attend physical education and their choice of elective classes that may include family and consumer sciences, art, music, technology, and foreign languages. This may be the first time that most children have opportunity to explore subjects of interest in a safe and creative environment.

The addition of elective programs as “special learning centers... includ[ing] a library, a reading laboratory, a home-arts center, a typing and writing laboratory, a foreign language laboratory, an arts and hobby center, a music room, and a physical education/recreation center” (MacIver & Ruby, 2011, p. 2) allows young students to build new skills sets and self-confidence. Jones (2010) recommended that it is best for “career education to begin in middle school or earlier to allow students time to develop the aptitudes necessary to develop an awareness of their chosen career” (p. 24). Some middle school settings use “the Wheel” to introduce young students to their opportunities for careers and creativity. The Wheel is a set rotation of elective classes, allowing all, or most, of their students to experience as many different career and creative opportunities as possible. Hinckley (1992) suggested that the young adolescent in middle school is often interested in many things, but not very interested in anything. The Wheel allows students to “sample a variety of subjects – from foreign languages to specialized music topics – as they take part in ‘wheels’ designed to involve entire classes of children in useful and intriguing sequences of four- to nine-week experiences” (p. 27). Using this method gives students some knowledge of different career paths that they may have never experienced or considered.

When students reach the high school level, many have established their own identities, and discovered the things that truly interest them. If they are fortunate enough to attend a high school that offers a variety of career exploration programs, they may continue pursuing those

interests while reaching toward academic success. Since not all schools can offer all possible career preparation choices, many school districts allow students to apply to schools based upon course preference rather than zoning requirements (Volusia County, p. 3).

High schools. Once students enter high school, it is the responsibility of the school and staff to ensure their enthusiasm is not stifled. Maintaining the team approach through the Career Academy model may be the answer to this puzzling problem. Unlike the student tracking of the 20th century, where students were placed in classes based on their perceived abilities, and “minorities [were] disproportionately represented in the lower tracks” (Hill, 1998), CTE Career Academies allow students to choose programs based on their own interests and career goals. This approach works with students who fit into any category of learning ability, because they “combine academic and vocational curriculum into an integrated career theme, [where] students traditionally stay with a core group of teachers over the 3 to 4 years they are in high school” (Coffee & Pestridge, 2001, p. 2) much like the looping or team teaching of the middle school.

More than a decade ago, Kemple and Snipes (2000) completed a 5-year study for the Manpower Demonstration Research Corporation (MDRC), investigating the impact of Career Academies on the success of high school students. One of the findings reported that “among students who are most at risk of dropping out of high school, Career Academies are an effective means of preventing dropout, increasing school engagement, and helping students acquire the credentials they need to graduate and prepare for post-secondary education... [and showed an] overall increase in academic course credits translated into a substantial increase in the percentage of students who completed a core academic curriculum” (p. 2). In other words, more students were graduating with a regular diploma. This does not necessarily mean that Career Academies are only helpful for students who are in danger of dropping out. Gifted students benefit as well.

“Because they have a high preference for tactile and kinesthetic learning activities, these [gifted] students are more likely to remain motivated and engaged when they are active participants in the discovery process” (Rayneri, Gerber, & Wiley, 2006, p. 104).

It is necessary for students to take responsibility for their own learning by the time they enter high school. Cassel (1998) suggested that a career interest survey should be administered to students to identify their three highest areas of interest. If there is a large discrepancy between the students stated goals and the results of the interest survey, a second survey identifying technical preferences should be administered. The third step in this process is a “Differential Aptitude Test to see whether the aptitude scores earned are in agreement with the stated interest” (p. 320). Ultimately, students should be offered the opportunity to make their own decisions about their interests, investigating as many careers as needed to help them reach their goals. High schools face many obstacles in leveling the academic playing field for a diverse student population. Issuing the interest surveys early can help students make choices and take responsibility for their own learning. Additionally, this approach may provide assistance to students at risk of not reaching graduation who may be dealing with personal problems or problems at home or school or in their communities (Castellano, et al, 2002) issues that can affect student engagement in the classroom. Once students reach the level of high school, it is important that they are empowered to take control of their own education and use that education to achieve their goals in spite of personal hurdles.

Career academies. The term *academy* has been in use relating to education for much of human history. “In 387 B.C.E., Plato founded The Academy, an institution of higher education” (Gutek, 2005. p.37). In early American culture the term identified an educational facility used to “prepare students for college” (Adler, 1993, para. 5). Webster defines academy as follows: a) “a

school usually above the elementary level; especially a private high school... [and] b) a high school or college in which special subjects or skills are taught” (*Merriam-Webster Online Dictionary*).

Before Career Academies were introduced to the American educational system, Booker T. Washington and others noticed that learning academics without application to industrial application left students without a complete education. As a young boy, Washington wanted nothing more than to learn to read. Shortly after the emancipation of slaves his now free family moved to West Virginia (Washington2010) where Washington and his step-father procured employment in a salt furnace. He longed to attend school and pleaded with his mother to help him learn to read. Although his time in school was often interrupted and unsure, he continued to do everything he could to gain education. He eventually managed to leave home for Hampton Normal and Agricultural Institute, in Virginia, where he had to work as a janitor to earn his board. While at Hampton he worked long hours alongside other students in a variety of tasks, and observed the caring and giving hearts of those in the position of leadership. As time passed, Washington’s (2010) knowledge grew and his desire to help his race succeed increased. With support from Brigadier General Armstrong, he had opportunity to begin a school in Tuskegee, Alabama. He and his students literally built the school from the ground up and added several industrial education programs in the process. Washington’s (2010) desire for his students was to “give them such practical knowledge of some one industry, together with the spirit of industry, thrift, and economy, that they would be sure of knowing how to make a living after they left” (p. 88) the Institute. More than a century later, this is the goal of Career Academies.

Once it became apparent the educational system was needed to adequately train students to become productive workers in the growing industrialization of America, the Morrill Act of

July 2, 1862, was signed into law by President Abraham Lincoln (Loss, 2012, para. 1). The Morrill Act, also known as the Land Grant College Act, “was the brainchild of a self-taught son of a blacksmith, Representative-and-later-Senator Justin Smith Morrill of Vermont, a Republican” (para. 2) provided higher education “accessible to all, but especially to the sons of toil” (para. 3). This act provided government land to help each state establish a college or university that would include “agriculture, home economics, mechanical arts (engineering), and other professions (Nolo Law for All, 2012, para. 1). A second Morrill Act of 1890 helped establish “a major educational resource for the nation. For over a century, they have provided a principal means of access to higher education for African American men and women” (Clark, 2012, para. 10). The Smith-Hughes Act of 1917 was established, after the land-grant colleges were developed, to assure “grants be given to stimulate vocational education and for teacher training; to partially pay the salaries of teachers, supervisors and directors; and to support a federal board to make studies useful to vocational schools” (Barlow, 1992, p. 30).

Changes have been implemented to this act throughout the years to include health occupations, technology and other subjects. In part, the Smith-Hughes Act has been a huge success. “In 1917, just before the implementation of the Smith-Hughes Act, there were 200,000 vocational students in the United States” (Prentice Hall Library: Smith-Hughes Act (1917), 1998, p. 3) and by the end of the 20th century, “vocational education enrollments had grown seventeen fold” (p. 4).

By the 1960s, vocational education was well ingrained in the American education fabric, but there were many changes in the American workforce and changes were needed in the career training programs as well. The Vocational Education Act of 1963 was implemented, partly to support the established funding of vocational schools, but it also “broadened the definition of

vocational education to include occupational programs in comprehensive high schools” (Gale Encyclopedia of Education, 2012, para. 8). In 1984 Congress, believing that “effective vocational education programs are essential to the nation’s future as a free and democratic society” (para. 15), passed the Carl D. Perkins Vocational Education Act (Public Law 98-524) followed by the Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990 (Public Law 101-392). Changes were happening rapidly in the 1990s in the area of vocational education, now known as CTE. In 1994 Congress passed the School-to-Work Opportunities Act (Public Law 103-239) to deal with the need for more skilled workers “through partnerships between educators and employers” (Gale Encyclopedia of Education, 2012, para. 16). The key elements of the School-to-Work Opportunities Act, which lead easily into the development of the Career Academy model, include “(a) collaborative partnerships, (b) integrated curriculum, (c) technological advances, (d) adaptive workers, (e) comprehensive career guidance, (f) work-based learning, and (g) a step-by-step approach” (Gale Encyclopedia of Education, 2012, para. 16).

Career Academies are “geared toward restructuring large high schools into small learning communities” (Smith, 2009, p. 1). According to David Pierce (2001), the first Career Academy “was started in Philadelphia in 1969” (p. 4) in an effort to prepare students for both college and career. Students work with a team of teachers equipped to prepare them in all academic areas, and all subjects focus on the chosen career theme. As of 2001, the National Academy Foundation claimed that there were a total of “394 Career Academies in 38 states and the District of Columbia [with] more than 30,000 students... enrolled in its programs” (Pierce, 2001, p. 5). Indications are that students, even those labeled as being at-risk, who participate in Career Academies have better attendance and greater academic success, and “CTE concentrators

graduated at a higher percentage than the school-age population at large” (Ramsey, 2012, para.

4). Career Academies are showing promise in the battle to keep students in school and increase their chances for more fulfilling career options.

Volusia County, Florida’s definition of a Career Academy is as follows: A small learning community that combines college preparatory curriculum with a career focus. A Career Academy provides unique learning opportunities through extensive business partnerships, integrated instruction, hands-on learning, field studies, service learning, career shadowing, co-ops, and internships. Academy teachers and business partners provide the real world skills necessary for students to be successful in today’s work environment (Pierce, 2001, p. 5). Students are encouraged to seek the programs that most closely meet their interests and “academies provide students with a sense of belonging and the opportunity to explore their interests” (Stone, 2000, para. 12). If students enroll in an academy, then discover it is not meeting their interests, they can always switch to a different career path.

Trybus and Li’s (1998) research showed that “high school Career Academies may hold promise for easing many of the problems disadvantaged youth face in school and employment opportunities” (p. 2). Career Academies require academic rigor organized around a career-related theme (Trybus and Li, 1998). Therefore, Career Academies meet the academic needs of students of all learning abilities. Mittelsteadt and Reeves (2003) explained that the original Career Academies were designed to help students who were at-risk of dropping out of school before graduation. Early studies show that “participating students have improved attendance and grades; higher self-esteem and satisfaction with school; improved sense of connection with teachers, other students and school programs; lower dropout rates; lower discipline problems and incidence of school violence; and lower sense of student apathy, isolation and alienation” (p. 39).

In general, Career Academies have 12 common characteristics. In order to be successful, a Career Academy should include the following:

- a small learning community;
- students of all achievement levels;
- students and teachers joining voluntarily;
- students moving through the program together;
- a team of teachers working together with a common planning time;
- a lead teacher and counselor support;
- a career cluster that focuses on a particular career theme;
- an organized schedule that combines integrated academics and career/technical training;
- a college-prep curriculum;
- community support and mentoring;
- an articulation agreement with a local post-secondary institution; and parent support

(Mittelsteadt & Reeves, 2003, p. 40).

One way Career Academies help students of all learning abilities to succeed is through the use of tiered assignments. “Tiered assignments, both in class and for homework, are a great way to differentiate instruction when all students need to work on the same content or material. This might include differentiated journal prompts, comprehension questions at different levels of Bloom’s Cognitive Taxonomy, or a range of sophistication in math problems” (Rakow, 2007, p. 11). By offering assignments, and projects, that include a number of choices in the way they can be accomplished, students are encouraged to challenge themselves. With tiered assignments, students receive the guidelines, and a rubric, that offers choices and creative freedom. Additionally, many of the assignments center on the career theme of the Career Academy. This

improves intrinsic motivation in the students because they are completing research related to something of interest to them. It works in much the same way as the internal motivation experienced by anyone who dedicates his or her time to beloved hobbies.

For decades, American schools have supposed the only way to increase students' successes in school was to increase academic drills, assessments, and pressure to learn. For many students, especially those who have learning difficulties, this type of learning is sheer drudgery. When students find it difficult to engage in the traditional classroom, they allow their minds to attend to those things that truly interest them. Adolescents have begun to build their own value system, and make decisions as to how their time and energies are spent. Because they have more freedom to make choices, they begin to exercise that new freedom in their choice of clothes, friends, and schoolwork. Deanna Kuhn (2007) stated that we should "center the curriculum on educational activities whose purpose and value are readily apparent to those who partake... [and that] we need to make schooling more connected to the adult life [for which] it is intended to prepare students" (p. 147).

Multiple Career Academies and career-related programs operating within a single high school provide students with a microcosm of the world in which they live. For example, when Susan Bantang (2008), retired Career Academy coordinator, of West Boca High School Culinary Academy, wanted to prepare documentation of their success, she began by having students collect local newspaper articles and district information discussing the beginnings and growth of the program and compile a scrapbook. She then asked the school's Drafting and Design Academy to prepare a PowerPoint presentation regarding the academy standards that explained the structure within the Career Academy. The Drafting and Design Academy also helped in the production of the Culinary Academy's logo and informational materials. Finally, the TV

production program produced recruitment videos. Career Academies giving students opportunity to develop their skill, explore their interests, and work with other Career Academies in the process can only provide encouragement.

Career Academies have gained the attention of many educational researchers, and the results are encouraging. The key components in keeping students involved and learning, in the Career Academy environment, or school in general, are what Willard Daggett (2005) dubbed the “new three Rs (p. 4). First, rigor in academic courses, meeting the NCLB legislation requirements seeks to push students into an area of learning that includes the ability to apply knowledge in real-world situations while using analysis, synthesis, and evaluation skills.

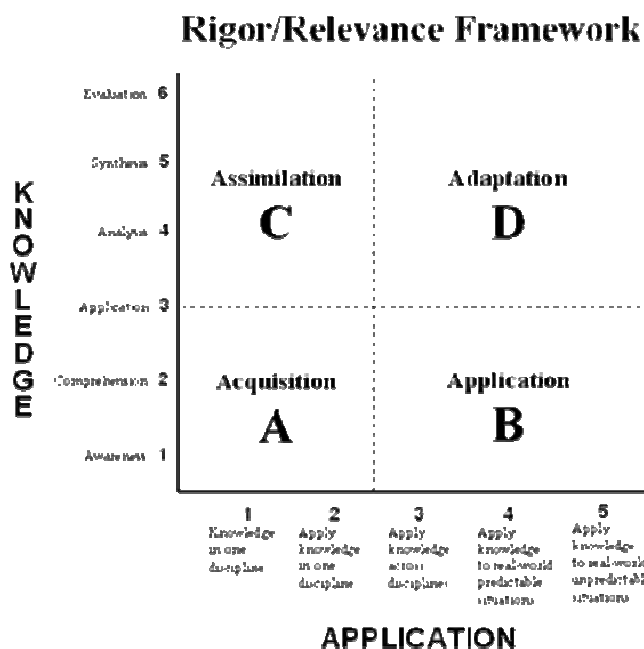


Figure 1 Rigor/relevance framework[®]. Copyright © International Center for Leadership in Education. Used with permission.

When instruction and expected student learning is in Quadrant A, the focus is on teacher work...

When instruction and expected student learning moves to Quadrant B, the emphasis is on the

student... When instruction and expected learning falls in Quadrant C, the student is required to

think in complex ways... [and] Quadrant D learning requires the student to think and work”
(Daggett, 2005, p. 3)

Second, relevance seeks to connect the classroom learning to the real-world application, showing students why they need to read, write, and compute. Third, relationship comes between students, and between students and teachers through their similar interests, and from the team teaching methods that allow students to stay with the same teachers from 2 to 4 years (Daggett, 2005, p. 1). Whether dealing with students who are at-risk of dropping out of school; students who are high achievers and are easily bored with traditional class structures; or average students who do not know where they fit in the bigger world, Career Academies and the new three Rs provide the motivation and connection they need to succeed. Daggett (2005) developed a framework to encourage the incorporation of rigor and relevance in every classroom, regardless of the subject matter. The framework diagram (see Figure 1) consists of four quadrants. Quadrant D is where CTE flourishes. The diagram design provides challenge to the student and the teacher to achieve higher goals.

Career Academies have come a long way from the industrial education models of the early 20th century. “Career Academies seek to forge partnerships and alliances with business” (Blomenkamp, 2009, 41) to provide paid and unpaid internships, mentoring, and employment opportunities for students. According to Vail (2007), the number of Career Academies increased to about 2,500 throughout the country, and enrollment increased “from a level of 9.6 million students in the year 1999 all the way to 15.1 million in 2004 (p. 1). Students want to do what interests them and Career Academies help them focus those interests on how they can be translated into viable careers while creating relevance between their interests and academic achievement. Mary Bruno, retired Director of Career, Technical, and Community Education for

Volusia County Schools, in central Florida, stated that “the curriculum commonly dubbed as electives, is actually at the heart of student interest and learning, including the rigor, relevance, and relationships students desperately need to make sense of their presence in the world of education” (personal interview, November 5, 2009).

Career academies and dropout prevention. Many of the students involved in CTE Career Academies face risk factors that would make the possibility of a high school diploma more difficult without the small community support provided by the Career Academy structure. Many risk factors contribute to the likelihood of a student dropping out of school. Four categories of risk factors have been identified, which include “individual, family or home, school and community” (Castellano, Stringfield, Stone & National Dissemination Center for Career & Technical Education, 2002, p. 3).

Castellano, Stringfield, Stone, and Lewis (2002) sought the best way to achieve school reforms that would improve academic outcomes for at-risk students. Although schools and teachers can do very little to change many of the factors that label a student as being at risk, the schools can provide a safe and interesting environment where at-risk students can flourish. Castellano et al. believed that for reform to be comprehensive, it had to be relevant. Relevance is the relationship a subject has to an individual and his/her interests, or to his/her chosen career path. Citing a previous study, Athanasou (2009) stated that more than two-thirds of students have greater achievement in subjects for which they have a high preference, and nearly three-fourths excel at those subjects that are closely related to their career choices. From these findings the researcher commented that “one might say that by and large there is little need to motivate the person who is interested in something, because interest is related to his/her abilities and what they value” (Athanasou, 2009, p. 9).

One of the primary goals of helping students identify their own interests and establish career goals early in their secondary schooling is to help them understand the relationship of their education to their future. David Virtue (2010) agreed that middle school is a time to open the world of opportunities to students because “middle school is the right time for students to discover – discover themselves, their abilities, interests, and limitations; discover others and examine the values, mores, and customs of the dominant society” (para. 4). Another area that schools must work to improve is the declining graduation rate. When students enter the ninth grade, but do not earn a diploma, they add to the dropout rate. The goal is to keep students interested and engaged throughout high school to improve their chances for a viable career. Whether graduates choose to enter college or not, they should leave high school equipped to do so. Kerka (2002) wrote the article “Career Academies in Brief: Fast Facts for Policy and Practice No. 1,” for the National Dissemination Center for Career and Technical Education. In it she cites a 1997 study by Maxwell and Rubin that concluded “that Career Academies raise high school achievement, decrease the need for English remediation in college, and increase the probability of college graduation for these students” (p. 4).

Stern’s (2001) investigation into the success of Career Academies in California, concluded that the “academy graduates are as likely as their schoolmates to be enrolled in postsecondary school” (p. 2). Much of the improvement seems to be due to the fact that students are learning in an environment of their choosing, an environment that motivates them toward their future. “The Manpower Demonstration Research Corporation (MDRC)... confirms... students in Career Academies earn more credits toward graduation and are more likely to participate in activities like volunteer projects (Stern, 2001, p. 3) than students who do not participate in the Career Academy communities. Additionally, those students considered at-risk

who participate in Career Academies have a dropout rate that “is 11% lower” (Stern, 2001, p. 3) than those who do not participate in Career Academies.

Colwell (2010), a retired Regional Superintendent of Volusia County Schools, Florida, presented statistics covering the graduation rates over a recent 10-year period comparing Volusia County Schools to the entire state of Florida (p. 3). Although no conclusive reason was discovered for the fact that graduation rates have increased over the past decade by more than 10%, it is significant at the same time the dropout rate was declining the number of CTE programs and Career Academies was increasing. Volusia County has maintained a greater graduation rate than the state average and has made great strides in meeting student interests. With a current graduation rate of 82%, Volusia County is on the high end of high school completion rates (Colwell, 2010, p. 3).

Career academies and gifted students. Because Career Academies have a more rigorous curriculum than the vocational classes of the past, they are more attractive to students who excel in their academic subjects. However, all students, no matter their academic ability or career aspirations, can benefit from career-oriented training that is based upon academic rigor and real-world relevance. “CTE offers an alternative educational setting in which students’ strengths and talents may be recognized and actualized” (Gentry, Peters, & Mann, 2007, p. 377) while they perform hands-on activities related to their interests. It is believed this phenomenon occurs because the relevance of the Career Academy opens doors to understanding that do not exist in the traditional setting (p. 393).

Another advantage for gifted students who participate in Career Academies is the development of personal identity and new skills. The laboratory setting of most CTE classes allows for tiered assignments. In the Culinary Arts Academy, for example, assignments are

modeled after the need to have a variety of work skills, such as “nutrition science, restaurant management, food chemistry and culinary skills to prepare them for employment in the hospitality, tourism or recreation industry” (Elk Grove United School District, 2012, p. 1). Students work each area, learning the unique skills and academics necessary for each. After some training, and experience, students tend to find their niche. Nutritionist, dietary aide, food stylist, and food scientist are just a few of the possible career paths that may be pursued from this Career Academy. It is possible that “students who attend a CTE program of study may be seen as talented in the CTE setting but not seen as talented in a traditional high school setting” (Gentry et al., 2007, p. 393). Miller (2012) referred to Danielle Whisler, a gifted senior “at Susquenita High School as a “hybrid student who can experience the best of a traditional high school and the more trade-focused vo-tech” (para. 4). By offering opportunities to lead and mentor other students while learning new skills, the Career Academy can offer opportunities to gifted students that do not exist in the traditional classroom.

Gentry et al. (2007) conducted a study to discover how CTE was perceived by students. They found that “themes emerged from the data that provided insights concerning how gifted and general students viewed both their CTE and traditional high school experiences” (p. 374). They found that all students believed their CTE teachers to be more caring, and involved. Additionally, students showed a preference for the hands-on activity that was included throughout CTE coursework. It was noted that “students with visual-spatial characteristics, such as a preference for hands-on learning, represent one group [of] often unrecognized gifted students” (p. 391).

Career academies and the college experience. Maxwell (2001), of the California State University, at Hayward, was interested in the claims that Career Academy students were

accepted into colleges at a higher percentage than students who attended the traditional class structure. Because Career Academies focus on high academic standards for all students, and “many programs emphasize the connections between high school and community college, and many are designed to keep university attendance open as an option for students” (p. 619) the goal was to determine if the academic success, seen at the high school level, continued at the postsecondary level.

The study (Maxwell, 2001) took data from college applicants in one state university from 1990 to 1998. The categories included “(a) applied for admission, whether or not they completed the process; (b) been denied admission; (c) been admitted to the university but did not enroll; or (d) enrolled in the university” (p. 625). The students all came from the same school district, surrounding the university, and “more than 90% of the district’s students are ethnic minorities” (p. 625). The questions Maxwell (2001) sought to answer were as follows:

- Does the Career Academy help students gain admission to a 4-year university?
- Does the Career Academy help students move through the university in a timely manner?
- Does the Career Academy facilitate positive postsecondary educational outcomes for its students?

After evaluating the data, Maxwell (2001) discovered that Career Academy students comprised 19% of the students in the school district, but they made up approximately 25% of the total college applicants with nearly all being accepted. Additional findings showed that the university students who attended Career Academies in high school had a lower “need for English remediation by approximately 12 percentage points... increased graduation by 4.3 percentage points, raising the simulated percentage to about 57%... [and] reduced the probability of

dropping out by 3.7 percentage points” (Maxwell, 2001, p. 638). Because the students in this study are among the “group of students who are not likely to attend a university” (p. 640), the successes are even greater than the numbers may indicate. Therefore, Maxwell suggested that a look into what factors create this success may be warranted. Vocational education and Career Academies are working to provide all students with motivation to learn and a means to their goals. Allowing gifted students the opportunity to apply their knowledge is a valuable benefit to their education.

Career counseling. Although there are many aspects of Career and Technical Education and Career Academies that would seem to provide a good solution to school reform and the need to prepare students for both higher education and the career field, the need for the assistance of career and guidance counselors still exists. The guidance counselors are given many responsibilities regarding their assigned students. Due to the demands put upon their time, and the number of students assigned to each counselor, “the vacillating emphasis of career guidance [has changed] from the major theme of school counseling itself to a minimal activity among other counseling responsibilities” (Schenck, Ancil, Smith & Dahir, 2012, p. 221). Career counseling has experienced many ups and downs throughout the 20th century. However, along with the recent mandates from President Obama, in *A Blueprint for Reform: The Reauthorization of the Elementary and Secondary Act* (2010), that schools are mandated to “ensure that every student graduates from high school well prepared for college and a career” (p. 1), the need for intensive career counseling is moving to the forefront again. Guidance counselors need to give time to students who are making decisions about their own futures.

Career and Technical Educators know the value of their programs, and work with those students who have made a commitment to them to assist them in planning career goals.

However, CTE teachers are busy in their own classrooms and are not available to plan with students who have not yet entered the program. That is where career counselors are needed most. Arne Duncan, U.S. Secretary of Education, when addressing the College AP Board in July, 2010, noted that “nationwide, there is roughly one Guidance Counselor for every 475 students... [and it is an] impossible caseload” (Reese, 2010, p.16). This ratio indicates why many guidance counselors find it difficult, if not impossible, to complete intensive career counseling with each student. Although guidance counselors are not directly involved in the Career and Technical Career Academy structure, they are involved in the overall career guidance that may lead students to career decisions early enough to enjoy the full benefits of the Career Academy structure. Unfortunately, “without structured guidance activities, students may drift through high school without learning about all the career opportunities available and without gaining the skills that can help them take advantage of those opportunities” (Reese, 2010, p.16).

If school reform’s goal is to supply students with the tools and skills necessary to graduate from high school with the training to enter college and a career, it would seem logical that the Career Academy approach would be valuable. However, CTE teachers are busy with the students they already have in their programs and Career Academies and cannot be expected to locate the students who may benefit from their programs on their own. Bringing guidance counselors back on board with career counseling as a primary function could be a major asset in meeting that goal. As with the relationships that are developed in the Career Academy among students and between students and their teachers, a relationship between students and their guidance counselors can help the students feel as though their interests are important.

21st century schools. Although CTE, or vocational education, has been in existence for more than a century, the first Career Academy began in 1969 in Philadelphia (Pierce, 2001).

Thus, it would appear that there is a resurgence of the idea that the goal of high schools is to prepare students for a life in society beyond graduation. More and more announcements of school districts reaching out to embrace a model that will help their students learn academics through hands-on assignments and industry partnerships are surfacing. For example, a New York City high school's "Academy for Software Engineering is wrapping up its first year as the only high school in the city devoted to computer science" (Khan, 2013, para. 1). They appear to have had a successful year and they will "open a second computer science high school, ... and launch pilot programs on a smaller scale in 20 middle and high schools" (para. 5).

A high school in Illinois has launched a program in health careers that provides students with a "full academic caseload ... [and] significant experience in a career field" (Shawchuk, 2013, para. 1). Students work with the "school's athletic facility [and] earn a Certified Nursing Assistant credential, and intern at a nursing-care facility" (2013, para.2). President Obama, for "his fiscal 2014 budget request seeks some \$300 million in grants to tighten the links between high school and careers" (2013, para. 8). Mississippi also "announced plans to redesign the high school curriculum to better prepare students for college and careers" (Pham-Bui, 2013, para. 1) by implementing "Academic Institutes" (2013, para. 3). "By giving students an early start on making career and college decisions, the district hopes to better prepare them for life after high school" (Pham-Bui, 2013, para. 12).

In a slightly different approach, a math teacher in a school in Wyoming partnered with the CTE teachers to help students understand "the useful application of math" (Moore, 2013, para. 1). There is excitement over the rise in grades and participation as a result of students learning by doing. The trend now being adopted by schools throughout the nation is also trickling down to the lower grades. The *Detroit News* published an article stating that a local

school district had decided “to create eighth-grade academies as part of a redesign of its secondary schools” (Lewis, 2013, para. 1) in hopes of creating a better learning experience for the students. Additionally, a Utah Charter School, grades K-9, operates a curriculum “peppered with concepts like sales and marketing, finance and entrepreneurship” (Evans, 2013, para. 2). The students earn play money for turning in homework and completing chores and the older students operate a school store where the students can spend their earned cash (2013, para 4-6).

Today’s CTE programs assist “all citizens in our country, by preparing workers in these vital areas of health care, manufacturing, construction and hospitality” (Rhodes, 2014, p.39), to name a few. These training programs provide students with the knowledge and skills needed to enter the vocationally-based careers with credentials that lead to entry-level positions and gives them the academically-based education and guidance to continue to post-secondary education that will enhance their potential for advancement and to meet life-long career goals.

Summary

Students will put in the time to do the things that interest them, and they will learn the skills they need to allow them to pursue those interests. Additionally, “during the school year, children generally spend more time interacting with their teachers than their parents. What happens at school has a deep and lasting effect on the mindset that children develop toward lifelong learning” (Wolk, 2008, p. 8). Career Academies seem to be the best of all educational worlds for all high school students. They continue the security and support of smaller learning communities without fully segregating students from the larger school environment. Additionally, they provide intrinsic motivation through interest-based curriculum, encourage better attendance, include tier-based assignments that allow individuality and creativity, improve academic success, and offer a variety of options for future educational and employment

opportunities.

As more and more studies are becoming available, the evidence shows that Career Academies are a successful model for students of all academic levels. They are showing increased academic success, higher attendance levels and higher graduation rates, and are encouraging more students to enter postsecondary education. According to Tennessee Lieutenant Governor, Ron Ramsey (2012), “CTE concentrators graduated at a higher percentage than the school-aged population at large... [and] CTE concentrators also beat the averages in math as well as in reading and writing” (para. 4). Students, who may not graduate in the traditional school setting, are graduating, attending college and finding careers for which they are well suited. For schools that truly have a desire to help students become productive adults in society, the use of the Career Academy model may prove to be the key to school reform for the 21st century.

CHAPTER THREE: METHODOLOGY

Do students who participate in high school Career Academies have higher standardized test scores than high school students who do not participate in Career Academies? Additionally, the test scores were evaluated regarding learning ability categories in each group. In this era of school reform designed to increase academic achievement, some schools have opted to institute Career Academies to support student learning. However, Career Academies take a great deal of time, effort, and money to maintain. Test scores, attendance and graduation rates all have weight in deciding what strategies to implement.

Research Design

This educational study sought to discover if high school students who participate in a Career Academy have a higher standardized test scores than high school students who do not participate in a Career Academy. A secondary goal was to determine if students of a particular learning ability in a Career Academy have higher standardized test scores than students of the same learning ability who do not participate in a Career Academy. The researcher chose to use the quantitative research, causal-comparative design. The design “is similar to an experiment, except the researcher does not manipulate the independent variable, which has already occurred in the natural course of events” (Ary, Jacobs, Razavieh & Sorensen, 2006, p. 29). The design is a good choice because all schools in this school district operate Career Academies in some fields while offering other classes that do not operate under the academy structure. Students made the choice to participate in or not to participate prior to the beginning of the study, thus preventing random assignment. The Mann-Whitney *U* test (also called the Wilcoxon-Mann-Whitney test) is a rank-based nonparametric test was used to determine if there are differences between two groups (Laerd Statistics, 2014, para. 1).

Research Questions

Research Question #1. Will all high school students who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than high school students who do not participate in a Career Academy?

Research Question #2. Will average students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than average students who do not participate in a Career Academy?

Research Question #3. Will gifted students in high school who participate in a Career Academy receive higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than gifted students who do not participate in a Career Academy?

Research Question #4. Will at-risk students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than at-risk students who do not participate in a Career Academy?

Research Hypotheses in Null Form

Hypothesis #1. There will be no significant difference in standardized test scores between high school students who participate in a Career Academy in high school and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Hypothesis #2. There will be no significant difference in standardized test scores between average students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Hypothesis #3. There will be no significant difference in standardized test scores

between gifted students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Hypothesis #4. There will be no significant difference in standardized test scores between at-risk students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Participants

This study used students enrolled in a Central Florida school district's public high schools, enrolled in a standard diploma program and participating in various Career Academies or the traditional class structure. Based on the requirement that all high school students earning a standard diploma in this district must earn a minimum of 24 credits in a four-year traditional program (Smith, 2009, p. 205) the comparison will use similar data for each student. Of the 24 credits required, eight credits must be earned in elective classes of which CTE programs are a part. Additionally, students must earn a passing grade on their 10th-grade FCAT in the area of reading and achieve a minimum grade point average of 2.0 on a 4.0 scale, (Smith, 2009, p. 205). Although not required for graduation, two credits in a foreign language may be required for acceptance into post-secondary institutions. As outlined in the Florida Statutes (2011) for high school graduation the standard diploma program requires students to earn eight credits in elective classes (section (b)). Elective classes, including Career Academies allow students to define their interests and use their high school experience to become better prepared for higher education and/or a career," (Florida Department of Education, 2011, section (b)).

The Career Academy group consists of 571 students in 11th and 12th grades attending the

high schools in the selected school district and enrolled in a variety of Career Academies. “The Career Academy is a high school model that integrates school-to-work elements in a personalized learning environment,” (Kerka & National Dissemination Center for Career and Technical Education, 2000, p. 1), and provides a small community where students are supported by a cohesive group of teachers who seek to meet the needs of their students. The Non-Career Academy group consists of 571 students attending traditional classes in the same schools. They have a similar course load as the students in the Career Academy group without the benefit of the Career Academy support. These students attend the traditional school arrangement, participating in English, mathematics, science, and social studies classes, as well as elective classes that have no connection across curriculum other than being part of the same schools. Students in the Career Academies have a different set of teachers than those students not in the Career Academies. However, every effort was made to ensure the Career Academy and the Non-Career Academy groups are as similar as possible.

Informed permission slips were not required due to the fact that the school board agreed to supply the data without the benefit of identifying factors and the participants are unknown to the researcher. Data was gathered by an Educational Assessment and Data Analyst and supplied to the researcher by the Assistant Director of Program Accountability at the targeted school district.

Setting

The population was drawn from nine high schools from a Central Florida school district that has a varied socio-economic and ethnic population. The county school district consists of an enrollment of 61,000 students in grades K-12 (Volusia County Schools, 2013-2014). The county’s ethnic population consists of “1.7% Asian, 11.8% Hispanic, 11% Black or African

American, 1.8% Mixed Race, 0.4% American Indian and Alaska Native, 0.1% Hawaiian and Other Pacific Islander, 74.5% White and 3% unknown” (U.S. Department of Commerce, 2012). The district is set in a suburban area with 16 municipalities and no fully metropolitan center (Volusia County Schools, 2013-2014). The schools provide all required academics and a variety of CTE programs. Some CTE programs are offered in isolation, as are many of the academic courses, and some CTE programs are offered as a Career Academy that provides a team approach that shows relevance between core academics and career-oriented subjects.

The schools chosen for this study contain Career Academies that incorporates all the aspects of the Career Academy structure for students with their mentor-teachers acting as facilitators. By comparing the scores of the Career Academy students with students at the same schools who do not participate in the Career Academy structure, it is believed the data will provide a fair overview of the causal-comparative relationships.

Instrumentation

All students are required to take a number of standardized state tests that are designed to indicate the students’ level of academic achievement. The instrumentation for this study includes the 10th-grade reading FCAT as the dependent variable. Each student included in the study chose to enter the Career Academies, or not enter the Career Academies upon entering the 9th-grade and has maintained that position for the full 2 to 3 years prior to the data collected.

The dependent variable of this study for the first group is participation in a Career Academy and enrollment in a standard diploma program. The second or comparative group, creating the second dependent variable, has non-participation in a Career Academy (Non-Career Academy) setting and enrollment in a standard diploma program. To reduce concern regarding a non-equivalent sample, students were selected from the same school district with a population of

varied ethnic and cultural backgrounds.

Table 1 *Classical Reliability of FCAT (2005-2006)*. Florida Department of Education, used with permission.

TABLE 1
Classical Reliability of FCAT (2005 – 2006)

Grade	Reading			
	Cronbach's Alpha - SSS		KR-20 ¹²	KR-20
	2005	2006	2005 NRT	2006 NRT
3	0.89	0.89	0.92	0.92
4	0.86	0.85	0.90	0.91
5	0.86	0.87	0.90	0.90
6	0.90	0.89	0.91	0.90
7	0.90	0.90	0.90	0.91
8	0.88	0.85	0.92	0.90
9	0.89	0.90	0.92	0.92
10	0.89	0.85	0.92	0.91

Table 2 *Classical Reliability of FCAT (2001-2004)*. Florida Department of Education, used with permission.

TABLE 2
Classical Reliability of FCAT (2001 – 2004)

Grade	Reading				
	Cronbach's Alpha - SSS				KR-20 ¹³
	2001	2002	2003	2004	NRT
3	0.91	0.91	0.91	0.89	0.94
4	0.90	0.90	0.90	0.86	0.93
5	0.88	0.87	0.90	0.87	0.93
6	0.91	0.89	0.89	0.89	0.92
7	0.92	0.91	0.91	0.89	0.93
8	0.90	0.89	0.89	0.86	0.94
9	0.91	0.88	0.89	0.89	0.94
10	0.89	0.89	0.88	0.88	0.93

The dependent variable is the 10th-grade standardized achievement test for reading known as the FCAT which is used to measure academic improvement in reading. To insure the

reliability of the instruments, the FCAT Briefing handbook states that “reliability coefficients using Cronbach’s Alpha for the FCAT-SSS component and KR-20 for the NRT component... data [as seen above] in Tables 1 and 2 confirm that the FCAT is a highly reliable test for assessing educational achievement of Florida students” (Florida Department of Education, 2007, p. 38).

Procedures

The Statistical Package for Social Sciences (SPSS) program (version 17) was used for the data analysis. All data were gathered from the school district database and entered in the appropriate programs in a password-protected computer that is utilized in the researcher’s private office. Once all participants were identified and all base data gathered, testing for Mean Ranks using the Mann-Whitney *U* Test was completed. Knowing that students would be at a variety of levels at the onset of the study and that the participants had made the decision to enroll in the Career Academy or Non-Career Academy group, an analysis of variance was performed to establish a “relationship between the independent variables” (Howell, 2008, p. 171). All participants experienced similar class structures and educational opportunities prior to entering the high school setting.

Data Analysis

Data were gathered from the school board archives and each set of data was analyzed using the SPSS program (version 17). “The first step in an analysis of causal-comparative data is to conduct an exploratory data analysis and compute descriptive statistics for each comparison group in the study (Gall, Gall & Borg, 200, p. 315). The dependent variables, the participants in the Career Academy group and those who are not, and the independent variable of the 10th-grade FCAT standardized test, were analyzed completing a Legacy Bar Graph for summaries of

cumulative percent of both groups, showing a similar distribution of scores. An Independent *t*-Test was performed on the data resulting in a Levene's test for Equality of Variance of .000 and a Sig. (2-tailed) score of .000. Therefore, the Mann-Whitney *U* test, "a nonparametric test for comparing the central tendency of two independent samples," (Howell, 2008, p. 496) was implemented to evaluate the test scores. After adding the additional information regarding the participants' learning ability categories of average students, gifted students, or at-risk students, the Mann-Whitney *U* test was applied to each subgroup to determine the means and standard deviation. This determined if there were remarkable differences between learning categories in academic achievement within the participant group. All data selected for this study were part of the participants' cumulative files and made accessible through the approval process at the county level. Access to the appropriate databases was provided through the school board's Department of Research and Development for evaluation. Participants' identities were protected using an alpha-numeric code provided by the Department of Research and Development.

CHAPTER FOUR: FINDINGS

Student academic achievement is defined by the Florida Department of Education as the “ability of students to earn passing scores on standardized testing designed to meet minimum standards” (Race to the Top Definitions, 2010, para. 26). The purpose of this study is to determine if student standardized test scores are higher with participation in Career Academies. Comparing the 10th-grade FCAT standardized test data is one way we can take a look at how much progress students are making toward graduation. The development of subgroups was added to determine if changes in standardized test scores differed for average students, gifted students, or at-risk students. This chapter will discuss the data and the procedures used to determine the outcomes regarding the student standardized test scores for the Career Academy and Non-Career Academy groups and the subgroups of average students, gifted students and at-risk students.

Data Analysis Overview

The dependent variable consisted of the 10th-grade FCAT standardized test scores, which were completed 2 years after the participants entered the Career Academy or Non-Career Academy setting and near the end of the second year of high school. The 1142 participants included in this study were taken from 29 academies disbursed through nine high schools in a Central Florida county, with 571 enrolled in the Career Academies and 571 enrolled in the traditional class structure, for school years 2010-2011 through 2013-2014. Of the 571 participants in the Academy Group, 471 participants were identified as average students, 44 participants were identified as gifted students and 56 participants were identified as at-risk students. The 571 participants in the Non-Academy group included 415 participants identified as average students, 15 participants as gifted students and 141 participants identified as at-risk

students. Information collected consisted of identified students in the 11th and 12th grades for the school year 2013-2014, who have maintained continuous enrollment in the Academy or Non-Academy setting and have met all qualifications for the identified groups with no personal information supplied by the school board that would indicate identity of the students to the researcher.

Research Questions and Hypotheses

Research Question #1. Will all high school students who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than high school students who do not participate in a Career Academy?

Hypothesis #1. There will be no significant difference in standardized test scores between high school students who participate in a Career Academy in high school and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Research Question #2. Will average students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than average students who do not participate in a Career Academy?

Hypothesis #2. There will be no significant difference in standardized test scores between average students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Research Question #3. Will gifted students in high school who participate in a Career Academy receive higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than gifted students who do not participate in a Career Academy?

Hypothesis #3. There will be no significant difference in standardized test scores between gifted students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Research Question #4. Will at-risk students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than at-risk students who do not participate in a Career Academy?

Hypothesis #4. There will be no significant difference in standardized test scores between at-risk students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment test scores.

Descriptive Findings and Data Analysis

Research Question #1

Will all high school students who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than high school students who do not participate in a Career Academy? The null hypothesis (H_{01}) states: There will be no significant difference in standardized test scores between high school students who participate in a Career Academy in high school and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Research Question #1 focused on the overall scores between the Career Academy and Non-Career Academy groups in the study by comparing the dependent variable data between two groups. A Mann-Whitney *U* Test was applied to evaluate Hypothesis #1, with results of the test in the expected direction. The results indicate a $z = -6.897$ and $p < 0.05$ with the Career

Career Academy group's average rank of 638.80 and the Non-Career Academy group's average rank of 504.20. The significance totals of the dependent variable data show a .000 result indicating a $p < 0.05$. Table 3 displays the results of the Mann-Whitney U Test on the 10th grade FCAT scores for both the Career Academy group and the Non-Career Academy group. Based on the results the researcher rejected Null-Hypothesis #1.

Table 3

Mann-Whitney U Test--Ranks

Group		N	Mean rank	Sum of ranks
10 th Grade scores	Academy	571	638.80	364752.50
	Non-Academy	571	504.20	287900.50
	Total	1142		

Research Question #2

Will average students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than average students who do not participate in a Career Academy? The null hypothesis (H_{02}) states: There will be no significant difference in standardized test scores between average students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Research Question #2 focused on the overall achievement between the average students enrolled in a Career Academy and the average students enrolled in a Non-Career Academy group in the study by comparing the dependent variable data between two groups. A Mann-Whitney U Test was applied to evaluate Hypothesis #2, with results of the test in the expected direction.

The results indicate a $z = -3.193$ and $p < 0.05$ with the Career Academy average students group's average rank of 469.26 and the Non-Career Academy average students group's average rank of 414.27. The significance totals of the dependent variable data show a .001 result indicating a $p < 0.05$. Table 4 displays the results of the Mann-Whitney U Test on the 10th grade FCAT scores for both the Career Academy average students group and the Non-Career Academy average students group. Based on the results the researcher rejected Null-Hypothesis #2.

Table 4

Mann-Whitney U Test--Ranks

	Average group	N	Mean rank	Sum of ranks
10 th grade scores	Academy	471	469.26	221020.00
	Non-Academy	415	414.27	171921.00
	Total	886		

Research Question #3

Will gifted students in high school who participate in a Career Academy receive higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than gifted students who do not participate in a Career Academy? The null hypothesis (H_{03}) states: There will be no significant difference in standardized test scores between gifted students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Research Question #3 focused on the overall achievement between the gifted students enrolled in a Career Academy and gifted students enrolled in a Non-Career Academy group in the study by comparing the dependent variable data between two groups. A Mann-Whitney U Test was applied to evaluate Hypothesis #3, with results of the test not in the expected direction.

The results indicate a $z = -1.655$ and $p > 0.05$ with the Career Academy gifted students group's average rank of 27.84 and the Non-Career Academy gifted students group's average rank of 36.33. The significance totals of the dependent variable data show a .098 result indicating a $p > 0.05$. Table 5 displays the results of the Mann-Whitney U Test on the 10th grade FCAT scores for both the Career Academy gifted students group and the Non-Career Academy gifted students group. Based on the results the researcher failed to reject Null-Hypothesis #3.

Table 5

Mann-Whitney U Test--Ranks

Gifted group		N	Mean rank	Sum of ranks
10 th grade scores	Academy	44	27.84	1225.00
	Non-Academy	15	36.33	545.00
	Total	59		

This outcome results in a failure to reject the null-hypothesis. The difference in gains between the Career Academy gifted students and the Non- Career Academy gifted students was greater in the Non-Career Academy setting indicating that gifted students seemingly have the ability to develop slightly greater achievement scores in the Non- Career Academy setting, although the scores were similar and the number of participants were small.

Research Question #4

Will at-risk students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than at-risk students who do not participate in a Career Academy? The null hypothesis (H_{04}) states: There will be no significant difference in standardized test scores between at-risk students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis

of the 10th-grade standardized Florida Comprehensive Assessment Test scores.

Research Question #4 focused on the overall achievement between the at-risk students enrolled in the Career Academy group and at-risk students enrolled in the Non-Career Academy group in the study by comparing the dependent variable data between two groups. A Mann-Whitney *U* Test was applied to evaluate Hypothesis #4, with results of the test only slightly in the expected direction. The results indicate a $z = -.780$ and $p > 0.05$ with the Career Academy at-risk students group's average rank of 104.03 and the Non-Career Academy at-risk students group's average rank of 97.00. The significance totals of the dependent variable data show a .435 result indicating a $p > 0.05$. Table 6 displays the results of the Mann-Whitney *U* Test on the 10th grade FCAT scores for both the Career Academy at-risk students group and the Non-Career Academy at-risk students group. Based on the results the researcher failed to reject Null-Hypothesis #4.

Table 6

Mann-Whitney U Test--Ranks

At-Risk group		N	Mean rank	Sum of ranks
10 th grade scores	Academy	56	104.03	5825.50
	Non-Academy	141	97.00	13677.50
	Total	197		

This outcome results in an acceptance of the null-hypothesis. The difference in gains between the Career Academy at-risk students and the Non-Career Academy at-risk students was unappreciable indicating that at-risk students seemingly have the ability to achieve equally in either the Career Academy or the Non-Career Academy setting. Past research has indicated that at-risk students do manage to have increased attendance and increased graduations rates in the

Career Academy setting, which indicate increased academic success.

Summary of Results

Because the causal-comparative research design has the “purpose of explaining educational phenomena through the study of cause-and-effect relationships,” (Gall et al., 2007, p. 306), it was implemented to evaluate the data in this study. The study began with the collection of base data for all participants. The data consists of the 10th-grade FCAT standardized test scores in reading providing the dependent variable. The primary goal of the study was to determine if students in the Career Academy made higher scores on standardized tests than students taking similar classes without the Career Academy structure. The secondary goals of the study were to determine if students of particular learning abilities made higher scores on standardized tests than other students. To analyze the data, the researcher used the IBM SPSS (version 17) for statistical analysis. After completing a Mann-Whitney *U* Test of the 10th-grade FCAT standardized test scores for Mean Rank scores, it was determined that the scores were within normal range with no outliers. Overall, the Career Academy group was determined to display higher standardized test scores than the Non-Career Academy group and the Career Academy average students group displayed a higher standardized test scores than the Non-Career Academy average students group. The gifted students and the at-risk students in the Career Academy group failed to show significant gain in standardized test scores over the Non-Career Academy group. However, the Career Academy scores for the gifted students and the at-risk students were similar to the Non-Career Academy scores.

CHAPTER FIVE: DISCUSSION

This chapter discusses the results of the causal-comparative study used to investigate the possibility that high school students would achieve higher standardized test scores when participating in a Career Academy rather than when participating in traditional class structures without the Career Academy educational system. A summary of findings, discussion of findings as they relate to implications in light of relevant literature and theory, study limitations, implications regarding methodology and practicality and recommendations for future research will be addressed.

Problem Statement

High schools include students with highly diverse learning styles and abilities. While some students survive and even thrive in independent classes that focus on a particular academic or career-oriented curriculum, many students struggle to show adequate progress in academic achievement despite their academic ability. In light of the push by the No Child Left Behind Act of 2001 (NCLB) legislation to close “the achievement gap between high- and low-performing children” (U.S. Department of Education, 2004, Sec. 101. Statement of Purpose # 3) it has become apparent that a continuing gap is a problem in need of a solution. Therefore, it is important to find key elements to school reform that show promise in closing the achievement gap while improving individual student academic achievement. There is constant change in the demands of America’s necessary workforce and “greater attention is being focused on work-bound youth” (Gordon et al., 2002, p. 3). It is important to prepare students to face new challenges with confidence.

Summary of Findings

As indicated in chapter 2, American public high schools vary in the ways they choose to

prepare students for their future careers and high schools face many obstacles in leveling the academic playing field for a diverse student population. “Many school improvement agendas focus on a new instructional strategy or curriculum, but the work to bring all students to high achievement levels is more complex than that” (McNulty & Quaglia, 2010, p.4). Once students reach high school, it is important that they are empowered to take control of their own education and use the American educational system to achieve their goals in spite of their personal hurdles.

Research Questions and Findings

Research Question #1. Will all high school students who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than high school students who do not participate in a Career Academy?

Results of the Mann-Whitney *U* Test showed a Mean Rank score of 638.80 for the Career Academy group and a Mean Rank score of 504.20 for the Non-Career Academy group. The results indicated that the overall achievement of the students in the Career Academy group were significantly greater than the students in the Non-Career Academy group, resulting in the rejection of the first null hypothesis (H_{01}).

Research Question #2. Will average students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than Average students who do not participate in a Career Academy?

The second question asks if average students who participate in a Career Academy as part of their high school education will achieve higher scores on their 10th-grade FCAT standardized test than average students who do not to participate in a Career Academy as part of their high school curriculum. Results of a Mann-Whitney *U* Test showed in a Mean Rank score of 469.26 for the Career Academy Average students group and a Mean Rank score of 414.27 for the Non-

Career Academy average students group, resulting in rejection of the second null hypothesis (H_{02}).

Research Question #3. Will gifted students in high school who participate in a Career Academy receive higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than gifted students who do not participate in a Career Academy?

The third question asks if gifted students who participate in a Career Academy as part of their high school education will reach higher scores on their 10th-grade FCAT standardized test than gifted students who do not to participate in a Career Academy as part of their high school curriculum. Results of a Mann-Whitney *U* Test showed in a Mean Rank score of 27.84 for the Career Academy gifted students group and a Mean Rank score of 36.33 for the Non-Career Academy gifted students group, resulting in failure to reject the third null hypothesis (H_{03}).

Research Question #4. Will at-risk students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than at-risk students who do not participate in a Career Academy?

The fourth question asks if at-risk students who participate in a Career Academy as part of their high school education will reach higher scores on their 10th-grade FCAT standardized test than at-risk students who choose not to participate in a Career Academy as part of their high school curriculum. Results of a Mann-Whitney *U* Test showed in a Mean Rank score of 104.03 for the Career Academy at-risk students group and a Mean Rank score of 97.00 for the Non-Career Academy at-risk students group, resulting in failure to reject the fourth null hypothesis (H_{04}).

Discussion of Findings and Implications in Light of Relevant Literature and Theory

Considering that the majority of students in the study made progress in academic

achievement within the Career Academy group, and the average students, who comprise the largest percentage of participants, proved to be the most successful group among learning abilities, it can be stated that the Career Academy approach to high school education is appropriate and beneficial. The methodology used to structure a Career Academy is one that proves to be valuable for all students. “High school Career Academies may hold promise for easing many of the problems disadvantaged youth face in school and employment opportunities” (Trybus & Li, 1998, p. 2) and Career Academies require academic rigor organized around a career-related theme (1998, p. 2).

Over the years, the government has created programs and passed legislative actions to level the educational opportunities. According to Swanson (2005), “Federal programs are aimed at either gifted and talented students or special-needs and at-risk kids” (p.1), and “most of the forgotten-middle students are really above average [and] we simply have defined our expectations and requirements too low” (p. 3). It appears that schools are comfortable in assuming that those average students, who do not fall into the gifted or at-risk categories, are doing well and do not need special attention. In the Career Academy setting, which establishes “relevance,... interest, allowing choice of courses so that interest can be followed, learning activities, close teacher-student relationships and sense of belonging between classmates” (Kember. Ho, & Hong, 2008, p. 253) as well as core academics and rigorous assignments, it appears to be the ideal educational forum for those “forgotten middle” (Swanson, 2005, para. 3) average students.

The small and non-equivalent numbers of gifted students and at-risk students may have played a role in the insignificant results in those two categories. The data was supplied by the local school board following criteria set forth by the researcher. The data included the maximum

number of qualifying Career Academy students and an equal number of Non-Career Academy students to round out the participant pool. Although no reasons were supplied with the data explaining the low numbers of gifted students and at-risk students, it may be that those groups are more likely involved in other programs designed specifically for their particular learning needs. The unequal sample size may involve “type II error rates [which are] very much affected by highly unequal n s. This will be true no matter what the test (e.g., the t -test, Mann-Whitney U -test, or z -test for equality of proportions will all be affected this way” (StackExchange.com, 2014, para. 2).

According to the *Journal of Vocational and Technical Education*, “at the close of the [20th] century, educators are, for a third time in a hundred years, hearing internal and external calls for schools to be accountable for the future occupations of students” (Foster, 1997, p. 1). In 1994 Congress passed the School-to-Work Opportunities Act (Public Law 103-239) to deal with the need for more skilled workers “through partnerships between educators and employers” (para. 16). With the implementation of the School-to-Work Opportunities Act, many schools across America have developed a variety of Career Academies and Career and Technical programs to assist high school students in their preparation for post-secondary education and career preparation. In a follow-up to a request by President Obama to budget for “grants to tighten the links between high school and careers” (2013, para. 8), he told high school students in Bladensburg, Maryland, that schools across the country are showing progress with “Career Academies [that] have been integrating classroom learning with ready-to-work skills, and... preparing students to move directly into the in-demand jobs of the future” (Obama, 2014, April).

In light of the push throughout history to connect American students with continued education and a path to their future career goals, Career Academies are taking the lead. Three

key elements of any Career Academy include: “(1) small learning communities; (2) a college preparatory curriculum with a career theme; and (3) partnerships with employers, community, and higher education” (Coffee & Pestridge, 2001, p. 1). Although the results of the subgroups showed that the student academic achievement of the gifted students and at-risk students in the Career Academy group were less than that of the average students, minimal gains for at-risk students did exist while the gap for gifted students leaned toward the Non-Career Academy group.

Past studies have indicated that gifted students do make significant gains in Career Academy program by receiving “an alternative educational setting in which students’ strengths and talents may be recognized and actualized” (Gentry et al., 2007, p. 377) while they perform hands-on activities related to their interests. The same has been said for at-risk students, who may be likely to drop-out before graduation. Those students considered at-risk who participate in Career Academies have a dropout rate that “is 11% lower” (Stern, 2001, p. 3) than those who do not participate in Career Academies. The fact that at-risk students are staying in school and earning a diploma is a success on its own.

The results of the study have special relevance for average students, who may possess a greater need for the focus of the Career Academy that provides the rigor, relevance and relationships needed for career development. CTE works to include more academics and to prepare students for the workplace and for college or technical school, while helping them develop critical thinking skills, and apply what they have learned to new and different situations. By providing students with opportunities to apply knowledge to real-world scenarios, it is expected that their scores on standardized testing will increase.

Practically, it appears that students will put in a greater effort when they feel a part of the

learning process and “one might say that by and large there is little need to motivate the person who is interested in something, because interest is related to his/her abilities and what they value” (Athanasou, 2009, p. 9). It could also be stated that the results of this study lead to the conclusion that the average level students felt more closely involved in their education and were given real-time experience related to individual career goals and educational aspirations.

Discussion of Findings

Research Question #1. Will all high school students who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than high school students who do not participate in a Career Academy? The results of the Mann-Whitney *U* Test of the dependent variable of both the Career Academy and Non-Career Academy groups shows a difference in the Mean Rank of the Career Academy scores as 135.6 greater than the Non-Career Academy. With the significance score of .000, or $p < 0.05$, the results were determined to be significant and the null hypothesis (H_{01}) was rejected.

These results are in line with Maxwell’s (2001) study at California State University at Hayward. Maxwell was interested in looking at the claims of Career Academy students accepted into colleges at a high percentage over students who did not participate in a Career Academy. This would correspond to higher test scores, as evidenced in this current study. The study took data from college applicants in one state university from 1990 to 1998. The categories included “(a) applied for admission, whether or not they completed the process; (b) been denied admission; (c) been admitted to the university but did not enroll; or (d) enrolled in the university” (Maxwell, 2001, p. 625). The students all came from the same school district, surrounding the university, and “more than 90% of the district’s students are ethnic minorities” (p. 625). The study compared the number of students from the school district who applied to the college and

divided them into Career Academy and Non-Career Academy groups. Maxwell discovered that a larger percentage of Career Academy students applied for college and had their applications accepted than of Non-Academy students.

In the current study, once all data was evaluated with the Mann-Whitney *U* Test, the Null Hypothesis #1 for Research Question #1 was rejected, indicating that the students who participated in a Career Academy upon entry to high school achieved higher scores on the 10th-grade FCAT standardized test and thereby noted greater achievement. With the continued connection between academic studies, career interests, community involvement and college preparation, Career Academies appear to be a valuable educational tool.

Research Question #2. Will average students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than average students who do not participate in a Career Academy? The results of the Mann-Whitney *U* Test of the dependent variable of both the Career Academy average students and Non-Career Academy average students groups shows a difference in the Mean Rank of the Career Academy average students group scores of 54.99 greater than the Non-Career Academy average students group. With the significance score of .001, or $p < 0.05$, the results were determined to be significant and the null hypothesis (H_{02}) was rejected.

Studies that focus on average level students are not common, but it may be that the average level students are not among those students who receive extra support and attention on a regular basis in their schools. Jantzen (1965) defined average students as “the students between the students of high intellectual ability who receive scholarships, grants, awards, etc. and the lower echelon which is composed of students who are low and under achievers, as well as those who drop out of school” (p. 279).

Research Question #3. Will gifted students in high school who participate in a Career Academy receive higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than gifted students who do not participate in a Career Academy? The results of the Mann-Whitney *U* Test of the dependent variable of both the Career Academy gifted students and Non-Career Academy gifted students groups shows a difference in the Mean Rank of the Career Academy gifted students group scores as 8.49 less than the Non-Career Academy gifted students group. With the significance score of .098, or $p > 0.05$, it was determined to not be significant and the researcher failed to reject the null hypothesis (H_{03}).

Although the gifted students in this study demonstrated a higher Mean Rank in the Non-Career Academy group, it merits consideration. It may be assumed that those students identified as “gifted” are capable of academic success regardless of the educational environment. The advantages of the Career Academy may not be readily identified among the gifted students who participate in them. Gentry, Peters and Mann (2007) noted that “CTE offers an alternative educational setting in which students’ strengths and talents may be recognized and actualized” (p. 377) while they perform hands-on activities related to their interests. It is believed this phenomenon occurs because the relevance of the Career Academy opens doors to understanding that did not exist in the traditional setting. Gentry et al. also noted that those gifted level students who “prefer hands-on learning may gain a greater benefit from the Career Academy setting” (p. 391).

Research Question #4. Will at-risk students in high school who participate in a Career Academy achieve higher scores on the 10th-grade standardized Florida Comprehensive Assessment Test than at-risk students who do not participate in a Career Academy? The fourth research question seeks to determine if the at-risk students who participate in a Career Academy

achieve higher scores than those who do not participate in a Career Academy. The results of the Mann-Whitney *U* Test of the dependent variable of both the Career Academy at-risk students and Non-Career Academy at-risk students groups show a difference in the Mean Rank of the Career Academy at-risk students group scores as 7.03 greater than the Non-Career Academy at-risk students group. However, with the significance score of .435, or $p > 0.05$, it was determined to not be significant and the researcher failed to reject the null hypothesis (H_{04}).

Although the at-risk students in this study demonstrated a higher Mean Rank in the Career Academy group, the significance of 0.435 resulted in failure to reject the fourth null hypothesis. It may be assumed that those students identified as “at-risk” are benefiting from extra programs designed to increase academic success for at-risk students regardless of the educational environment. The advantages of the Career Academy in this study may not be readily identified among the at-risk students who participate in it. However, Trybus and Li’s (1998) research shows that “high school Career Academies may hold promise for easing many of the problems disadvantaged youth face in school and employment opportunities” (p. 2). The added rigor, relevance and relationships created by the Career Academies are generally beneficial to all students.

Study Limitations

The causal-comparative model allows the researcher to “examine the possible effects of variables that are difficult or impossible to manipulate experimentally” (Gall et al., 2005, p.185). The criteria of participants covered 11th and 12th-grade students in one Central Florida school district who had completed at least 2 years of high school either enrolled in one of the many Career Academies or voluntarily not enrolled in a Career Academy upon entry to high school and completed a 10th-grade reading FCAT exam. The use of an *a priori* < 0.05 reduced the

probability of a Type I error and the broader diversity among participants reduced the probability of a Type II error.

In the 2011-2012 academic year, Florida began phasing out the FCAT standardized testing system and “phasing in Common Core” (O’Connor, 2014, para. 7). With protest from parents regarding book adoption (Larrabee, 2014, para. 8) and “dozens of changes to Common Core” (para. 10) standards, Governor Rick Scott “signed a trio of bills aimed at allaying fears about the state’s version of the Common Core education standards” (para. 1) and implementing the “Florida Standards” (para. 11). Due to changes taking place in the educational system with the addition of the Common Core curriculum and new ways of testing the academic progress of students, the reading FCAT was the one valid exam available across the targeted population for this study. In light of the reduced number of subjects covered in the FCAT exams, the researcher requested an enlarged participant pool to increase normality.

The Career Academy and Non-Career Academy participants in the causal-comparative study result from a non-randomized selection. However, the selection met specific criteria and spanned several schools and Career Academies throughout a specific school district. Additionally, the selection was digitally produced by a VCSB Educational Assessment and Data Analyst per criteria provided by the researcher. The participants were unaware of involvement in the study as data were collected from a database of previously collected data, reducing the possibility of selection bias. No real-time collection was necessary.

Implications of the Study

As was theorized by the original hypotheses, the overall scores were greater for the Career Academy group. Additionally, the majority of the Career Academy students, identified as average students, received higher scores than the average students in the Non-Career Academy

group. It was disappointing that the Career Academy gifted students did not score as well as the Non-Career Academy gifted students, but the scores were not vastly different. Finally, the Career Academy at-risk students also failed to show significant differences from those of the Non-Career Academy, but did have an overall score greater than the Non-Career Academy group. Ultimately, the comparison between the Career Academy group and the Non-Career Academy group proved to be significant overall for the Career Academy group and minimally insignificant for the gifted and at-risk students in the Career Academy group.

Deanna Kuhn (2007) stated that we should “center the curriculum on educational activities whose purpose and value are readily apparent to those who partake... [and that] we need to make schooling more connected to the adult life [for which] it is intended to prepare students” (p. 147). One way Career Academies help students of all learning abilities succeed is the use of tiered assignments. Tiered assignments are easily adjusted for students of all learning abilities. By offering assignments, and projects, that include a number of choices in the way they can be accomplished students are encouraged to challenge themselves. This improves intrinsic motivation in the students because they are completing research related to something of interest to them. It works in much the same way as the internal motivation experienced by anyone who dedicates time to a beloved hobby.

Because the majority of the students in the study, in both the Career Academy and Non-Career Academy groups fit into the average student category, it is not surprising that the Career Academy average student group demonstrated the highest scores. This result supports that the average students, who do not generally receive academic assistance from the at-risk or gifted departments, fare better in an environment where they can build relationships with each other, their teachers and local businesses.

Recommendations for Future Research

Career Academies are schools within the larger school that focus around the training needs of a particular career-oriented program. Unlike the traditional structure of the high school classes that work independently of one another, the Career Academy's CTE and core subject teachers work together to offer career training in conjunction with academic classes to demonstrate the relevance of academic courses to the career goals of their students. Additionally, Career Academies draw students of all academic abilities, unlike the tracking structures of the mid-20th century vocational classes. CTE works to include more academics and to prepare students for the workplace and for college or technical school, while helping them develop critical thinking skills, and apply what they have learned to new and different situations. Whether dealing with students who are at-risk of dropping out of school; students who are high achievers and are easily bored with traditional class structures; or average students who do not know where they fit in the bigger world, Career Academies and the three Rs of rigor, relevance and relationship provide the motivation and connection they need to succeed.

For future study, this researcher recommends that the study be replicated after the Florida Standards and new standardized testing protocol are in place. This will allow multiple measures upon which to determine academic achievement. Additionally, using participants from several school districts across America could provide a more appropriate generalization of the American population. Because this current study identified the highest scores with the average students who struggle on their own to discover their interests, it is appropriate to delve further into the connections between the involvement in a Career Academy and the average students' engagement in the learning process. Subgroups of ethnicity and gender may add clarity in this instance. Investigating the academic achievement of average students is a good option since

“they constitute a large part of the middle two quartiles of students” (Swanson, 2005, p. 1).

Career Academies seem to be the best of all educational worlds for all high school students. They continue the security and support of smaller learning communities without fully segregating students from the larger school environment. Additionally, they provide intrinsic motivation through interest-based curriculum, encourage better attendance, include tier-based assignments that allow individuality and creativity, improve academic success, and offer a variety of options for future educational and employment opportunities.

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& sid=4bf17ad0-d282-4df0-abd9-8a1de212b0d6%40sessionmgr4003&hid=4207

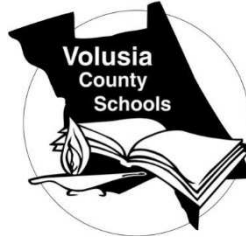
APPENDIX A

Proposed Schedule of Research

Submit Proposal for Defense	September 20, 2013
Defend Proposal	October 11, 2013
Submit IRB Application	October 14, 2013
Receive IRB Approval	December 12, 2013
Collect Data	April 9, 2014
Enter Data for Analysis	April 10, 2014
Complete Chapters Four and Five	May 9, 2014
Submit Final Dissertation for Approval	May 13, 2014
Submit Dissertation for Defense	May 22, 2014
Defend Dissertation	July 7, 2014

APPENDIX B

Volusia County Schools RESEARCH AND PERMISSION REQUEST



PRINT OR TYPE PLAINLY
USE ADDITIONAL PAPER IF NECESSARY

Researcher: Linda L. Kyees	Date: 12/17/2013
Mailing Address: [REDACTED]	Telephone Numbers: [REDACTED] E-mail Address [REDACTED]
Sponsor (University/Agency): Liberty University	Major Professor: Dr. Daniel Baer
Are you an employee of Volusia County Schools? Retired If yes, where do you work?	
Title of Research (Study Topic): RIGOR AND ACADEMIC ACHIEVEMENT: CAREER ACADEMIES VERSUS TRADITIONAL CLASS STRUCTURE	
Statement of problem or need to be addressed: High schools include students with a high degree of variance in learning style and ability. In light of the push by the No Child Left Behind Act of 2001 (NCLB) legislation to close "the achievement gap between high- and low-performing children" (U.S. Department of Education, 2004, Sec. 101. Statement of Purpose # 3) and the desire to meet Common Core Standards to be "aligned with college and work expectations" (Introduction to the common Core State Standards, 2010), it has become apparent the continuing gap is a problem in need of a solution. Therefore, it is important to find key elements to school reform that show promise in closing the achievement gap while improving individual student academic achievement. With a constant change in the demands of the necessary workforce, "greater attention is being focused on work-bound youth" (Gordon, Daggett, McCaslin, Parks, & Castro, 2002, p. 3). Will Career Academies close the achievement gap?	

BRIEF DESCRIPTION OF RESEARCH (Hypothesis, research design, statistical treat of data:

There are four hypotheses for this study. The first being an overall view of the academic progress from eighth grade to tenth grade as evidenced by evaluation of the Reading FCAT scores for approximately 300 current eleventh and twelfth grade students with half enrolled in a number of active Career Academies and half enrolled in the traditionally structured classes at a number of Volusia County Schools.

Hypothesis #1:

There will be no significant difference in student academic achievement between High School Students who participate in a Career Academy in high school and those who do not, as evidenced by data analysis of the dependent variable.

Hypothesis #2:

There will be no significant difference in student academic achievement between Average High School students who participate in a Career Academy and those who do not, as evidenced by data analysis of the dependent variable.

Hypothesis #3

There will be no significant difference in student academic achievement between Gifted Students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the dependent variable.

Hypothesis #4

There will be no significant difference in student academic achievement between At-Risk Students in high school who participate in a Career Academy and those who do not, as evidenced by data analysis of the dependent variable.

This is a causal-comparative study to determine the differences in academic achievement between students who participate in a Career Academy and those who do not. Once permission is granted and participants are established, the data including the tenth grade Reading FCAT scores will be gathered and evaluated, using the Statistical Package for Social Sciences (SPSS) program and the *t*-Test to determine the academic achievement in the participating groups. All data will be anonymous and kept in the investigator's personal office on a password-protected computer or a locked filing cabinet until all work is completed. After three years, all data will be destroyed.

Note: SUBMIT WITH THIS DOCUMENT any tests, questionnaires, survey, letters, applicable to your research.

PROCEDURES

<i>Grade Level(s)</i>	<i>Number of Participants</i>	<i>Population to Study</i>
11 & 12	300 or more	Standard diploma students enrolled in a number of Career Academies in Volusia County High Schools.
11 & 12	300 or more	Standard diploma students enrolled in the traditionally structured classes and not enrolled in a Career Academy at a number of Volusia County High Schools.

How are the participating subjects to be selected (randomly, matched, etc.)? All 11th and 12th grade High School students seeking a standard diploma and participating in the Career Academies who have remained in the Academy for two, or more, years, and an equal number of 11th and 12th grade High School students seeking a standard diploma who do not participate in a Career Academy.

REQUESTED PARTICIPANTS

<i>School or Department Name(s)</i>	<i>Students? Teachers? Administrators?</i>	<i>How Many?</i>	<i>Estimated Time Required</i>	<i>Activity Involved</i>
A number of Volusia County High Schools with active Career Academies (possibly, but not limited to Spruce Creek, DeLand & New Smyrna)	Students	100 or more	4 weeks	No activity required by students.
A number of Volusia County High Schools with non-academy structured classes (possibly, but not limited to Spruce Creek, DeLand & New Smyrna)	Students	100 or more	4 Weeks	No activity required by students.

Estimated Date Research will Begin:

March 10, 2014

Estimated Date Research will be Complete:

April 10, 2014

School facilities needed (briefly list space, materials, equipment, etc. necessary for the proposed research. Also describe the purpose of use intended for each item listed.): The data will be gathered from the Volusia County School District Office on Clara Avenue in DeLand, Florida. The statistical evaluations and report will be completed in the investigator's private office. Data will not be identified by name and will be kept anonymous for the duration of the study.

NOTE

IF YOUR RESEARCH REQUEST IS APPROVED BY THIS OFFICE:

- Participation to conduct your research is at the sole discretion of the principal, teachers, and parents for all students involved. We request that you complete your study with as little disruption to the instruction day as possible.

- Approval will not permit use of our electronic mail system for distribution.
- Parent Consent Forms will be necessary for all data collected directly from students.
- All clothing and conduct will be professional while on school board property.
- Employees necessary to filter data into specialized reports will be compensated at their hourly rate of pay.
- For safety issues, discussion with students or parents is prohibited in parent pick up, or bus transportation areas.

ENCLOSURE CHECKLIST

One copy of each of the following must accompany this request.

- ☒ [X] Completed research permission request form
- ☒ [X] An abstract of the research (one page limit)
- ☒ [X] Evidence of a review of the relevant literature and previous research
- ☒ [X] Instruments to be used
- ☒ [X] Procedures to be used to ensure confidentiality of subjects
- ☒ [X] Parental permission form and/or subject permission form

ALLOW TWO WEEKS UPON RECEIPT OF THIS REQUEST
FOR A WRITTEN RESPONSE.

RESEARCHER NAME: Linda L. Kyees, Ed.S.
(PRINT)

SIGNATURE: 

SPONSOR NAME: _____
SIGNATURE: _____
(PRINT) (if applicable)

Packet may be e-mailed, mailed or, faxed to:

Dr. Alicia Parker, Coordinator, Program Accountability and Evaluation
Volusia County Schools, PO Box 2118, DeLand, FL 32721



Need to Contact Us?

Office of Program Accountability and Evaluation

Phone: (386) 734-7190 ext. 20650

Fax: (386) 506-5068

mscolwel@volusia.k12.fl.us

APPENDIX C

RE: Research Request

AKPARKER@volusia.k12.fl.us

Tue 12/10/2013 10:42 AM

lkyees@cfl.rr.com

Linda,

The district will provide you with the data and we will remove all student identifying information prior to sending it to you. Please use this email as needed for your IRB request.

Additionally, please give me a call at your convenience.

Alicia K. Parker, Ed.D

Assistant Director, Program Accountability

(386) 734-7190 Ext. 20650

APPENDIX D

11/06 Ref. # _____

APPLICATION TO USE HUMAN RESEARCH SUBJECTS

Liberty University

Committee On The Use of Human Research Subjects

1. Project Title: RIGOR AND ACADEMIC ACHIEVEMENT: CAREER
ACADEMIES VERSUS TRADITIONAL CLASS STRUCTURE

2. Full Review 0 Expedited Review 0

3. Funding Source (State N/A if not applicable): N/A

4. Principal Investigator:

Name and Title	Phone,	E-mail,	correspondence address
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Linda L. Kyees, Ed.S.			
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5. Faculty Sponsor (if student is PI), also list co-investigators below Faculty Sponsor, and
key personnel:

Name and Title	Dept,	Phone,	E-mail address
----------------	-------	--------	----------------

Daniel N. Baer, Ph. D.,	Education,	(919) 539-9094,	dnbaer@liberty.edu
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6. Non-key personnel:

Name and Title	Dept,	Phone,	E-mail address
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John Duryea, Ed. D.,	Education,	(407) 582-2445,	jrduryea@liberty.edu
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7. Consultants:

Name and Title	Dept.,	Phone,	E-mail address
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Sylvia Tricarico, Ph. D.,	Specialist-Family (561)	625-9159,	sylviajt@att.net
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& Consumer Sciences

Education

8. The principal investigator agrees to carry out the proposed project as stated in the application and to promptly report to the Human Subjects Committee any proposed changes and/or unanticipated problems involving risks to subjects or others participating in approved project in accordance with the Liberty Way and the Confidentiality Statement. The principal investigator has access to copies of 45 CFR 46 and the Belmont Report. The principal investigator agrees to inform the Human Subjects Committee and complete all necessary reports should the principal investigator terminate University association. Additionally s/he agrees to maintain records and keep informed consent documents for three years after completion of the project even if the principal investigator terminates association with the University.

Principal Investigator Signature

Date

Faculty Sponsor (If applicable)

Date

Submit the original request to: Liberty University Institutional Review Board, CN Suite 1582, 1971 University Blvd., Lynchburg, VA 24502. Submit also via email to irb@liberty.edu

APPLICATION TO USE HUMAN RESEARCH SUBJECTS

10. This project will be conducted at the following location(s): (please indicate city & state)

☐ Liberty University Campus

☒ Other (Specify): Volusia County Schools, 200 N. Clara Avenue, DeLand, FL 32720

11. This project will involve the following subject types: (check-mark types to be studied)

☐ Normal Volunteers (Age 18-65) ☐ Subjects Incapable Of Giving Consent

☐ In Patients ☐ Prisoners Or Institutionalized Individuals

☐ Out Patients ☒ Minors (Under Age 18)

☐ Patient Controls ☐ Over Age 65

☐ Fetuses ☐ University Students (PSYC Dept. subject pool ____)

☐ Cognitively Disabled ☐ Other Potentially Elevated Risk Populations_____

☐ Physically Disabled _____

☐ Pregnant Women

12. Do you intend to use LU students, staff or faculty as participants in your study? If you do not intend to use LU participants in your study, please check “no” and proceed directly to item

13. YES ☐ NO ☒

If so, please list the department and/classes you hope to enlist and the

number of participants you would like to enroll.

In order to process your request to use LU subjects, we must ensure that you have contacted the appropriate department and gained permission to collect data from them.

Signature of Department Chair:

	_____	_____
	Department Chair Signature(s)	Date
13.	Estimated number of subjects to be enrolled in this protocol: 300	
14.	Does this project call for: (check-mark all that apply to this study)	
	<input type="checkbox"/> Use of Voice, Video, Digital, or Image Recordings?	
	<input type="checkbox"/> Subject Compensation? Patients \$ Volunteers \$	
	<input type="checkbox"/> Participant Payment Disclosure Form	
	<input type="checkbox"/> Advertising For Subjects?	
	<input type="checkbox"/> More Than Minimal Risk?	
	<input type="checkbox"/> More Than Minimal Psychological Stress?	
	<input type="checkbox"/> Alcohol Consumption?	
	<input type="checkbox"/> Confidential Material (questionnaires, photos, etc.)?	
	<input type="checkbox"/> Waiver of Informed Consent?	
	<input type="checkbox"/> Extra Costs To The Subjects (tests, hospitalization, etc.)?	
	<input type="checkbox"/> VO2 Max Exercise?	
	<input type="checkbox"/> The Exclusion of Pregnant Women?	
	<input type="checkbox"/> The Use of Blood? Total Amount of Blood	
	Over Time Period (days)	
	<input type="checkbox"/> The Use of rDNA or Biohazardous materials?	

☐ The Use of Human Tissue or Cell Lines?

☐ The Use of Other Fluids that Could Mask the Presence of Blood

(Including Urine and Feces)?

☐ The Use of Protected Health Information (Obtained from Healthcare Practitioners or Institutions)?

15. This project involves the use of an Investigational New Drug (IND) or an Approved Drug For An Unapproved Use. ☐ YES ☒ NO

Drug name, IND number and company:

16. This project involves the use of an Investigational Medical Device or an Approved Medical Device For An Unapproved Use. ☐ YES ☒ NO

Device name, IDE number and company:

17. The project involves the use of Radiation or Radioisotopes:

☐ YES ☒ NO

18. Does investigator or key personnel have a potential conflict of interest in this study?

☐ YES ☒ NO

EXPEDITED/FULL REVIEW APPLICATION NARRATIVE

A. PROPOSED RESEARCH RATIONALE (Why are you doing this study?

[Excluding degree requirement]) The Investigator is interested in the effect of self-paced Career Academy learning in a school-to-school environment on the academic achievement of students of both genders, all ethnicities, and all learning abilities as opposed to the traditional school environment of individually operated classes without the benefit of the self-paced Career Academy structure.

B. SPECIFIC PROCEDURES TO BE FOLLOWED

- In a step-by-step manner, using simple, nonscientific language, provide a description of the procedures of the study and data collection process. Also, describe what your subjects will be required to do. (Note: Sections C and D deal with type of subjects and their recruitment. That information does not need to be included here.)

- The data will be gathered from the appropriate school board department with the pretest scores, posttest scores to be entered into a simple equations to determine the overall change from one to another.

- The next step will be to gather and evaluate the scores for the PSAT for ninth and tenth grades, the attendance for ninth and tenth grades, the end-of-year exam scores for ninth and tenth grades and the accumulated grade point averages for ninth and tenth grades to determine specific trends in the progress of academic achievement.

- Finally, all the data will be evaluated for connections, or lack of connections, to increased scores relating to gender, ethnicity and learning ability.

- Subjects will be only required to submit the completed permission slip and complete their school work as outlined by the curriculum.

C. SUBJECTS

Who do you want to include in your study? Please describe in nonscientific language:

- The inclusion criteria for the subject populations including gender, age ranges, ethnic background, health status and any other applicable information. Provide a rationale for targeting those populations.

All students enrolled in the self-paced IT and Robotics Career Academy at an identified high school, and all students enrolled in the traditional classroom structure at the same high

school will be eligible. The goal is to gather 100-150 students from each of the Career Academy/non-Career Academy settings. All ninth and tenth grade students, of all ethnicities and academic rankings who are seeking a regular diploma will be permitted to participate up to the maximum number of participants.

- The exclusion criteria for subjects.

The only exclusions will be random exclusion if more than the maximum number of participants submit permission forms.

- Explain the rationale for the involvement of any special populations (Examples: children, specific focus on ethnic populations, mentally retarded, lower socio-economic status, prisoners)

The goal of admitting students who are enrolled in the self-paced IT and Robotics Career Academy is to document the potential differences between the Career Academy and non-Career Academy population as it relates to academic achievement over two years.

- Provide the maximum number of subjects you seek approval to enroll from all of the subject populations you intend to use and justify the sample size. You will not be approved to enroll a number greater than this. If at a later time it becomes apparent you need to increase your sample size, you will need to submit a Revision Request.

The maximum number of subjects sought for this study is 300. No more than 150 will be enrolled in the Career Academy setting and no more than 150 will be enrolled in the traditional classroom setting. This sample size was chosen because the typical Career Academy has no more than 150 students in any given year.

- For NIH, federal, or state funded protocols only: If you do not include women, minorities and children in your subject pool, you must include a justification for their exclusion.

The justification must meet the exclusionary criteria established by the NIH. N/A

D. RECRUITMENT OF SUBJECTS AND OBTAINING INFORMED CONSENT

- Describe your recruitment process in a straightforward, step-by-step manner. The IRB needs to know all the steps you will take to recruit subjects in order to ensure subjects are properly informed and are participating in a voluntary manner. An incomplete description will cause a delay in the approval of your protocol application.

The first step in the recruitment process is to acquire the permission of the Volusia County School Board and the permission of the Principal of the designated high school. Once permission is granted, the investigator will meet with the appropriate teachers to discuss the recruitment process with their students. The students meeting the criteria will be introduced to the study through their teachers at the designated school. The teachers will read a script explaining the data to be collected, the purpose for the study and how the results will be used. The students will be given a permission slip and a description of the study to take home for signatures and return that permission slip to their teachers within a one week timeframe. The permission slips will be gathered and counted to assure the number of participants is appropriate for the study. If enough permission slips have not been gathered at the end of the first week, a reminder will be issued to encourage the return of the permission slips and one additional week will be allotted. The permission slips will be identified as CA for Career Academy students and NCA for non-Career Academy students. Once the participant list has been established, the permission slips will be stored in a locked filing cabinet in the investigator's personal office and the data collection and evaluation process will begin.

E. PROCEDURES FOR PAYMENT OF SUBJECTS

- Describe any compensation that subjects will receive. Please note that Liberty

University Business Office policies might affect how you can compensate subjects. Please contact your department's business office to ensure your compensation procedures are allowable by these policies. N/A

F. CONFIDENTIALITY

- Describe what steps you will take to maintain the confidentiality of subjects. All data will be provided without the names of participants. All permission slips will be stored in a locked filing cabinet in the investigator's personal office at home for a period of three years. After three years, the files will be shredded. The files will not be accessible by anyone but the investigator.
- Describe how research records, data, specimens, etc. will be stored and for how long. All hard copies of data and research findings will be stored in a locked filing cabinet in the investigators personal office at home for a period of three years. After three years the files will be shredded. The files will not be accessible by anyone but the investigator.
- Describe if the research records, data, specimens, etc. will be destroyed at a certain time. Additionally, address if they may be used for future research purposes.

G. POTENTIAL RISKS TO SUBJECTS

- There are always risks associated with research. If the research is minimal risk, which is no greater than every day activities, then please describe this fact. Because the data will only be identified by alpha code and Career Academy or non-Career Academy and the students are asked to continue their school functions as normal, it is certain that the students will be at minimal risk for this study.
- Describe the risks to participants and steps that will be taken to minimize those risks. Risks can be physical, psychological, economic, social, legal, etc. Psychological and

social risks would be the only areas of slight concern, in that not all students at the school will be participating in the study. However, the study will not be general knowledge among all students and the students participating will be part of a particular Career Academy or non-Career Academy class. The involved teachers will be asked to refrain from discussing the study with other teachers and students. The students should see the study as an extended part of their class.

- Where appropriate, describe alternative procedures or treatments that might be advantageous to the participants. N/A
- Describe provisions for ensuring necessary medical or professional intervention in the event of adverse effects to participants or additional resources for participants. N/A

H. BENEFITS TO BE GAINED BY THE INDIVIDUAL AND/OR SOCIETY

- Describe the possible direct benefits to the subjects. If there are no direct benefits, please state this fact. There are no direct benefits to the participating subjects.
- Describe the possible benefits to society. In other words, how will doing this project be a positive contribution and for whom? Depending on the results of the study, the benefits to education may be important. If the statistics show that the students in the self-paced Career Academy are making a significant academic progress over those who do not participate in the Career Academy structure the information would be most helpful to closing the education gap that is now a problem in our society.

I. INVESTIGATOR'S EVALUATION OF THE RISK-BENEFIT RATIO

Here you explain why you believe the study is still worth doing even with any identified risks. The risks are very minimal and the study may offer a new approach to secondary education and the academic achievement of many students.

J. WRITTEN INFORMED CONSENT FORM (Please attach to the Application

Narrative. See Informed Consent IRB materials for assistance in developing an appropriate form.
See K below if considering waiving signed consent or informed consent)

K. WAIVER OF INFORMED CONSENT OR SIGNED CONSENT

Waiver of consent is sometimes used in research involving a deception element. Waiver of signed consent is sometimes used in anonymous surveys or research involving secondary data. See Waiver of Informed Consent information on the IRB website. If requesting either a waiver of consent or a waiver of signed consent, please address the following:

1. For a Waiver of Signed Consent, address the following:
 - a. Does the research pose greater than minimal risk to subjects (greater than everyday activities)?
 - b. Does a breach of confidentiality constitute the principal risk to subjects?
 - c. Would the signed consent form be the only record linking the subject and the research?
 - d. Does the research include any activities that would require signed consent in a non-research context?
 - e. Will you provide the subjects with a written statement about the research (an information sheet that contains all the elements of the consent form but without the signature lines)?
2. For a Waiver of Consent Request, address the following:
 - a. Does the research pose greater than minimal risk to subjects (greater than everyday activities)?
 - b. Will the waiver adversely affect subjects' rights and welfare? Please justify?
 - c. Why would the research be impracticable without the waiver?

d. How will subject debriefing occur (i.e., how will pertinent information about the real purposes of the study be reported to subjects, if appropriate, at a later date?)

L. SUPPORTING DOCUMENTS (to be attached to the Application Narrative)

M. COPIES:

For investigators requesting Expedited Review or Full Review, email the application along with all supporting materials to the IRB (irb@liberty.edu). Submit one hard copy with all supporting documents as well to the Liberty University Institutional Review Board, Campus North Suite 1582, 1971 University Blvd., Lynchburg, VA 24502.

APPENDIX E

LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

December 12, 2013

Linda L. Kyees
IRB Application 1719: Rigor and Academic Achievement: Career Academies Versus Traditional
Class Structure

Dear Linda,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your approved application.

Your study does not classify as human subjects research because the information obtained about living individuals is not individually identifiable, and the identity of the subjects cannot be readily ascertained by the investigator or associated with the information.

Please note that this decision only applies to your current research application, and that any changes to your protocol must be reported to the Liberty IRB for verification of continued non-human subjects research status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Application number.

If you have any questions about this determination, or need assistance in identifying whether possible changes to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,



Fernando Garzon, Psy.D.
Professor, IRB Chair
Counseling

(434) 592-4054

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APPENDIX F

RE: DOE Publication

Follick, Joe

Sent: Fri 7/25/2014 5:37 PM

To: lkyees <[REDACTED]>; EVALNRPT EVALNRPT@fldoe.org

Hello Linda and good luck with your dissertation. I can assure you that you have our permission to use information you found on our website and suggest you attribute it to us as well.

I don't have the exact link to the report you are referring to. If you can send that to me, I can double-check to make sure it's the latest info on that topic.

Thank you!

Joe Follick

Communications Director

Florida Department of Education

850-245-9670

joe.follick@fldoe.org



From: lkyees [REDACTED]

Sent: Friday, July 25, 2014 3:56 PM

To: EVALNRPT

Cc: Follick, Joe

Subject: RE: DOE Publication

Dear Mr. Follick and EVALNRPT Dept.

My name is Linda Kyees and I am finishing my Doctoral Dissertation entitled "Rigor and Academic Achievement: Career Academies versus Traditional Class Structure." For my participants I was provided anonymous Reading FCAT scores to use for evaluation. In order to verify that the scores are valid and useful for research I utilized information found in the FCAT Assessment and Accountability Briefing Book – 2007 as support. Additionally, I wish to use the reading portion of Tables 1 and 2 on page 38 of that publication in my final publication, if that is permitted.

Please respond with information regarding permission to use the tables, or further action on my part in order to secure needed permission. An e-mail to me at [REDACTED] will be sufficient to accomplish this requirement.

If you need further information from me, feel free to ask. I will respond as quickly as possible.

Sincerely, Linda L. Kyees, Ed.S.

APPENDIX G

Hi Linda,

If using the framework as is, please use the following tagline: The Rigor/Relevance Framework® (with registered trademark symbol). Copyright © International Center for Leadership in Education. Used with permission.

If you will be adapting the framework, I will need to see how you plan to present this information.

I hope this helps.

Thanks,
Kris

Kris Ross

Managing Editor
1587 Route 146
Rexford, NY 12148
518-723-2069 | 518-399-2776 (main)



Principal Academy

February 6-8, 2015 | Nashville
LeaderEd.com/PrincipalAcademy

23rd Annual Model Schools Conference

June 28 – July 1, 2015 | Atlanta
ModelsSchoolsConference.com

From: lkyees [REDACTED]
Sent: Thursday, July 24, 2014 10:38 AM
To: Ross, Kris
Subject: RE: ICLE Web Request

Hi Kris,

My dissertation. Compares the standardized test scores of Career Academy students to those who are in the traditional class settings. The Rigor and Relevance rubric is used to describe, in part, how Career Academies function. I am a big fan of Dr. Doggett and believe his research is most useful in educating today's students.

I was told an e-mail stating permission would be sufficient for this requirement.

Thank you for your quick response.

Linda

Sent from my Verizon Wireless 4G LTE Smartphone

----- Original message -----

From: "Ross, Kris"

Date: 07/24/2014 09:40 (GMT-05:00)

To: [REDACTED]

Subject: ICLE Web Request

Hi Linda,

Please let me know how you plan to use the framework in your dissertation. I'm sure we can accommodate your request.

Thanks,
Kris

Kris Ross
Managing Editor
1587 Route 146
Rexford, NY 12148
518-723-2069 | 518-399-2776 (main)

Principal Academy
February 6-8, 2015 | Nashville
LeaderEd.com/PrincipalAcademy

23rd Annual Model Schools Conference
June 28 - July 1, 2015 | Atlanta
ModelsSchoolsConference.com

-----Original Message-----

From: International Center for Leadership in Education

Sent: Thursday, July 24, 2014 9:37 AM

To: Ross, Kris

Subject: FW: Web Request

From: [REDACTED]

Sent: Wednesday, July 23, 2014 4:58 PM

To: International Center for Leadership in Education

Subject: Web Request