

THE RELATIONSHIP BETWEEN CAREER TECHNOLOGY EDUCATION  
AND HIGH SCHOOL GRADUATION

by

Patricia Lynn Garnto Schimpf

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University

July, 2011

The Relationship Between Career Technology Education and High School Graduation

by Patricia Lynn Garnto Schimpf

A Dissertation Presented in Partial Fulfillment  
Of the Requirements for the Degree  
Doctor of Education

Liberty University, Lynchburg, VA  
July, 2011

APPROVED:

COMMITTEE CHAIR:

John R. Duryea, Ed.D.

COMMITTEE MEMBERS:

Andrew T. Alexson, Ed.D.

Ingrid Jones, Ph.D.

CHAIR, GRADUATE STUDIES:

Scott Watson, Ph.D.

## **ABSTRACT**

Patricia Lynn Garnto Schimpf. THE RELATIONSHIP BETWEEN CAREER TECHNOLOGY EDUCATION AND HIGH SCHOOL GRADUATION. (Under the direction of John R. Duryea, Ed.D., Chair) Liberty University, School of Education, July, 2011.

This study examined the relationship between programs in Career Technology and Agriculture Education (CTAE) utilized by a school district in northern Georgia and the relative effect the programs had on high school graduation. Career technology and agriculture education (CTAE) programs engage students and prepare them for college or career readiness upon graduation from high school. Extended learning activities are found in CTAE co-curricular clubs, academic tutoring, job site experiences, and dual enrollment opportunities. This quantitative, causal comparative research study used inferential and descriptive analyses to determine possible relationships between graduation status and CTAE program variables. The study involved 730 participants who entered grade 9 in the fall of 2006 and who either graduated or dropped out from high school by May, 2010. The analysis indicated that participation in student organizations and work based learning experiences had the most significant results for students staying in school and graduating.

## **DEDICATION**

This dissertation is dedicated to my loving parents, Raleigh and Vira Garnto. Your faith and belief in my abilities throughout my life have been unfailing. I am so appreciative of all the support you have given me in every endeavor I attempted. Thank you for teaching me to trust in the Lord, and in everything there is a purpose for His glory. I love you both more than words can say.

## ACKNOWLEDGEMENTS

The writing of this dissertation is the end to a long journey of ups and downs. This work certainly would not have been possible without my faith in the Lord. My family deserves an outpouring of gratitude for their support during this time!

Blair and Ashton, you have been there from the beginning, seeing your mom go back to school and enduring my seemingly never-ending “study time.” Your love and encouragement was always there; I love you both! It is my hope that you will seek God in all things and trust Him for your needs.

For my husband, Happy, I love you so much. Your support was never ending - from the very beginning you told me, “I will not let you quit.” You are my constant comfort, encouragement and best friend. Through it all, you have been by my side. Thank you for your patience and belief in me. To my bonus daughters, Henley, Georgia, and Ava, remember that you are loved and our family is a gift from God. Faith, Family, Love – always!

My committee deserves many thanks; your prayers and support were vital. Dr. John Duryea, thank you for becoming my chair when life hit us hard – I truly appreciate you. Dr. Andy Alexson, my colleague and friend, you came on board at the drop of a hat – thanks for your candor and humor! Dr. Ingrid Jones, you are the angel in my corner – thanks for your shoulder every time it was needed! Dear Lord, thank you for allowing me the short time with Dr. Jill A. Jones. I know she is thrilled walking with you now. She taught me so much more than writing and research; namely, to “treat each day with the desire to make our Heavenly Father smile.”

## TABLE OF CONTENTS

Dedication .....	ii
Acknowledgements.....	iii
List of Tables .....	viii
List of Figures .....	ix
CHAPTER ONE.....	1
Background of the Study .....	2
Theoretical Concept .....	9
Research Significance.....	11
Purpose Statement.....	13
Professional Significance.....	16
Overview of Methodology .....	18
Definition of Terms.....	20
CHAPTER TWO: REVIEW OF LITERATURE.....	23
Introduction.....	23
Theoretical Framework.....	24
Caring Relationships.....	26
High Expectations.....	29
Opportunities for Involvement.....	31
Educational Value.....	34
Role of Government Legislation.....	35
High School Dropouts: A National Problem .....	39

Dropouts in Georgia.....	40
Reasons Related to Dropout Rate .....	42
Linking Academics to Meaning.....	45
Career Technology Programs .....	48
Career Academies and Pathways .....	48
Career Technology Student Organizations .....	50
Work-Based Learning.....	51
Intervention Programs.....	53
Early College and Dual Enrollment Programs.....	54
Conclusion .....	58
CHAPTER THREE: METHODOLOGY .....	59
Statement of the Problem.....	59
Participants and Sample.....	59
Research Setting.....	61
Instrument .....	62
Face Validity Procedure.....	64
Questionnaire Reliability Procedure .....	66
Pilot Survey Administration .....	67
Research Design.....	68
Data Collection and Procedures.....	69
Student Information System Data.....	71
Student Survey Data .....	73
Data Organization .....	74

Analysis of Data.....	75
Research Questions.....	77
Summary.....	83
CHAPTER FOUR: RESULTS .....	84
Receipt of and Coding of Data.....	85
Findings.....	88
Research Question 1 .....	88
Research Question 2 .....	93
Research Question 3 .....	96
Research Question 4 .....	97
Research Question 5 .....	98
Research Question 6 .....	99
Summary.....	101
CHAPTER FIVE: DISCUSSION.....	103
Summary of the Study .....	103
Overview of the Problem .....	103
Purpose.....	104
Review of Methodology .....	105
Findings and Discussion .....	106
Research Question 1 .....	106
Research Question 2 .....	110
Research Question 3 .....	112
Research Question 4 .....	114

Research Question 5 .....	115
Research Question 6 .....	115
Implications and Discussion .....	116
Limitations to the Study.....	119
Recommendations for Further Research.....	122
Conclusion .....	123
REFERENCES .....	125
APPENDIX A.....	140
APPENDIX B .....	144
APPENDIX C .....	148
APPENDIX D.....	152
APPENDIX E .....	156
APPENDIX F.....	157
APPENDIX G.....	159
IRB Approval.....	160

## LIST OF TABLES

Table 1	Graduation Status of Intervention Students .....	89
Table 2	Graduation Status of Dual Enrollment Students.....	90
Table 3	Graduation Status of CTSO Participants .....	91
Table 4	CTSO Participants and Diploma Type .....	95
Table 5	Work-Based Learning Program Comparison of Diploma Recipients .....	96
Table 6	Percentage of Dropouts Completing CTAE Concentrations .....	97
Table 7	College Prep Participation in CTAE Programs .....	98
Table 8	Completion of CTAE Concentrations.....	98
Table 9	More Courses Than Concentration Required .....	99
Table 10	Student Survey Selected Responses.....	100

## LIST OF FIGURES

Figure 1	CTAE Course Distribution .....	93
----------	--------------------------------	----

## CHAPTER ONE

This research study examines the influence that career technology and agriculture education programs offer to increase the persistence toward graduation among high school seniors. Career education programs provide students with skills needed for securing and earning a living after traditional secondary schooling ends. These programs have many formats; this study is to investigate enrollment in career technology courses, co-curricular student organizations, extended tutoring times, work-site learning or apprenticeships, and early entry into college or technical school. Students may elect to take courses in a career technology area of personal interest while in high school. Additionally, there are opportunities to join a co-curricular student organization that corresponds to a career technical course they have chosen. By joining one of the clubs, students can apply a learning focus in such areas as business and banking applications, farming or horticulture, carpentry, or healthcare sciences (Reese, 2006). Through student organizations, students may also participate in skill competitions at the local, region, state, and national level. Competitive events offer a valuable learning experience outside of the classroom for students. Work-site learning or apprenticeships afford students the opportunity to earn graduation credit in a career path while gaining valuable on-the-job learning experience under the tutelage of a mentor or specialist in the area (Beltram, 2010). Extended learning or tutoring is provided before, during, and after school in state-directed programs that specifically address skills needed to pass graduation exams (Georgia Department of Education, 2003). Career technology teachers focus on integration of academics with the career lesson during the school day and include more

academic-targeted approaches after school hours. Opportunities for students of all backgrounds can be gained from starting college or technical school while still in high school. Students may earn both high school and college credit for specific courses that will transfer to a two or four year university or college; students attending a local technical college for training in occupational skills are afforded the same type of opportunity (Lynch & Hill, 2008). It is surmised that participation in any of these programs stimulates a student's learning in and out of the classroom and focuses the purpose of that learning toward the goal of successfully completing high school.

### **Background of the Study**

As early as the late 1800s, there has been a recognized need for education in technical skilled areas. The Morrill Act of 1862 established institutions in each state that would educate students in agriculture, home economics, and mechanical arts; these areas were occupations that were practical at the time (Lightcap, 2008). As America progressed through rebuilding after the Civil War and into World War I, it became more evident that industrial education had a place in school. President Woodrow Wilson signed the Smith-Hughes Act in 1917, providing for vocational education in public schools. The act was further emphasized with a funding formula that encouraged schools to not only train students in the industrial or vocational areas, but also to incorporate related academic study; a student would spend 50% of study time in vocational shop, 25% in a related subject, and another 25% of schooling in academic work (Foster & Wright, 1996). The priority of the Smith-Hughes Act for student study was a trade, not academic topics.

After World War II, the desire for stronger national security emphasized that the high school curriculum center on academics with a focus on incorporation of vocational training. The National Defense Education Act of 1958 provided funding for stronger academic education and vocational training necessary for national defense. The Carl D. Perkins Vocational Education Act of 1963 was enacted to develop and improve the vocational and technical education that was occurring in the nation's schools. A major focus of the Perkins Act was an emphasis on the integration of academic and technical instruction in the normal course of study.

Occupation training, or vocational education, has experienced growth over time in our public schools. Seen as a need by government officials, federal funding began what was intended to be a positive move in society's needs. In reality, the training for vocations in schools soon became a separate and isolated island from the world of academia. Historical high school curricular paths indicated that those students guided toward labor force entry after high school often had their high school credits embedded in areas of trade, industry, business, or other vocational areas, while students being groomed for college generally took far fewer vocational classes in favor of academic courses (Plank, 2001). Plank, DeLuca, and Estacion (2008) found that the path of vocational education had a stigma attached to it; it has been portrayed as a dumping ground where unmotivated young people experienced low quality teaching in what was seen as a remedial track (p. 348). Students who chose vocational training over preparation for college were thought of as a lesser participant in education. The nature of the physical building layout of some schools lends to the "low status" of career technical education. Public schools often segregated the "vocational training wing" of the building as a

distinct unit of the physical school building, a practice that can still be found in some school facilities. Luttrell and Parker (2001) discovered vocational education departments located in the “basement and outer wings of the school, signifying its lower position in the hierarchy of academic legitimacy” (p. 240). Additionally, some states such as Alabama, Hawaii, Louisiana, Indiana, and Virginia still incorporate different diploma tracks for students to follow for high school completion (Florida Legislature Office of Program Policy Analysis & Government Accountability, 2011). Generally, these tracks included one for college preparatory students and one for vocational preparatory students. Even though one purpose of the Perkins Act meant to integrate both academics and vocational education, the segregation between these two entities existed through the early 2000s.

The Perkins Act has been reauthorized several times with the latest occurring in 2006. The last reauthorization also brought with it a name change: the Carl D. Perkins Career and Technical Education Improvement Act of 2006. This name change was not just a facial uplift to an old law, but a new focus on student learning that would be directly applicable to today’s workforce. Gene Bottoms (2008) stated:

For the first time, federal law requires that CTE [Career and Technical Education] courses include essential academic skills. . . . quality CTE studies must be linked with high school reform to dramatically increase the percentage of students who graduate from high school prepared for further study and careers. (p.17)

Career technology education changed to promote the belief that every student needs the integration of academics with career technology in preparation for a lifelong career. The Association for Career Technical Education (ACTE) reported that:

The skills measured by workforce readiness credentials are just as important to a student's future workplace success as more publicized academic indicators.

However, students often lack opportunities to gain these skills through traditional academic courses. CTE programs provide the relevance necessary to engage students, and the real world situations that lead to workforce readiness skills attainment ("Workforce Readiness," p. 3).

Society in the new millennium demands that students are ready for the work force in practical occupational and interpersonal skills essential to the workplace. When students apply what they are learning to a future vocation, the learning becomes real and relevant.

The goal of the new career and technical education movement is to promote the relevance and meaning career education and academic education has for all students. Educators partnering with businesses to discover the type of skills our students need leads to ". . . improve the way teachers instill academic and career skills in our students" (Dan Hull, 2005, p. 51). Regardless of the vocation chosen or decisions for continued education beyond high school, all students can and should experience learning that has meaning. This study anticipated that when students have a purpose for learning in an applied or contextual format, an increased desire to stay in school and graduate will result.

In this researcher's home state of Georgia, the high school graduation rate is in need of improvement. Over the last several years, the percentage of Georgia students leaving high school with a regular education diploma has not shown tremendous growth. In 2005-2006, the Governor's Office of Student Achievement (GOSA) reported a state graduation rate of 70.8%; (<http://www.gaosa.org>). Concerned education and

governmental officials in Georgia have implemented several plans that should ultimately boost the state's graduation rate and reduce the percentage of students classified as drop outs. Strategies incorporated include funding programs to help students recover lost course credit, establishing waivers and variances for the required Georgia graduation test, the establishment of a state virtual school, changes in required courses needed for graduation, and revising the state curriculum for core course areas. Despite these efforts, in 2009 the GOSA reported that approximately 21% of Georgia high school students still do not earn a diploma within four years of beginning high school. The challenge to improve the graduation rate in Georgia has not been isolated as a state problem; individual school districts have also struggled with the same issue.

In the past several years, the graduation rate of this researcher's northwest Georgia school district has frequently been below that of the state. Although the graduation rate has improved from 59.1% in 2002 to 76.2% in 2009, the fact that approximately three fourths of students who start school in the ninth grade actually finish is still disturbing. A school district graduation task force was formed in 2007 to find ways of assisting students in completing high school. This task force is a collaborative effort between the schools of the district, district personnel, community entities, and the local technical college. To develop local strategies that might keep students in school and encourage graduation, the task force examined various reasons students leave school without a diploma. The plans explored included concentrating on transition from middle school to high school, focusing on academic success early in high school, encouraging participation of students in activities or organizations, increasing enrollment in early college entrances, expanding work site learning experiences for students, revising student

tutoring programs, and creating credit recovery options that keep students on track for graduation (Dykeman et al., 2003). The discussions and planning of the task force led to the supposition that forming close relationships with caring adults through various areas may strengthen a student's desire to stay in school and graduate (Benard, 1991). After examining each of the task force's planned strategies, this researcher speculated Bonnie Benard's (1991) description of close relationships with caring adults could be found in the career technology programs of all high schools.

The very nature of the program design of career technology education can offer a sense of belonging to students (Castellano, Stringfield & Stone, 2003). The core study of career education is centered on preparation for occupational life skills after high school, whether or not that life includes post-secondary study. Curricular aspects of career technology are centered on concentrated study in an area of enjoyment or a possible career interest. This focused study is often referred to as a *concentration* or a *pathway* and requires a minimum of three courses in a career area such as health occupations, auto mechanics, or architectural engineering. Students have the opportunity to experience a sense of accomplishment as they learn in an area that holds high interest for them; the pride in this work may encourage students to keep focusing on further educational study. Although the learning environment centers on skilled activities and projects, career technology incorporates meaning for academic topics such as math or science formulas – topics that some students tend to struggle with in high school. However, the educational benefits for students in career technology extend far beyond the immediate classroom. Among the extended learning opportunities, students also have opportunities to form

relationships with caring adults that may strengthen their desire to stay in school and graduate.

Participation in career technology activities or school clubs and organizations provides positive experiences for students. Career Technology Student Organizations (CTSOs) provide related learning extended outside the classroom. Student organizations in career technology allow students to practice skills through organized competitions in word processing, auto mechanics, construction, and healthcare science. While giving students a sense of belonging to a group, this extended learning practice mimics workforce skills (Brown, 2002). Although the school district being studied in this research had already established early entrance programs at surrounding colleges for students with strong academic backgrounds, a recent collaboration with the nearby technical college began an Early College initiative. The Early College concept allows high school students who are at risk for dropping out of school to be accepted into a dual enrollment program at the college (American Institutes for Research, 2007). The student's academic and career training are offered solely on the college campus. Experiencing Early College gives students realistic training in different occupational fields and the academic classes needed for graduation from high school. Participation in work-based learning internships and job-site career education programs provide valuable learning experiences for students (Stone & Alfeld, 2004). Under the close supervision of experts in various fields, students earn high school credit in a particular career focus area and gain essential skills needed for occupational positions. Identification of middle school students at risk of experiencing academic deficiencies in high school can be accomplished by reviewing past academic progress from middle school. This review

allows strategies for early intervention at the high school to be planned in advance. Through career technology pathways tutoring sessions and special courses, good study skills can be provided for at-risk students (Dykeman et al., 2003). Intervention activities can result in academic success and give meaning to the education that students receive. Experiencing early academic success may encourage students to continue their education. Career technology education programs may play a large part in encouraging students in northwest Georgia to graduate from high school.

### **Theoretical Concept**

This study applied concepts of the many years of research in protective factors and resiliency of young people in education. Nan Henderson (2007) summarizes that within every individual is an innate capacity for overcoming adversity – an internal capacity called resiliency (p. 9). Over the years, resiliency research has focused in part on student success in education despite the obstacles faced in obtaining that education. Research by Bonnie Benard (2004) uncovered the characteristics of family, school and community environments that elicit and foster the natural resiliency in children. Benard listed three broad categories for the protective factors of the environment that tend to alter or reverse negative outcomes in individuals: caring relationships, high expectations, and opportunities for meaningful participation and contribution (pp. 40-43).

Resiliency research is closely aligned to Albert Bandura's self-efficacy research. Self-efficacy is related to the beliefs that determine "how people feel, think, motivate themselves and behave" (Bandura, 1994, p. 71). Bandura (1986) observed that parents, teachers, and peers play particular roles in developing self-efficacy and are a key influence to help an individual develop resilience to adversity. Individuals possess a

degree of confidence to accomplish tasks or have success in an activity; a high degree of confidence can come from outside encouragement and feedback on performance from an authoritative figure such as a teacher or school principal (Pajares & Schunk, 2001).

Abraham Maslow's "Hierarchy of Needs" outlines that individuals have a need not only for basic food, shelter, and safety, but also for affection, belonging, and building esteem. Supporting resiliency and self-efficacy stem from those targeted needs, pulling them all together to nurture students toward self-actualization. All of these protective factors encourage positive human growth and can be found in the environment of school.

Within career technical education programs, protective factors are present to provide students a stronghold in completing an education in high school. Caring relationships are built between teacher and student as the student follows a course of study for a diploma; a strong relationship grows through instruction as both individuals share interests in the skill being learned. Students considered at risk for failure in many areas are personally encouraged to succeed through intervention courses. Intervention teachers follow students closely throughout high school, mentoring them through academic remediation and support in other areas of personal growth. High expectations are found in the industry-quality products the students produce in classrooms as culminating projects from study, the work-site quality expected in apprenticeships, or the practiced skills needed to compete in a co-curricular state competition. Students have opportunities for meaningful participation in the career technology student organizations and the many phases of cooperative learning in the career technology classroom. This research study connects the relationship of protective factors found in resiliency and self-efficacy research to those same factors found in career technology education.

## **Research Significance**

Across the United States, the graduation rate of high school students has been viewed as dismal; John Bridgeland, John DiIulio, and Karen Morison (2006) state that nationally, research puts the graduation rate between 68 and 71% (p. 1). Longitudinal studies researched by Croninger and Lee (2001) found that roughly 6% of students drop out in the first two years of high school and approximately 11% leave between grades 10 and 12 (p. 550). These figures have given rise to concern in not only schools and communities, but the nation's government. Reform efforts following the findings of studies and legislation such as "A Nation at Risk" report (1983), Goals 2000 (legislation passed in 1994), and No Child Left Behind Act (2001) resulted in raising a fluctuating national graduation rate from 74% in 1984 to only 75% in 2008 (Balfanz, Bridgeland, Moore, & Fox, 2010). The consequences of not graduating from high school go far beyond simple statistics of individuals walking across a stage in cap and gown; greater issues tend to show up as an individual without a high school diploma moves forward in life as an adult.

Researchers state that economic sufficiency in adulthood is difficult to achieve with no high school diploma (Castellano et al., 2003). The National Center for Education Statistics published unemployment rates in 2006 of 16.6% for 16- to 24-year olds who did not complete high school; by 2008, this figure rose to 21.9% (2009). In 2002, Jennifer Day and Eric Newburger reported U.S. Census Bureau statistics demonstrating the average earnings for a 25- to 64-year old who did not graduate from high school to be \$18,900 while a high school graduate in the same age group earned \$25,900. High school dropouts were also found less likely to work full-time and year-round (Day &

Newburger, 2002). Not completing high school has further consequences than those of a personal nature. The nation's economy loses billions in income, taxes and productivity (Kennelly & Monrad, 2007). The eventual cost to the nation's economy could be reversed if students would complete their high school education. Getting them to do so is a different story.

In the report, "The Silent Epidemic," research findings from student surveys and focus groups revealed 81% of dropouts said that if presented with more opportunities for real-world learning to make classroom learning more relevant, the chances of staying in school to graduate would be greatly increased (Bridgeland et al., 2006). Career technology education offers students a chance at academic rigor and occupational relevance (Achieve, Inc., 2004). While most research on dropout or school persistence has centered on characteristics of the individuals who left or stayed in school, Christine Christle, Kristine Jolivette, and Michael Nelson (2007) found that the relationship between school experiences and dropout or staying in school has rarely been considered (p. 326).

The experiences in career technology can include career pathway programs that focus not only on career curriculum, but also center on smaller learning environments, membership in organizations, and work experiences (Stone & Alfeld, 2004; Kennelly & Monrad, 2007; Beltram, 2010). These experiences may seem valuable, but while Castellano et al. (2003) found research on work experiences in career technology that demonstrated some significance, they noted that those findings could not be generalized to other programs (p. 251). Bridgeland et al. (2006) reviewed numerous federal evaluations concerning school dropouts and graduation rates, but discovered there were

relatively few studies that examined the past *experiences* of students in school. In fact, in his extensive study of schools nationwide in *A Place Called School*, John Goodlad (2004) found that there was only “preliminary evidence to show promise” in experienced-based career education (p. 344) – evidence that was still lacking. It is the intent of this research to help fill some of those gaps and missing segments of prior research in career technology education and to evaluate the possible potential those particular segments of education and student experiences within the educational program may have on inspiring students to stay in school and graduate.

### **Purpose Statement**

The purpose of this study is to examine the relationship between various Career Technology and Agriculture Education (CTAE) programs and high school student’s graduation. Career Technology and Agriculture Education program elements considered were participation in CTAE courses, career technology student organizations, enrollment in work-based learning programs, CTAE intervention and tutoring programs, and students involved in the Early College and dual enrollment initiatives.

The following research questions were addressed in the study:

Research Question 1: Does high school student participation in the Career Technology programs have an impact on graduation from high school?

Based on this research question, four null hypotheses were evaluated:

Ho<sub>1</sub>: There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students identified “at risk” entering grade nine who participated in a CTAE intervention program and

students identified “at risk” entering grade nine who did not participate in a CTAE intervention program.

Ho1<sub>2</sub>: There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students who participated in the Early College or dual enrollment programs and students who did not participate in the Early College or dual enrollment programs.

Ho1<sub>3</sub>: There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students who participated in a Career Technology student organization and students who did not participate in a Career Technology student organization.

Ho1<sub>4</sub>: There is no statistically significant difference in the number of CTAE courses taken by the end of the 10<sup>th</sup> grade by students who graduated and the number of CTAE courses taken by the end of 10<sup>th</sup> grade by those students who did not graduate.

Research Question 2: Is there a statistically significant difference in the type of high school diploma received among the students who graduated from high school, based upon the type of career technology program the students participated in while attending high school?

Based on this research question, the following two null hypotheses were tested:

Ho2<sub>1</sub>: There is no statistically significant difference in the type of high school diploma (Career Technology Education, Dual Seal or College Preparatory Education) students received based on the students’ participation in a

Career Technology student organization or the lack of participation in a Career Technology student organization.

Ho<sub>2</sub>: There is no statistically significant difference in the type of high school diploma (Career Technology Education, Dual Seal, or College Preparatory) students received based on the students' participation in a Career Technology work-based learning program.

Research Question 3: Among high school dropout students who initially pursued a Career Technology Education or Dual Seal diploma prior to dropping out, what percentage completed a CTAE concentration among those who: (1) dropped out after completing the tenth grade; (2) dropped out during or after completing the eleventh grade; and (3) those who dropped out during the twelfth grade?

Research Question 4: What percentage of students who graduated with a College Prep Diploma participated in the Career Technology Program?

Research Question 5: Among students who graduated from high school after entering in the fall of 2006, what percentage: (1) completed a CTAE concentration; (2) completed two or more classes above a CTAE concentration?

Research Question 6: Among students who indicated they were going to receive a Career Technology Education diploma or a Dual Seal diploma on the survey instrument, what were their current or future plans related to their education and occupational goals after high school and their perceptions of the preparation they received in Career Technology program?

## **Professional Significance**

Career technology programs have a variety of experiences to offer students. The intent of this study is to contribute to considerations of school program and course offerings, especially those in the career technology area for students in grades nine through 12. It is intended that the research results will have an impact on the academic and career planning advisement for students prior to and during high school. Data gathered from this study could lend direction for strengthening career-related intervention programs for students at risk of dropping out of high school. Additional significance includes the increased collaboration between academic and career technology teachers to build incorporation of contextual learning in all classrooms. Providing workplace or “real-world” examples to accompany theoretical concepts adds deeper meaning to lessons for students. This research expects to lead to an emphasis on instruction that is performance-based, allowing students to experience learning that has practical meaning beyond printed lessons and text. A focus on student intervention and support through career education may increase the numbers of students that graduate with a high school diploma.

Many schools have traditionally used career technology education – formerly called “vocational” education – as a ‘dumping’ ground to place an individual when other courses did not fit the student’s schedule or the student was not succeeding in certain academic areas. Plank et al. (2008) stated that research on “tracking” ability groups in school often portrayed vocational education as a place where the majority of students were poor and minority; the students experienced courses with very little rigor and learning (p. 348). Added to that traditional practice was the thought that career education

is not a rigorous preparation for life after high school. One parent of a career technical student in Maryland stated that when she was in school approximately 20 years ago, “vo-tech” was for students who “did badly” (Harty, 2009, para. 6). Whether post-secondary plans include college or university study, training and life in a military field, or a sustainable career in a related occupation from high school training, career education was typically believed to be substandard preparation. Not only had vocational education suffered from a reputation as a second-class education for students who would enter the blue-collar workforce, it was also seen as the last stop before such students quit high school (Dana Hull, 2007). Harty (2009) also interviewed a student who was told “you get a half-degree” when attending a local career technical center to complete a high school education (para. 9). The typical preparation of students for college or university study upon exiting high school needs an overhaul. Options such as technical college and apprenticeship training can provide rigorous instruction in the technological advancements needed for many occupations today. Concentrated study in just one entity – academic or career technology – would offer many students an “unbalanced” education for future needs. Preparing students for college seems to permeate pockets of the world of education; however, formal college after high school is not always the most acceptable choice for all students. In fact, one executive director of the Association on Career and Technical Education stated that only about 25% of careers need a college degree (S. Karp, 2009, para. 9). Through this study, schools may approach career and academic study as equally important for all students. Additionally, it is hoped a result of this research will be the eventual removal of the stigma associated with career technology

study, ending tracking classes of students, and strengthening the collaboration between academic and CTAE programs for all participants.

Judy Coddling and Marc Tucker (2000) discovered that the focus in vocational education needs to be academically rigorous; industry proponents expect high academic standards to be met (p. 91). Classes should include high-level reading and math in addition to relevant career training. When students are faced with engaging study with connective relevance, they rise to the challenge of increased rigor in both academics and product-based learning. Academic topics are more applicable in a setting where the student continually uses the concept while accomplishing a task that has relevant meaning. In her exploration of area career programs, Angela Mack (2008) found that the directors of technical school settings discover students highly interested in exploration of career paths doing quite well academically. Connecting students to studies that have meaning to a desired vocation can make all the difference in completing high school. This research study aims to encourage incorporation of academic rigor in all high school programs, promoting student success beyond school. It is intended that the programs related to career education in the study will be considered an integral part in increasing the graduation rate of students not only in northwest Georgia, but also setting the stage as a model other school systems may follow.

### **Overview of Methodology**

This study uses a causal comparative research design, incorporating student data from one northwest Georgia school district to determine if a relationship exists between participation in CTAE programs and graduation from high school. Causal comparative research is designed to examine possible cause-and-effect relationships between

variables. Ex post facto research is also called causal comparative research; Ary et al. indicate that the designation of an ex post facto research applies to a situation in which “the variable of interest has already been determined in the natural course of events” (p. 356). Based upon the course history and participation of students who either graduated in the spring of 2010 and those students who should have graduated in the spring of 2010 but dropped out prior to that time after attempting participation in high school, this study considers variable elements that existed prior to research examination.

After graduation in the spring of 2010, data was gathered from all students who entered high school in the fall of 2006 and graduated with a regular diploma. Additionally, data was collected on students who entered high school in the fall of 2006 but did not graduate with a regular diploma or had dropped out of high school. Data concerning these students was available from the school district’s student information system database (Infinite Campus<sup>®</sup>). Diploma type, grade point average, and course history information were included in the information gathered from the student database system. There was no manipulation of the variables involved; all data used had occurred prior to the study and were not dependent on the use of a control or experimental group. The data used were also linked to the student reporting system established by the state of Georgia. After passing through state reporting and certification, this ex post facto data records do not change.

The twelfth grade students were identified by the type of diploma pursued, then by the level of involvement in career technology programs, using identifiers specific to the various programs. The programs included for examination were career technology student organizations, co-curricular competitions and conferences, enrollment in work-

based learning courses, Early College, and career technology intervention programs including classroom intervention and credit recovery. A survey was also conducted with the senior students prior to graduation to examine the level of participation in career technology courses and programs. Further discussion of the methodology of the study will be included fully at a later point.

### **Definitions of Terms**

- Career Technology Diploma: a diploma issued to students who have completed three or more courses as a distinct pathway of career courses in one career program.
- Certificate of Attendance: a document issued to students who have not passed all of the state required assessments for graduation, but have completed all coursework required by local and state standards
- College Preparatory Diploma: a diploma issued to students who have completed a specific number of units in academic core and elective areas.
- Concentrator/Concentration: a student who earns three or more course credits in one particular CTAE area or pathway, (i.e., Horticulture, Business, or Family and Consumer Science), while in high school.
- Coordinated Career and Academic Education (CCAЕ): a high school course in which students integrate components of successful employability skills, personal growth, and additional academic support as it related to the career education. Generally, students in CCAЕ are considered

at-risk for dropping out of high school. Formerly called Coordinated Vocational and Academic Education (CVAE).

- CTAE Intervention programs: Coordinated Career and Academic Education, before and after school tutoring, and Instructional Extension programs.
- CTSO: Career Technology Student Organizations; clubs provided for students to enhance the learning experienced in a related career technology course.
- Dual-Seal Diploma: a diploma issued to students who have completed both the requirements for a college preparatory diploma and have completed three or more courses as a distinct pathway of career courses in one career program.
- Early College: a partnership in which a local school district or districts and a technical college form a separate educational program for students experiencing difficulties in the normal high school setting. The program provides career technology education courses and high school courses solely on the college campus, encouraging students to experience relevance in combining academic and career education while earning both high school and college course credit.
- GED: General Equivalency Diploma: a series of five tests which, when passed, certifies that the individual has achieved academic skills at the high school level and has earned the equivalent of a high school diploma.

- Instructional Extension Program: a program funded by the state of Georgia that provides tutorial help for students lacking skills to pass the Georgia High School Graduation Tests or for those experiencing academic difficulty in core subject areas.
- Performance Learning Center: a separate alternative school setting that provides a school of choice for high school students behind in credits and experiencing difficulty having success in a traditional high school setting. Much of the lesson presentation is computer-based, with a classroom teacher facilitator. This model of instruction is considered a smaller learning community or a “school within a school.”
- Regular diploma: a diploma that is issued to those students completing both Carnegie course units in academic and elective requirements and all components of the state testing requirements. Does not include a special education diploma based on goals set and accomplished in an Individual Education Program.

## **CHAPTER TWO: REVIEW OF LITERATURE**

This chapter includes an overview of the theoretical framework guiding the study, a review of the educational values of a high school diploma, and the historical governmental influence on career technology education. Also included is an examination of issues and statistics surrounding high school dropouts and an overview of the programs presented through career technology education programs.

### **Introduction**

Our nation has a concern for education. The direction of that concern varies depending on the opinions reviewed from any government official, public entity, community leader, or educational leader. Some major points of concern are educational standards as compared to other industrialized nations, lack of basic skills, teacher training, discipline and safety issues, family stability and parental involvement, and high dropout rates (Stossel, 2006; Boyer & Hamil, 2008; Halperin, 2008; Meeder & Couch, 2005). All of these points surround students being able to learn in the appropriate environment with appropriate support systems, having a solid education, and eventually becoming a contributing member of society. Bob Alexander (2002) states that America's educational system is in a crisis and “. . . the crisis is that children must be educated now and prepared to take their place in a competitive world” (p. 10). Reports and studies from various fields have shown that more and more young adults are ill-prepared for entering the world of work.

Employers list the need for workers with good attitudes, the ability to communicate well, think through and solve problems – all skills that can be taught to

young people while they are still in school (Baxter & Young, 1982). Skill development is expected not only in simple reading and mathematical literacy, but also in technical literacy. The Association for Career and Technical Education (“Workforce Readiness Credentials”) states that technical literacy involves “the ability to apply academic knowledge . . . read, understand and communicate in the language of the technical field, . . . and use technology to complete projects in a specific career/technical field” (p. 4). In many cases, students are stunned by the education a chosen profession or occupation requires (Mack, 2008). Further training in skills for employment is often needed beyond high school; many of these skills are honed during post-secondary education. Careers in the 21<sup>st</sup> century may “require various levels of education – from high school and postsecondary certificates to two- and four-year college degrees” (Association for Career and Technical Education, “American Competitiveness,” p. 3). Technical college or university study can play a big role in occupational preparation, yet Anthony Carnevale and Donna Desrochers (2002) reported that there will be a shortage of about 12 million college-educated workers in the U.S. workforce by 2020 (p. 4). Strengthening those educational requirements is part of education reform and focus in our nation today.

### **Theoretical Framework**

The focus of this study is based upon various backgrounds of research on resiliency in young people. As a researcher of resiliency and protective factors for over 20 years, Bonnie Benard (2007) summarizes resiliency not as an extraordinary factor but one that “exists in the human organism – that part of our genetic makeup – and which unfolds naturally in the presence of certain environmental attributes” (p. 3). Masten (1997) defines resilience as success “in spite of serious challenges to development” (p.

1). A large focus in the 1980s centered on fostering awareness on at-risk youth and interventions toward success in school and community. During those years, Benard (1991) found that preventionists of that era centered on building resiliency in young people. Peer influences, moral decisions, family strife, and educational difficulties all present types of challenge for young people as they grow older. How a young person positively handles each adverse situation helps build inner strength and resolve to handle other hardships he or she may face. Grotberg (1995) related resilience to Abraham Maslow's hierarchy of needs; as individuals have basic physiological needs met, they then have a need for security and safety, affection and belonging – all growing to a point of self-actualization. Grotberg states that:

Along with food and shelter, children need love and trust, hope and autonomy.

Along with safe havens, they need safe relationships that can foster friendships and commitment. They need the loving support and self-confidence, the faith in themselves and their world, all of which builds resilience. (Chapter 1)

One source for building confidence – or efficacy – in one's self is by overcoming obstacles through perseverance and effort. Additionally, Albert Bandura (1994) writes that self-efficacy is supported and strengthened through modeling influences and social persuasion. By observing others succeeding in similar challenging endeavors, an individual has a 'model' with which to identify and to aspire to succeed in the same manner. Social persuasion is simply hearing from others that one possesses the ability to achieve the activity or challenge at hand (p. 72). By establishing and building self-efficacy, an individual is exposed to characteristics such as faith, confidence, and positive attitudinal behaviors that work to build resilience.

Benard found that there are three main factors that support success when one is faced with complicated situations. These tenets are often referred to as *protective factors* or *resilience assets*: caring relationships, high expectations, and opportunities for participation and contribution (“Student Well-Being,” 2003, p. 8). These three assets are found in the supportive strategies of families, communities, and schools. This research study focuses on the theoretical concept of resiliency assets supported in the high school setting, especially focusing on the programs provided through career technology education (CTE).

### **Caring Relationships**

Bonnie Benard (2004) states that “caring relationships are characterized by a sense of compassion – nonjudgmental love that looks beneath negative behaviors . . .” (p. 45). Commonly thought of as a difficult set of years to grow through, high school poses challenges for many young people trying to “fit in.” Students have a need to build self-esteem, foster friendships, or find a group with which to belong. Cove, Eiseman, and Popkin (2005) describe sources of support for a child’s environment to include peer relationships and shared values. These relationships can be found in a school setting through friendships formed in class, teammates, or a group of individuals who share a common interest. Benard (1991) states that “just as in the family arena, the level of caring and support within the school is a powerful predictor of positive outcome for youth” (p. 10). Self-efficacy – the belief that one has confidence and control over whatever he or she attempts or experiences – is increased when students are provided frequent and immediate feedback while working on academic tasks. (Pajares & Schunk,

2001). That feedback and positive reinforcement can grow into a trusting and caring relationship between teacher and student.

Researching caring relationships in school and the resulting positive outcome for children, Nel Noddings (2010) concluded, “When a child is secure in a caring relationship, the caring adult usually has a powerful effect” (p. 147). Pulling from background knowledge and high interest in the subject topics, a teacher can convey excitement for his subject to students through classroom lessons. Feeding on the teacher’s enthusiasm, a student can be drawn in to develop an interest in the subject matter or to quench a deep desire to learn more. A potential relationship has a great chance of forming between teacher and student as the journey through the common course of study ensues. In this instance, a common human need of acceptance and nurturing will be fed through personal connection. Ann Masten (1997) states that “the most important protective resource for development . . . is a strong relationship with a competent, caring, . . . adult” (p. 3).

Supportive school environments include a culture and atmosphere of care, belief, and interest passed from the teacher to the student. Students must know and see that teachers care about their needs in order to believe that teachers will help them learn. Making a personal connection with students at school and in the classroom has importance for student success. Montana Miller (2006) supports this thought in her findings that teachers who emphasized making a personal connection with students “act as role models, pushing students to identify short-term and long-term goals and then inspiring them to go the distance to achieve them” (p. 50). BethAnn Berliner, a senior research associate with the Regional Educational Laboratory West at WestEd, found that

students who returned to high school after dropping out “said they were often motivated to return because of the concern of school staff” (“Once a Dropout,” 2010, p. 11).

Berliner further explained that:

Kids [said] it was the wrestling coach, it was the principal, it was the attendance officer. . . who said, ‘We love you, we miss you, we’ll do whatever it takes’ to help you get back. Caring came out as sort of a premium thing . . . Kids wanted to go where people knew their life stories, where people were non-judgmental and were trying to help them deal with their lives. (pp.11-12)

Key findings in research by Adena Klem and James Connell (2004) indicate that support by teachers is “important to student engagement in school . . . Students who perceive teachers as creating a caring, well-structured learning environment . . . are more likely to report engagement in school” (p. 270). Louie Rodriguez (2008) found that strong student-teacher relationships lead not only to high levels of engagement in school, but “more favorable academic outcomes” (p. 761). Strong, caring relationships can develop in career technology classes as teacher and student explore not only subject matter that holds high interest for each of them, but also the specific career areas that study can provide for the student.

Relationship-building can be found outside the typical school walls of career technology education. Beltram (2010) stated that:

A unique characteristic of CTE is the building of relationships with partners. Business, industry, community and postsecondary partnerships in the classroom, in work-based learning opportunities, and in CTSO [Career Technology Student Organization] activities set CTE apart from other educational programs: These

partnerships and relationships give students support systems on their journey into their future. (p. 11)

Collaboration with the partners outside the school provides a different perspective for all individuals involved. Not only does the student see a view of the professional world on which to set goals, but also the business partners get a glimpse of how best to help schools prepare young people for life after high school. Whether the partnership consists of assisting students with preparation for competitive events, sponsoring technology innovation upgrades in the classroom, providing guest speakers, or mentoring through apprenticeships, the relationships built through outside partners are instrumental to the success of career technology education programs.

### **High Expectations**

Setting high expectations for learners contributes to success in school. Expecting the best out of students sets a standard for student learning and aids the growth of the individual in both self-efficacy and personal resiliency. High expectations are “clear, positive, and youth-centered expectations. . . . creating a sense of structure and safety through rules and disciplinary approaches that are not only perceived as fair by young people but that include youth in their creation” (Benard, 2004, p. 45). Setting guidelines for an end “product,” requiring specific written work or projects, not accepting failure on standard learning units, and focusing on strong academic integration throughout school programs are all examples of setting the bar high in the school classroom. Pajares and Schunk (2001) report that teachers who assign challenging tasks and meaningful activities that can be mastered help students develop self-worth and grow in self-confidence. Adena Klem and James Connell (2004) found that students who faced

challenging situations actively persisted through the use of “effort, strategic thinking, problem-solving, information-seeking, and experimentation” (p. 262). Benard (2004) also found:

When students are asked to define qualities they want in their teachers, the answer, across studies, is unequivocal: They want teachers who are caring and who also accept no excuses – who, in other words, care about them enough to refuse to let them fail. (p. 70)

Kathleen Cushman (2006) discovered students actually want work that builds on what they know, stretches their thinking, and leaves them desiring to know more – students are not afraid to take challenging classes if they are interesting and engaging. Miller (2006) also discovered a plus for teachers who held students accountable for educational aspects:

The educators . . . asserted that students need firm boundaries and consistent training to develop a sense of responsibility for their lives and for their learning. As program leaders made expectations clear to the students, followed through with consequences, and took care to be fair and respectful, they found that teenagers responded and grew. (p. 53)

Career technology programs are built on high expectations in order to meet industry standards. In fact, “the 1990 Perkins Act called for integrating CTE and academic education so that each student would gain strong basic and advanced skills in a career setting” (Meeder & Stevens, 2005, p. 90). Meeder and Stevens (2005) also stated the reauthorization law of the Perkins Act in 1998 “emphasized the importance of academics and establishing an accountability system to measure outcomes in academics and technical skill acquisition, program completion, advancement to further education

and training and the workplace” (p. 91). “Once considered an option only for low achieving, non-college bound students, career and technical education programs are now making a comeback as a valuable means to infuse students’ educational experience with rigor and relevance” (Walker, 2008, p. 24).

To prepare students ready for the world of work, a product completed in CTAE classes must center on skill, knowledge, and precision (Association for Career and Technical Education, “American Competitiveness”). Less than perfect precision is not acceptable. To illustrate the importance of meeting or exceeding standards in skilled areas, one can think of automotive or health occupation areas. No individual desires a heart monitor to stop working in the middle of surgery because an electronics technician was satisfied with 70% accuracy in wiring products! A business manager would not want to miss closing a huge company deal because his new carburetor was not installed properly in his automobile. Career technology courses provide environments where students can not only learn a skill and incorporate academics, but also understand the importance of answering to high expectations.

### **Opportunities for Involvement**

The third tenet in protective factors of resiliency, the opportunity to participate and become active in the environment of school, allows students a chance to take ownership in that part of their lives. When studying student relationships of attachment and connectedness to school, Heather Libbey (2004) found that school involvement could be measured by the aspect of student’s “membership” or a “bond” with the school. This membership or school bond was related to participation in school activities such as athletics, band, school government, or school-related clubs. Cushman (2006) stated,

“Extracurricular activities provide another way to acknowledge the importance of students’ passions and feelings of competence. . . . Clubs and activities . . . can foster a tone of inclusion that often comes as a relief to students” (p. 36). In addition to the active participation provided students through CTAE courses during the school day, co-curricular activities extend the classroom learning, participation, and chance for meaningful contribution. Research by Jeremy Finn (1989) found that “extracurricular and social activities may remain as the primary source of attachment to school for students whose academic work is weak” (p. 129). Susan Reese (2010) cites that:

Career and technical educators understand the importance of making learning relevant for their students, and they often use service projects to demonstrate how the skills and knowledge students are acquiring in their classrooms, labs, and CTSOs [Career Technology Student Organizations] can make a real difference.

(p. 17)

Graphic arts classes give students a chance to design printed work for contracted projects, while an advanced construction class may provide students opportunity to design, budget, organize, and build an entrance ramp for the home of an elderly person in the community. Connecting learning to practice and meaning is a goal of career technology (Keffeler, 2008).

As members of co-curricular clubs, students not only participate in class and community projects, they also extend their learning. Student organizations such Future Business Leaders of America, SkillsUSA, or Health Occupations Students of America allow students to apply classroom skills in competitive events such as computer applications, first aid skills, or collision repair. Students enrich their confidence by

participating in events such as public speaking or community service projects. A multitude of opportunities such as leading other students at the local, state, and national level, interacting with the business community, creating and implementing a program of work, and learning from mistakes can be found through career technology student organizations (Beltram, 2010). Benard (2004) noted that:

Through having the opportunities . . . to voice one's opinion, to make choices, to engage in active problem solving, to express one's imagination, to work with and help others, and to give one's gift back to the community – that youth develop the attitudes and competencies characteristic of healthy development and successful learning . . . (p. 79)

As the project director of the High School Survey of Student Engagement, Ethan Yazzie-Mintz (2006) reported that while “in high school, [students] want to be intellectually, academically, *socially, and emotionally* [emphasis added] engaged with the life and work of their high schools . . . and to mean something within their high school communities.” (p.11). Meaningful involvement and participation are key components in the educational area of career technology.

All three key tenets of resiliency research can be found through career technology education. The degree to which students become more resilient to outside forces which influence failure and instead, concentrate on applying classroom success toward the goal of finishing school is a factor to consider. Encouragement is given through student-teacher relationships, feelings of accomplishment from meeting high expectations, and the many chances for a student to blossom through active participation. The education found in career technology programs lends itself to building self-esteem, providing a

sense of belonging, and promoting a resilient nature in students; these factors play a large part in encouraging students to stay in school and graduate with a diploma.

### **Educational Value**

One focus of concern in American education centers on efforts toward students completing high school rather than quitting without obtaining a diploma. The astounding effects of non-graduates on our nation are compelling. The lack of a high school education results in consequences later in life that many young people are completely unaware. In 2003, research by Castellano, Stringfield, and Stone indicated that failure of young people to earn at least a high school diploma leads to great difficulty achieving “economic sufficiency in adulthood” (p. 241). The cost to the nation’s economy suffers due to the lower annual income earned by dropouts.

In 2007, the mean earning for a high school graduate was \$31,286 while the high school dropout earned \$21,484, a difference of \$9,802 (U.S. Census Bureau, 2007). The approximate 1.3 million students in the United States who did not graduate in 2004 would eventually cost “more than \$325 billion in lost wages, taxes, and productivity” (Kennelly and Monrad, 2007, p. 4). The Alliance for Excellent Education (2008) found that if the students who dropped out of the Class of 2008 had graduated, the nation’s economy would have benefited from an additional \$319 billion in income over their lifetimes. In their report, “The Silent Epidemic,” Bridgeland, DiIulio, and Morison (2006) describe dropouts as “much more likely than their peers who graduate to be unemployed, living in poverty, receiving public assistance, in prison, on death row, unhealthy, divorced, and ultimately single parents with children who drop out from high school themselves” (p. 2). The focus on high school dropouts inspired several

governmental studies and legislative actions as attempts to prevent such decisions by young people.

### **Role of Government Legislation**

As early as the late 1800s, the federal government was finding ways to encourage students to become educated in areas that would contribute to society. The introduction of vocational training in schools provided by the Morrill Act of 1862 began to pave the way for more students to attend and stay in school. Also known as the Land Grant College Act, the purpose of the Morrill Act was to establish institutions in each state to educate people in practical occupations of the time such as home economics and farming (Lightcap, 2008). A second Morrill Act was passed in 1890 to make allowance for the education of persons of color. Not only did the Morrill Acts result in support from the government for higher education, the legislations provided a shift from classical studies to more applied studies that prepared students for the world outside the classroom (Lightcap, 2008; Clark, n.d.; “Backgrounder,” n.d.). Many of the nation’s agricultural and technology institutions standing today originated from the funding provided through the Morrill Acts.

Further governmental influence through the Smith-Hughes Act of 1917 provided for vocational education in public secondary schools. This education allowed supervised, on-site practice for students to gain skills needed to enter into farm employment (Bagby, 2004). Because of the funding specifications, students studying the vocational field were limited to the amount of time pursuing academic or other related studies, and provided strict funding for the salary of vocational teachers. Stasz and Bodilly (2004) found that due to this specific federal funding for vocational education, the Smith-Hughes Act

“separated . . . [vocational education] from other programs, thus contributing to the separation of the high school curriculum still present today” (p. 1). The end result was that vocational students and teachers were segregated from the academic students and teachers; academic content studies were limited, so theoretical content for learned skill sets suffered. The impact of the segregation has continued through the decades into the present; the Act which strove to bring an additional plus to the educational scene actually led to a disaggregated program that eventually resulted in the stigma of a lesser education (Smith-Hughes Act of 1917, 1998). Since the passage of the Smith-Hughes Act, the federal government has been involved in the provision of vocational education to high school students (Castellano et al., 2003).

As a response to the Soviet Union’s launch of the Sputnik I satellite and a perceived threat to the security of the United States, President Dwight D. Eisenhower signed into law the National Defense Education Act (NDEA) of 1958 (Flattau, et al., 2006). This legislation stressed the importance of preparing our students for stronger work in the vocations which supported the nation’s security through the study of science, mathematics, foreign language, and technical education. Although the NDEA was intended to complement federal education programs already in place through the Office of Education, Flattau et al. (2006) found that the NDEA also emphasized “general education” that “was intended to strengthen the U.S. educational infrastructure by steering people into teaching and guidance counseling careers” (p. I-2). These early legislations provided more than training for students in occupations needed at that time in our nation’s history. Funding for low-interest loans to students pursuing higher education served as a catalyst for increasing the number of educated students in our nation.

Trends into the 1960s showed that all students did not view the importance of a high school diploma as was desired. Meeder and Stevens (2005) found that the education movement of the era “assumed that many should take vocational or nonacademic classes rather than pursue college. . . . it largely abandoned the ideal of education as a means of moving up the social ladder” (pp. 87-88). This tendency was addressed with the passing of the 1963 Vocational Education Act; replacing the Smith-Hughes Act, this piece of legislation substantially increased the funding by the federal government for vocation training in schools. The Vocational Education Act expanded agricultural and home economics education to include all aspects of study in those areas. Further, the act provided the extension of vocational education to persons of varying needs including such special needs groups as handicapped, disadvantaged, and women wanting to enter nontraditional occupations (Wolfe, 1978). This important legislation paved the way for the 1984 authorization of the Carl D. Perkins Vocational and Technical Education Act.

According to Stasz and Bodilly (2004), the 1984 act “placed more emphasis than earlier legislation did on improving access to vocational education programs, particularly for special populations, and on modernizing and developing program quality” (p. 2). The passage of the Carl D. Perkins Vocational and Applied Technology Education Act (Perkins II) in 1990 concentrated on preparing a highly skilled workforce and providing young people with a strong foundation in academic skills (Meeder & Stevens, 2005). Castellano, Stringfield, and Stone (2003) stated that Perkins II was “the first CTE legislation to recognize the changing economic and educational landscape” (p. 246). Perkins II not only mandated integration of vocational and academic curricula, but it also

promoted work-related experiences and focused on the accountability of funding (Castellano et al.)

The 1990 act was reauthorized by Congress in 1998 as the Perkins Vocational and Technical Education Act, or Perkins III. This version provided a focus on connecting secondary and postsecondary education and held states accountable for outcomes in academic and technical skills by linking monetary incentives to performance (U.S. Department of Education, 2000; Skinner & Apling, 2005). The intention of the Perkins act was to strengthen and improve vocational education in the nation's public schools, stressing the importance of staying in school and learning a vocation along with a solid academic background (Dan Hull, 2005, pp. 10-11).

By 2006, the federal government reauthorized the Perkins Act once again as the Carl D. Perkins Career and Technical Education Improvement Act of 2006. This legislation provides the principal funding source for innovation and program improvement of technical education in today's schools, while maintaining a focus on valid accountability for academic and technical skill attainment, and strengthening the connection between secondary and postsecondary institutions.

Plank et al. (2005) concluded that:

Recent federal legislation . . . present a vision of CTE that involves not only the development of practical skills needed in the workplace, but also an integration of CTE and academic subjects, an erasure of the stigma often attached to vocational education, and pathways to both postsecondary education and employment. (p.1)

The involvement of the federal government continues to make a lasting imprint on career and technical education in our nation's schools. As stated by the Association for Career

and Technical Education (2010), today's career education has grown "from a limited number of vocational programs available at the turn of the 20th century into a broad system that encompasses a variety of challenging fields in diverse subject areas which are constantly evolving due to the changing global economy" (www.ACTEonline.org) .

### **High School Dropouts: A National Problem**

America was shocked at the revelation brought by the 1983 "A Nation at Risk" report. At that time, only 81.3% of Americans between the ages of 15 and 19 were enrolled in school and the high school completion rate was on the decline (Colvin, 2003). As an effort to address the importance of educating the youth of America in the late 1990s, President George H. Bush held a summit for the nation's governors to discuss educational reform. This meeting laid the groundwork for the Goals 2000: Educate America Act, passed in 1994 under President Bill Clinton. Goals 2000 proclaimed that by the year 2000, the graduation rate in America would improve to 90%. At the time of Goals 2000, the percentage of students receiving a regular high school diploma was approximately 83% (Chaddock, 2006). However, just four years after Goals 2000, the Center for Education Reform (1998) discovered that during the span of time fifteen years after "A Nation at Risk," over six million Americans dropped out of school altogether. The Alliance for Excellent Education (2008) states, "Every school day, almost seven thousand students become dropouts."

The business and industrial community seems to value a diploma earned in high school; in an article on dropout prevention, Kelly Grysho (2008) found that "in today's world if you don't have a high school diploma, you're setting yourself up for failure" (n.p.). Although high school students can leave school before graduation and take the

General Equivalency Diploma (GED) exam to earn a document supposedly equal to a school diploma, the GED does not statistically classify the student as a high school graduate. Paul Barton (2006) cited that even though GED recipients fared better than high school dropouts, the circumstances were not as successful as high school graduates with diplomas. Barton further stated that although “the GED is a well-respected substitute, . . . it is not a regular diploma earned after completing four years of high school” (p. 16). In fact, students earning a GED are counted as dropouts in the Adequate Yearly Progress calculations for graduation rate in the No Child Left Behind Act (NCLB) (State of Georgia Consolidated Application, 2009, p. 33).

Currently, the No Child Left Behind Act requires state reporting of graduation rates, placing further emphasis on the government’s desire to decrease the dropout rate in our nation. Despite recent public and governmental actions to combat the mounting dropout rate in America, students are still leaving high school without a diploma. In a February 2008 news article Jay Mathews reported that nationally, about 30% of students starting ninth grade drop out before graduating four years later. With the NCLB goal of graduating 100% of high school students by the year 2014, state educational agencies have to take strong measures to meet that goal. To begin to think reform for dropout problems, states across the nation need to examine their own success or failure at keeping students in school through graduation.

### **Dropouts in Georgia**

The plight of student graduation rate in Georgia mirrors that of the nation; roughly 30% of Georgia students do not finish high school with a diploma. In 2002, the graduation rate for all students was at 61.8%. Georgia experienced a large jump in the

percentage of students graduating high school in 2004, when the graduation rate was at 65.4%. The state graduation data reported by the Governor's Office of Student Achievement ([www.gaosa.org](http://www.gaosa.org)) showed that in 2007, the graduation rate for all students was only at 72.3%. In 2008, Susan Walker, Director of Policy and Research for the Georgia Partnership for Excellence in Education (GPEE), found that "while the high school graduation rate in Georgia has increased annually, . . . the fact remains that more than one-fourth of our state's students leave school without a high school diploma" (p. 23). Walker states further:

Although the high school graduation rate in Georgia is rising, the aggregate number of non-high school graduates continues to rise as well. Over the past four years – the period of time during which an entire freshmen class should have completed high school – Georgia has seen well over 100,000 students drop out.  
(p. 23)

With only slight increases each year, the graduation rate of Georgia's students does not seem to be trending toward meeting the goal set by the No Child Left Behind act. Examining this trend more narrowly, this researcher reviewed the graduation rate of her school system.

Like the state of Georgia, the northwest Georgia county in which this researcher works has as a graduation rate that mirrors the current status of our nation. The graduation rate for the class of 2009 settled around 75% (Governor's Office of Student Achievement, 2010). Although this figure is a large increase from 59% of seniors graduating in 2002, the graduation rate of the students in the school system has seemed to stall in the 70<sup>th</sup> percentile in the past couple of years. A deep concern for success of

students has the school system exploring why so many students are not graduating and what can be done to influence positive change in this area.

### **Reasons Related to Dropout Rate**

In their research, Louise Kennelly and Maggie Monrad (2007) found that the key indicators for those likely to drop out are poor grades, low attendance, failing to be promoted to the next grade level, lack of engagement in the classroom, and behavior problems. Some students who do not finish high school drop out because of the inability to succeed academically, or they view academics as unimportant for life after high school. As an effort to increase the focus on the need for an academic background, some states implement testing programs as a way to qualify the knowledge attained before issuing a high school diploma.

Even before the testing requirements of No Child Left Behind, the state of Georgia implemented tests that assessed a students' proficiency in basic skills before he or she left high school. Georgia students were required to pass minimal competency tests prior to graduating. The Georgia Basic Skills Tests were assessments in English language arts and mathematics; a student had to pass both sections to be considered a high school graduate and earn a diploma ([www.doe.k12.ga.us/ci\\_testing.aspx](http://www.doe.k12.ga.us/ci_testing.aspx)). The state basic skill assessments later became the Georgia High School Graduation Tests (GHS GT) and now include five content areas: writing, English language arts, mathematics, social studies, and science. As with the former Georgia Basic Skills Test, students must pass all areas of the GHS GT and complete all coursework requirements to be awarded a diploma. Students who complete all coursework but lack passing all testing components receive a Certificate of Attendance rather than a diploma at graduation. To

achieve a regular diploma, those students must continue to return to take the GHSGT until they pass all five components.

Georgia is not alone in the testing requirements for a earning a diploma. Achieve, Inc. (2004) reports that although the most common criteria for awarding a high school diploma in the United states surrounds the courses taken when in school, “graduation exams play a pivotal role in setting a standard for high school graduation in about half the states” (p. 4). Chester Finn (2002) finds that:

This [testing] effort is fraught with difficulty. Lots of young people arrive in high school without a decent elementary foundation. Once there, few are motivated to study hard and do well. Too many give up or get bored and drop out. (p. 11)

In this researcher’s experience, students who experience difficulty passing the GHSGT eventually give up retesting and decide to forego a high school diploma altogether.

Students who fall behind in courses or receive failing grades lose interest in school. Kennelly and Monrad (2007) discovered that one key factor for predicting ninth graders who may leave high school was receiving more than one failing grade in academic subjects and being retained at the end of the school year (p. 6). These students simply feel that they cannot succeed as well as others, so they leave school. Students without the proper foundational skills to succeed in high school studies need academic support structures in place that will help them fill the gaps in their learning. As a student experiences continual frustration in school, he or she eventually holds a perception of being ineffective and incompetent to succeed, leading to withdrawal from school (J. Finn, 1989, pp. 119-120). Plank, DeLuca, and Estacion (2005) concluded that “by dropping

out, retained and/or old-for-grade students can shed a punishing role and, instead, seek desired status through paid work or other means” (p. 27).

Reasons for students leaving high school without graduating have also been related to economic diversity and large learning environments. Especially in urban areas, large comprehensive high schools have reports of the highest dropout rates (Croninger & Lee, 2001, p. 551). Mathews (2008) discovered that in low-income neighborhoods, the dropout rate is much closer to 50%. This high rate is blamed in part on large, impersonal, rule-bound schools that do not adjust to individual needs of the students. Naturally, high schools in urban and suburban areas tend to be large, with enrollments in the thousands (McKinney, Steglich, & Stever-Zeitlin, 2002). With the lack of smaller facilities, the price paid is a loss of student identity. The schools are often so large, students do not know other students or form a personal relationship with a teacher or counselor. Croninger and Lee (2001) cited that “dropouts frequently complain that their teachers do not care about them, are not interested in how well they do in school, and are unwilling to help with problems” (p. 551). In his study, Scott Joftus (2002) indicates that smaller schools provide relationships with caring adults and can offer support services for those in need. With many students to educate within the confines of state and federal budgets, it is near impossible for larger schools to discover the needs of individual students and turn their learning experience into one of a personal nature. Yet, if they could focus on this one issue, the rewards would be great; support from teachers in the form of relationships and guidance increases the likelihood that at-risk students complete high school (Croninger & Lee, p. 569). Nel Noddings (1996) finds that “students must believe

that the adults in their schools and communities care about them, that their well-being and growth matter” (p. 186).

### **Linking Academics with Meaning**

If the subject matter is interesting to students, then the students will be more interested in school (Downs, 2007). Gene Bottoms (2008) stated that of those students who do not graduate high school on time, “many . . . blame schoolwork that failed to challenge them and assignments that meant nothing in their lives” (p.16). Louise Kennelly and Maggie Monrad (2007) found that dropouts “often cite a lack of motivation, boredom, an unchallenging atmosphere, and an overall lack of engagement in school” as a reason to leave school (p. 6). The learning experience is more encouraging if it has personal relevance for students. Dan Hull (2005) reports that “contextual teaching of academics is effective in improving the academic achievement of a majority of students” (p. 12). Hands-on learning is generally experienced more frequently in career technology classes; this allows students to explore subjects that have a “fit” for what they desire as a career. Studies by Achieve, Inc. (2004) report that as an addition to rigorous core curriculum, “career and technical programs can provide students with interesting and engaging content, help them apply academic skills in real-world contexts, and help them develop and refine career aspirations” (p. 18). Beltram (2010) writes:

CTE laboratories are where students apply what they have learned in theory during classroom instruction to a hands-on situation. This is where connections are made, by not only the hands, but the logic of why certain protocols are used and why business and industry have certain procedures; this knowledge gives students the “ah-ha” moments that connect their learning to life. (p. 11)

As a natural flow of discovery, students find the math and science components of subjects such as cosmetology, auto collision repair, engineering drawing and design, or aerospace technologies have relevant meaning. Bottoms (2008) states:

Young people who struggle to find meaning in traditional academic classrooms often thrive when they are asked to tackle authentic projects and solve problems – the hallmark of the best CTE classes. CTE programs that teach 21<sup>st</sup> century skills advocated by business and industry can provide the ingredients for schools to motivate more students to make the effort to succeed. (p. 16)

This is an important link demonstrating the role academics have in a chosen career for students. Additionally, “in the future, all careers will require high levels of *useful academics* and most careers will require education beyond high school” (Dan Hull, 2005, p. 14). The student experiences the importance of why they are learning the academic topics when integrated within the career technology course.

Although career technology education is moving toward a higher note of esteem in the educational realm today, Meeder and Stevens (2005) implicate that career tech was once part of a historical tracking system in schools for placement of students whose desire was to work outside of the professional arena. Associated with the level of academic coursework taken in school, tracking would separate students into ability groups based on perceived intellect. Students with seemingly more intellectual ability would be assigned to academic classes of high rigor. Those students who did not readily display high academic skills would be assigned to basic content academic classes and courses that emphasized skills for workforce or personal development such as career technology education. Vocational education was thought of as a basic education for

those whose skills were considered low level or non-academic. In a case study on tracking in high school, background history revealed school tracking policies that indicated “high-track classes include labels like *advanced placement, honors, gifted . . . .* Low –track classes are often labeled *vocational . . . basic*. (Chambers, Huggins, & Scheurich, 2009, p. 44). John Goodlad (2004) reported findings of “lower self-esteem, more school misconduct, higher drop-out rates, and higher delinquency among students in lower tracks” (p. 152). Career technology programs have tried to shed that lowly image over the past few years. Plank, DeLuca, and Estacion (2005) believe:

Recent federal legislation . . . present a vision of CTE that involves not only the development of practical skills needed in the workplace, but also an integration of CTE and academic subjects . . . [and is leading to] an erasure of the stigma often attached to vocational education. (p. 1)

In contrast, Burris and Welner (2005) found that although research demonstrates “the ineffectiveness of low-track classes and of tracking in general, schools continue the practice” (p. 595). The work reported by Chambers et al. (2009) showed that a majority of schools in our nation still continue to use tracking in some form.

Indicated previously, the concentration of strong academic integration with career technology programs has been the center of attention through the recent government decisions; other groups have also focused on strengthening the education of our nations’ students. One initiative includes input from state governors, state school superintendents of education, business executives and college leaders as they concentrate on raising the value of the high school diploma (“American Diploma Project,” 2010, para 2). By strengthening standards and academic rigor regardless of content area, the American

Diploma Project (ADP) is a newer focus on making sure that *every* high school graduate is prepared for whatever he or she decides to do after high school (para. 5). The inclusion of all students in high rigor expectations of completing a “college- and career-ready curriculum” is also a move to end the tracking practices and the common belief that career education is only for those students who were originally perceived as incapable of completing academic work infused with rigor and high expectations. As part of the ADP Network, the state of Georgia now requires all students entering high school in the fall of 2008 or later to complete a course of study that is not segregated into specific tracked diplomas. The new ‘one diploma’ approved by the Georgia Department of Education includes a choice of focus on career preparation, fine arts, or foreign language and pushes for students to be both college and career ready ([www.doe.k12.ga.us](http://www.doe.k12.ga.us)).

### **Career Technology Programs**

Career technology programs have varied methods to encourage students to enjoy school, discover an occupational path for further exploration and prepare them for success in life after high school. These experiences provide meaningful activities and relationships for students. Through activities during or after the school day or at an off-site program, career technology education programs are designed to help students have a successful experience in school, graduate with a diploma, and move on to achievement in the real world.

### **Career Academies and Pathways**

More involved technology is demanded in today’s workforce, and our schools must prepare students for such. “To contribute to economic growth, our students need world class skills demanded by the global economy” (P. Erli, personal communication,

October 30, 2008). To accomplish this goal, some schools create career “academies” or pathways so students can identify with a certain topic of interest and attend classes with others having the same interest. Stone and Alfeld (2004) state that “career pathway programs incorporate a vocational focus in high schools by organizing curriculum around career clusters, such as health, automotive or business careers” (p. 29). “Career pathways are . . . intended to provide a rigorous, coherent program of study that includes high-level academics in addition to technology applications and work-based learning” (Castellano et al., p. 256). “Career academies [or pathways] provide internships” with the local work community and mesh technical and academic coursework (Kennelly & Monrad, 2007, p. 14). Students choose a career interest and follow a specific pathway of study and work experience throughout high school.

Due to the nature of the career pathway study, the career academy essentially becomes a small “school within a school.” Kennelly and Monrad (2007) state that students in career academies “appear to have stayed longer in school than they might have otherwise, but they did not eventually earn a diploma . . . .” (p. 14). In contrast, other research finds that providing smaller communities in which students learn have been shown to reduce dropout rates by three percent (“The Value of CTE,” 2008). The internships and work-based experiences through career academies also provide students with a demonstration of skills and a solid connection between school and the world of work. Lucy Hood (2006) discovered that students applying academic knowledge to the vocational arts tend to stay in school and have improved attendance overall. Career academies are one approach to creating a sense of a smaller school or community of learning and providing students with a more nurturing, positive environment in which to

learn. Castellano et al. (2003) found positive outcomes from career academies and pathways in schools: “In the best of cases, students feel that their teachers care, their peers care, and they all share a common interest and goal. These affective factors are likely to increase student engagement and can improve achievement as well” (p. 257).

### **Career Technology Student Organizations**

Students in career technology courses are often members of a Career Technology Student Organization (CTSO). Bettina Brown (2002) found that organizations such as Future Farmers of America, Future Business Leaders of America, Technology Student Association, and Health Occupations Students of America provide opportunities for leadership development, service learning, and career exploration. As a result, Brown discovered that students in such organizations seem to attach a greater value to their school studies than do average students (p. 2). Students also have opportunities to extend their learning by attending regional, state, and national conferences and competitions in a career area that interests them. One student wrote of her experience as a member of Future Business Leaders of America (FBLA):

Through FBLA, this invaluable education has gone beyond the classroom and expanded to an understanding of how to lead and motivate other members, how to communicate articulately and effectively with business leaders, and how to work cooperatively in a team to plan successful conferences. These skills will stay with me for life, translating into abilities that can be applied in my future as well. (Shi, 2006, p. 34)

“A recent study found that CTSO activities positively affect students’ academic engagement, and the stronger the student’s involvement, the better the results”

(Association for Career and Technical Education, “Dropout Prevention and Recovery”, p. 5). Students in an Environmental Technology club in an Arizona high school not only design and build specialty cars for competition, but they are also involved in a myriad of skills through the process. Raising funds for the project, creating a specific design, manufacturing a product, troubleshooting problem situations, and working together as a team are just a few of the skills the students experience through the co-curricular organization. “Students say that this was the only activity in their high school career that put all the math, science, English, and career and technical skills together” (Reese, 2006, p. 16). Through activities related to the career domain, CTSOs help students develop skills and confidence needed for further educational study and successful careers later in life (Alfeld, et al., 2007, pp. 11-12).

### **Work-Based Learning**

Career technology students who have studied a particular career pathway in high school may explore work-based learning during the last two years of high school. The Georgia Career Related Education Manual (2007) outlines that “these educational experiences provide a rigorous and relevant curriculum with an occupational specialty” (pp. 6-5). Beltram (2010) states that “work-based learning comes in many forms, but the most effective are cooperative education and internships” (p. 11). Programs that provide work-related experiences “are beneficial in the lives of young people because most high school students want or need to work” (Castellano et al., p. 250). Work-based learning allows the student to leave the school site and earn high school course credit for on-the-job training or apprenticeship in a career related field. Placed under the direction of a

mentor in the workplace, the student has a chance to explore the world of work and apply background knowledge learned in the CTAE classroom.

Exploration may be assisting a veterinarian with treatments for small animals, leading small reading groups in a daycare center, or revising architectural drawings for a local architectural firm. Beltram (2010) also found:

When students reflect on what happens in their training station, they usually say things like, “I now realize the importance of being to work on time,” or “I wouldn’t have known that without this experience,” or “I have more of an advantage with this experience than my peers who didn’t participate in work-based learning.” It is one thing to learn the theory in a classroom setting and practice it in a lab setting, and another to actually use the skills in the workplace.

(p. 11)

Stone and Alfeld (2004) state that when done well, “work-based learning can serve three purposes for students: 1) connect school learning to the world of work, 2) increase school course-work relevancy, and 3) prepare students with skills necessary for the workforce” (p. 29).

Although the student may earn payment for the internship, the real reward comes in the form of experience and exposure. “Through work-based learning experiences the student also learns whether he or she has the skills, interest, and temperament for a particular career. Work-based experiences can greatly enhance a student’s understanding of career requirements, both mental and physical” (Schwallie-Giddis, Creamer, & Kobylarz, 2005, p. 218). Castellano et al. also cited that students in work-related programs were able to define life goals and know the purpose of creating those goals;

additionally, they “were more likely than other students to choose a major early in college, a sign of direction and purpose” (p. 252). Through work-based learning, students can work through the reality of applying classroom knowledge, finish school, and make an informed decision about further education for their career goal.

### **Intervention Programs**

One program in Georgia utilizes a coordinated approach to assisting at-risk youth in high school by offering Coordinated Career and Academic Education (CCAЕ). The course offers classroom time to work on problems students experienced to reach grade level achievement in reading and mathematics. Strategies are provided for career advancement and the skills needed to transition into a world of work or possible postsecondary technical school. Students also learn strategies to deal with personal factors that may impede their desire to stay in school. Dykeman et al. (2003) cited that “career development interventions can promote student academic growth by addressing problems such as low expectations and self-doubts” (p. 1). Positive reinforcements are given for student attendance, problem solving, and improvements in social skills. The model is best described as intervening with high but realistic expectations, peer involvement, and assistance from a team of professionals, as well as parents or caregivers (Georgia Department of Education, 2003, pp. 5-6). “So many ‘lower performing’ students perform so because they haven’t found their interest. Once they do, and support is given, they rise to where performance is not an issue” (P. Erli, personal communication, October 30, 2008).

Dykeman et al. (2003) found “there is substantial evidence to support the assertion that vocational education lowers the dropout rate and increases the retention of

students” (p. 7). In a classroom setting, students are led to see how their work in academic and personal areas relates to career occupations and success in the working world. Making a realistic connection for students with academic study and a career pathway is a vital part of the CCAE program and can strengthen students’ desire to stay in school. Students are encouraged to choose a career path of study that suits their interest and are mentored throughout the years in high school to lay a strong foundation of academic skill complemented by work in the vocational area of choice. Certified teachers trained in intervention techniques oversee the CCAE program and have close working relationships with the students. CCAE is one innovation by the state of Georgia to help encourage students to graduate with a diploma by positively experiencing the connection between academics and career skills delivered through career technology education.

### **Early College and Dual Enrollment Programs**

Early College began in 2005 as a partnership funded by the Bill and Melinda Gates Foundation, Carnegie Corporation of New York, the Ford Foundation, and the W.K. Kellogg Foundation. The main goal was to promote rigorous instruction, relevant curriculum, and supportive relationships for student groups traditionally underrepresented in postsecondary education (American Institutes for Research, 2007). Additionally, Early Colleges “provide a seamless secondary-postsecondary educational continuum, use innovative curricula and pedagogy, and create a small nurturing environment” (Association for Career and Technical Education, “Secondary-Postsecondary Transitions”, p. 6). Early Colleges can form as a school within a school by altering student schedules, hosting a separate school facility created by segregating select students

into one or two wings of the school building for Early College courses, or entirely located on the college campus. In some cases, students have outside issues that prevent them from attending school in what has been considered ‘normal fashion.’ For those students with:

Personal or family responsibilities, . . . [they] may be most likely to complete high school in a flexible late-afternoon, evening, and weekend program structured more like a college than like a high school and designed to allow for credit acceleration. (Steinberg & Almeida, 2008, p. 11)

Students in the program are those that are typically at risk for not progressing to a higher form of education and possibly not finishing high school. By giving students a taste of college life with real world career skills and a rigorous challenge, the Early College program hopes to increase students’ desires to finish high school and college.

Steinberg and Almeida found that North Carolina and Pennsylvania provided legislation to allow community colleges and local school boards to create programs that mirror Early College. Those programs permit students at risk for dropping out of high school or those that have already left school to achieve an education through a joint college and high school program - earning a high school diploma and college credits (pp. 11-12). It is intended that Early College students graduate from high school with enough college credits to achieve a certificate for a specific job or occupation or to apply those credits toward a four-year degree program. In this researcher’s state of Georgia, Early College is an initiative that has been broached by a few school systems, including that of the researcher. Collaborative work with the local technical college has provided another means of support to students whose outlook on high school seems dismal for any number

of reasons. The program “allows students more flexibility to work or juggle other responsibilities while staying in school” (Morrison, 2009, p. B1). Support structures for Early College students help show that there is a goal to finishing school.

Dual Enrollment is similar to Early College, but is open to all students meeting the criteria of the program. Basic standards feature “a comprehensive, aligned sequence of coursework . . . culminating in the junior and/or senior year with college-level courses for which students simultaneously earn high school and college credit” (“Dual Enrollment,” 2010, p. 14). Once students fulfill requirements early in their high school career, they have formed a foundation on which to apply to a college, university, or technical college for admission while still in high school. After students are admitted to the postsecondary institution, the high school and higher education unit work together to provide dual credit for the students to earn high school credit while taking courses for college credit. M. Karp and Hughes (2008) found that for the CTE student, participation in dual enrollment courses provided “better educational outcomes than for . . . [students] who did not participate” (p. 14).

The course delivery may be on the college campus, taught on the high school campus by the college faculty, or taken through distance learning such as over the Internet in ‘online’ classes. Once perceived as only appropriate for ‘college-prep track’ students, dual enrollment is now open to many students. M. Karp and Hughes explain that dual enrollment programs:

Lead to a range of positive outcomes, including . . . helping low-achieving students meet high academic standards; providing more academic opportunities and electives in cash-strapped, small or rural schools; preventing high school

dropout and increasing student aspirations; . . . and reducing the cost of college to students. (p. 14)

In Georgia, high school students participating in dual enrollment in technical colleges have increased dramatically from 1999-2004 and represent “an important segment in the technical college system” (Lynch & Hill, 2008, p. 28). Schools often turn to dual enrollment programs to offer high interest courses such as auto body mechanics, cosmetology, or public safety to students on the college campus while the public school system finds funding for such programs difficult to produce. The lab space and equipment at the technical college is often far better than the high school can secure and maintain for student instruction. Students from high schools unable to offer a widely varied CTE program have a chance to learn a career subject in state-of-the-art facilities while earning both high school and college credit. Research from Lynch and Hill (2008) found that in the state of Georgia, dual enrollment programs at technical colleges:

Prepare students to transition into postsecondary education and prepare them for employment after high school; increases access to college for those who earned a high school CTE diploma, those from low-income groups, and for work-oriented students; expanded course offerings for students; enabled students to obtain “good” jobs and higher wages; encouraged many students not to drop out of high school. (p. 31)

Dual enrollment and Early College offer many benefits to students and high schools; it is a win-win situation for both.

## **Conclusion**

There is added value that career technology can give to a student's education. Courses that have relevance cause students to rise to the challenge of succeeding at what interests them in life. Academic preparation in any form assists an individual to make decisions about what he or she wants to achieve as an occupation. Career technology education supports instruction in occupational areas; the programs offered within these areas have dire importance in keeping students in school through graduation.

## **CHAPTER THREE: METHODOLOGY**

Chapter Three explains the methods used to execute the study. It includes a description of the design of the study, the participants, the instrumentation and data collection, the procedures used to carry out the design, and the analysis of the collected data used to answer the research questions.

### **Statement of the Problem**

Noticing that completion of a high school education is a large problem not only in my school district, but also in my state and nation, I sought to find causes for such a trend and to provide solutions that may assist school districts with strategies to encourage high school completion. To examine possible reasons for the rise in dropout rates, I studied the impact of one aspect of high school content programs and the relationship that program may have had on a student's decision to stay in school. This causal comparative study investigated the possible influence of various career technology and agriculture education (CTAE) programs on student success in graduating from high school. Career Technology and Agriculture Education program elements considered were participation in career technology and agriculture education (CTAE) courses, career technology student organizations, enrollment in work-based learning situations, CTAE intervention and tutoring programs, and students participating in the Early College or dual enrollment initiative.

### **Participants and Sample**

The participants used in the study were all students who entered grade 9 in the fall of 2006 in the same northwest Georgia school district. From the student information

database (Infinite Campus<sup>®</sup>), a subject base of 730 total students who entered grade 9 in the fall of 2006 were pulled for comparative study. Of that group of students, those who graduated from high school in the spring of 2010 or who were classified as dropping out from high school prior to graduation were included in the study; the condition for inclusion in the study was complete student data records consisting of all course history elements required for the study.

This was a nonprobability convenience sample, selected due to my location and employment within the school district, access to student data records, and size of the student population records available for data inclusion. Although the sample was based upon convenience, the graduation rate was an identified problem for improvement within the school district. The graduation rate in the school district in 2005 was 68.6% (Governor's Office of Student Achievement, 2005); in 2008, the graduation rate only increased to 72.1% (Governor's Office of Student Achievement, 2008). As illustrated in an extensive review of the literature, researchers have well identified the economic impact that dropouts have on society (Castellano, Stringfield, & Stone, 2003; Kennelly & Monrad, 2007; Bridgeland, DiIulio, & Morison, 2006). To meet the 2014 graduation rate requirement of 100% under the federal No Child Left Behind legislation (2001), identification of ways to improve graduation rates in the school system was clearly needed. The sample that was derived for this study holds value for study based upon the programs of focus in career technology education and the parameters set on research of course history for each student in the study.

From the students that entered grade 9 in the fall of 2006, those who transferred to other educational institutions outside the school district were excluded from the study.

All participants were marked with various identifiers to indicate diploma type and other information content pertaining to the time they were in school. Participants considered were not excluded based on population identifiers such as ethnicity, gender, special education, gifted education programs, English Language Learners, or economically disadvantaged.

Students from the 12<sup>th</sup> grade classes from the districts' three high schools in the 2010 fiscal school year were also asked to be active participants during the school day in a written survey. These current seniors were generally of the ages 17 or 18; approximately 92% came from Caucasian backgrounds while approximately 8% of the students were from ethnic groups of other origins. No 12<sup>th</sup> grade student was denied active participation in the study based upon ethnicity, gender, socio-economic status or other population group identifiers.

### **Research Setting**

This research study was conducted in one northwest Georgia public school district. The district is comprised of two primary schools, eight elementary schools, three middle schools, three high schools, and one high school alternative setting. During the 2006-2007 school year, the school district reported and verified their enrollment records with Georgia's Department of Education and Governor's Office of Student Achievement. Those records revealed an enrollment of 10,448 students consisting of 93% Caucasian, 2% African American, 2% Hispanic, 1% Asian, and 2% Multi-racial (Governor's Office of Student Achievement, 2007). Of that reported student population, 14% were eligible for special education services, 41% were eligible for the free and reduced meal program,

1% were served in the English Language Learners (ELL) program, and 13.4% were served in the gifted learning program (Governor's Office of Student Achievement, 2007).

According to information gathered from the U.S. Census Bureau (2006), the school district is located within a suburban county with a total population of approximately 62,016 residents. The county is in close proximity to a large metropolitan area in Tennessee. In 2010, the Georgia Department of Labor reported a labor force in the county of 34,362; of those individuals, 8% were reported as unemployed. Approximately 73% of the county's residents are employed outside the county (Georgia Department of Labor, 2010). The median household income reported for the county in 2009 was \$43,814, compared to a state average median household income of \$47,469. The percentage of residents in 2009 with income below the poverty level was 13.1%, compared to a state average of 16.6% (U.S. Census Bureau, 2009).

Much of the school system data gathered for study was provided through records gathered in the student information database, Infinite Campus<sup>®</sup>. The information from the student survey was gathered by administering the survey during the normal school day in a variety of settings that only included students in grade 12, such as a senior homeroom, 12<sup>th</sup> grade English class, or a senior assembly. Each of those settings was monitored by a teacher faculty member to ensure the survey data would be collected as directed.

### **Instrument**

While considering the topic of study, I became aware of a need to collect data concerning types of participation in high school career technology programs. This participation can be shown through the number of career technology courses taken,

number of student memberships in CTAE clubs, number of those enrolled in internship or work-based learning programs, and student enrollments in dual college programs. This information could accurately be gathered from the transcripts and records of graduated students and readily available to me through Infinite Campus<sup>®</sup> records. Course history records that could be obtained from the student records would yield accurate data on any student group pulled for study within the school district. The particular group information gathered electronically was for students who had entered grade 9 in the fall of 2006 and included:

- student name;
- grade 9 entry date;
- withdrawal or graduation date;
- diploma type;
- total course credits earned by time of withdrawal or graduation;
- total CTAE course history;
- dual enrollment history; and
- score level reports from the 8<sup>th</sup> grade state Criterion Referenced Competency Test in reading and mathematics.

The information gathered from Infinite Campus<sup>®</sup> is verified and certified for accuracy through yearly reporting to the Georgia Department of Education.

Desiring to investigate the level of involvement from current high school seniors in the same type of career technology programs, I was conscious of a need to collect data from the 12<sup>th</sup> grade students in the school district. To my knowledge, no tool existed that

would provide the exact information desired from the students; I chose to design a closed-ended survey that would provide the needed information.

The survey was designed to be administered in “paper and pencil” format, with students marking answer choices directly on the survey instrument. Because the survey was designed to be used for gathering general student perception data concerning CTAE programs, no identifying names of students were asked to be recorded. Initial questioning in the survey instrument design concerned student participation in various career technical program areas explored in this study: Career Technology Student Organizations, Coordinated Career and Academic Education or intervention programs, Early College, dual enrollment, or work-based learning. As designed, these questions served the purpose of gathering information from the students currently in school in the spring of 2010. The questions developed were chosen to elicit responses from students regarding experiences and activities in career technology programs in high school. Student answers were categorized by question topic to reveal level of participation in career technology programs. The survey data assisted in classifying responses according to diploma type, course interest of students while in high school, and whether or not career technology education helped in making occupational choices after high school. Additionally, the survey data was examined for perception information from students nearing the completion of their high school career.

### **Face Validity Procedure**

When creating the survey instrument, I first created a multiple choice questionnaire having a broad scope of questions for participants to answer (see Appendix A). This survey centered on eliciting responses from students regarding experiences and

activities in career technology programs in high school. As suggested by Ary, Jacobs, Razavieh, and Sorensen (2006), the survey needed to be verified that it was “valid for its intended purpose” and

. . . having some competent colleagues who are familiar with the purpose of the survey examine the items to judge whether they are appropriate for measuring what they are supposed to measure and whether they are a representative sample of the behavior domain under investigation. (p. 440)

To ensure face validity, I asked two curriculum directors and a curriculum specialist from northwest Georgia public school systems to review the survey questions and make suggestions for changes and clarity.

After consultation with additional outside reviewers, I revised the survey a second time to strengthen the face validity. Outside reviewers included a Tennessee Temple University faculty member, a local public school assistant principal, and a career technology school supervisor from a neighboring school system. The reviewers recommended the following changes: clarifying the directions to specify choosing one answer per question, instructing participants to answer all questions asked, and the addition of a statement at the end of the survey signifying that the survey was completed and for participants to review their responses (see Appendix B).

A third survey revision (see Appendix C) was developed after consultation with a professor of statistics from the University of Tennessee at Chattanooga. This revision included questions for internal consistency and specific instructions for completing the survey. Survey changes involved removing a question concerning the integration of English, math, or other core academic content within the career technology lessons. A

question asking students to indicate the number of career technology courses they had taken while in high school was added to further determine level of interest in those courses. Additionally, a section was included for student participants to add comments at the close of the survey should they wish to do so.

After meeting with an additional statistician, a final revision of the survey instrument was created (see Appendix D). The changes included removing a question concerning tutoring help received during school and replacing it with one allowing students to self-report grade point averages. The question concerning the type of activity that interested students most while in school was replaced with one asking students if they would be in school if not for Career Technical classes. Additionally, a final answer choice of “none of the above” was added to a question concerning involvement in career technology program areas.

### **Questionnaire Reliability Procedure**

To ensure internal consistency, Ary, Jacobs, Razavieh, and Sorensen (2006) suggest that researchers build some redundancy into the instrument – items on the same topic that are rephrased or repeated in the questionnaire (p. 440). To assist with reliability of questioning, I constructed the survey to include questions asking for the same information, yet written in a different structure or wording. With each revision of the survey, this procedure was followed. The reliability of the questions was tested during a pilot survey session to a select group of twelfth grade students in a neighboring school district. Once the pilot session was complete, I examined the companion questions to be certain that each pair was answered with the same responses. Ary et al. (2006) states that “the more consistent the responses, the higher the reliability” (p. 440).

The review procedure revealed that partnered questions were answered as was the companion; therefore, the pair of questions was reduced to a single question version for the final edition of the survey.

### **Pilot Survey Administration**

With cooperation from a neighboring school district, the pilot survey was administered to a classroom group of students in grade 12. This survey contained 17 questions, with several questions being pairs of duplicates to utilize internal consistency. The classroom teacher followed the instructions provided for the administration and collected 20 completed surveys from students. The pilot surveys were numbered 1 to 20 once they were returned to me. To analyze the survey results, I arranged a spreadsheet with corresponding numbering to facilitate recording the survey responses (see Appendix E). Special notation indicated the duplicate pairs of questions; those results were examined for consistency in answers. The results indicated that three of the four sets of paired questions had a 75% or better consistency in the results. The remaining set had a 60% consistency.

Review of the paired questions allowed me to select the questions to eliminate for publishing the final survey. I had initial concern over the set of duplicate questions with the 60% consistency (numbers 9 and 16); this set of questions dealt with the number of CTAE courses a student had taken while in high school. One of the questions in that pair stated that Computer Applications was a class required for graduation while the paired question did not indicate such. While Computer Applications is a local requirement in my school system, it was not a local requirement in the pilot system. Therefore, consideration was given that those students in the pilot study may have been misled or

confused by the answer selections in that particular pair of questions. Because the survey for the study was to be used in my school district, question number 9 mentioning Computer Applications as one of the courses required for graduation was chosen to remain in the survey while the companion question (number 16) was discarded. The remaining duplicate questions were culled to narrow the total number of survey questions to 13.

### **Research Design**

This quantitative study used causal comparative research. The purpose of causal comparative research is to examine the possible cause-and-effect relationships between variables. This research focused on the effect (high school graduation status) first and then attempted to determine the possible causes by examining various CTAE program area variables (student organizations, intervention programs, dual enrollment and Early College, work-based learning, career technology courses and career pathways). Causal comparative research design is appropriate for situations where manipulation of the variables is not possible or would be unethical. The changes in the variables have already taken place. The student history data used in the study was gathered and studied after the students had completed four years of high school and student record history verification had been completed with the state of Georgia. Gathering data in this manner ensured there was no manipulation of the data.

Inferential and descriptive statistics were used to evaluate the research hypotheses of the study. Inferential statistics is a statistical procedure used for reaching conclusions about a representative population, while descriptive statistics describes conclusions made

about a particular given group without inferring that conclusion about a larger group (Spiegel, 2000).

The results of this study are useful as they investigated programs that could be effective in motivating students to graduate from high school. Since school districts across the nation must raise graduation rates to 100% under No Child Left Behind (2001) legislation, examination of programs that could assist in this effort is very timely. Therefore, causal comparative research design was beneficial in this study because it allowed examination of any possible relationships between graduation status of students and the programs offered through career technology education.

### **Data Collection and Procedures**

Application was made to the school district for conducting the study. Permission was granted in February, 2010, to gather data from the student information system, Infinite Campus<sup>®</sup>, and to administer a student survey to all students in grade 12 in the spring of 2010. Application was made to the Institutional Review Board (IRB) of Liberty University concerning the use of human subjects in the study; approval was granted on April 6, 2010. Data collection began after IRB approval. The CTAE programs to be studied for effect on graduation were the following: a) intervention programs; b) career technology student organizations (CTSOs); c) Early College and dual enrollment programs; d) work-based learning programs; e) CTAE courses; and f) CTAE concentrations or pathways.

CTAE intervention programs are specifically tailored to meet the needs of at risk students through academic tutoring, mentoring, and school to work transitions. The course also assists students with strategies to deal with personal factors that may hinder

their desire to stay in school. CTSOs are co-curricular clubs that provide opportunities for students to demonstrate classroom learning through leadership development and career exploration in a school club format. Students also have opportunities to attend conferences and compete in career areas of interest. Early College and dual enrollment programs offer students a chance to attend a postsecondary institution while still in high school. Students may earn both high school and college credit for courses taken while in the program. Work-based learning programs allow time for student on-the-job training during the school day in a career related field. Students are able to apply background knowledge learned in the CTAE classroom in the world of work. CTAE pathways are comprised of specific CTAE courses that concentrate study in a career area such as graphic arts, nursing, or engineering. Students take an introductory, intermediate and advanced course in a career area to complete a specific pathway.

The groups of data gathered for examination concerned the type of diploma earned by students and the amount of involvement each of those students had in career technology programs while in high school. The level of involvement was based upon student record details of the students who entered grade 9 in 2006 and who either graduated or dropped out of school prior to graduation. The diploma type was reported on the permanent records of the graduated students as defined by the state of Georgia: college preparatory or career technology focus. Involvement in career technology was examined according to the number of courses taken during high school in the field of career technology and the amount of participation in student clubs, work-based learning programs or internships, and other career technology related activities. The data was gathered through course transcript history, program rosters, and state reports for those

students after graduation in 2010. There was no manipulation of the variables; all data used had occurred prior to the study and were not dependent on the use of a control or experimental group.

### **Student Information System Data**

In October, 2010, the school system's Instructional Technology Department provided the student information I requested from the student data base (Infinite Campus®). This data included information from all students who entered the 9<sup>th</sup> grade in the fall of 2006; these were the students who typically would be considered for graduation in the spring of 2010. The state student record information recorded in the student database indicated not only student gender and final grade point average, but also the type of diploma pursued while in school. Diploma type or graduation program of study included these three codes: "C" (college preparatory diploma), "V" (career technical diploma), or "B" (dual seal diploma). These categories ensured a link to the educational history of each student graduate. Some graduates had the code of "A" for receiving a Certificate of Attendance rather than a diploma. The Certificate of Attendance is given to any student who completed all state course requirements, but had not passed all portions of the state graduation assessment.

Graduate records were examined for an additional factor of course history to determine number and type of career technology and work-based learning courses taken while in school. This information was compiled for each student based on the state-issued course numbering system in those areas. An Excel spreadsheet was constructed to display the information gathered from the student information system. Columns were created on the spreadsheet to record the data as needed.

Once the course numbers for various program areas were established for each student graduate, I recorded the actual quantity of CTAE courses taken and whether or not any career pathway programs were indicated by the pattern of courses taken. Career pathway programs were identified by specific courses taken in a particular career area; these courses are specifically outlined by the Georgia Department of Education Career Technology division through the Georgia Performance Standards. Other data recorded from the student information system included the following: course numbers for postsecondary courses a student may have taken and the date entered 9<sup>th</sup> grade. The 9<sup>th</sup> grade entry date provided determination of graduation within four years of starting high school while any postsecondary course numbers identified students who explored earning dual credit while in high school.

Data gathered from the student information system was indicated by an identification number and student names in order to link data with career technology student organization rosters and from the fiscal school years of 2007, 2008, 2009 and 2010. Using the rosters from these specific past four fiscal school years yielded names of the graduating class as a club member since beginning high school. The club rosters were provided by the student organization faculty sponsors and were recorded by student name only.

Once the link between student club memberships was established and marked on data collection spreadsheets, the student names were deleted from the master data sheet leaving student identification only by the random Excel spreadsheet number. From that point forward, no student names were used at any time while studying or publishing the information provided by Infinite Campus<sup>®</sup>. This procedure helped to ensure protection of

student identity during the analysis of data. Student identifiers such as special education, free and reduced lunch, or English Language Learner were not be recorded.

### **Student Survey Data**

A closed-ended survey I developed was examined by educational professionals to establish face validity. To ensure reliability of the survey questionnaire, a pilot survey contained questions embedded with two different response formats. The pilot survey was administered to a group of 12<sup>th</sup> grade students in a neighboring northwest Georgia school system with results examined to be certain that students understood the questions being asked. Once this reliability was established, the survey was shortened to contain only question content asked once and readied for administration.

Information letters were mailed to parents of all students listed as current twelfth grade students, requesting permission for students to participate in the student survey for the study (see Appendix F). Permission was granted by exception; if a parent allowed the student to participate in the survey, no action was necessary. If the parent did not want the student to participate in the survey, a form indicating such was to be returned to the school (see Appendix G). A total of six letters were undeliverable by postal service in addition to failed attempts to deliver to the student at school. A total of eleven forms were returned to the schools, declining student participation in the survey.

Students listed as 12<sup>th</sup> graders in the spring of 2010 in the school system were asked to complete the survey during the school day at a time they could feasibly do so. The survey was administered through classes or activities designed for senior students only or through time in an advisement or homeroom period. Administered in a paper and pencil format, a teacher facilitator at the school gave each senior student a copy of the

survey. Directions were explained and read to the students, ensuring that the information received at the end of the survey was as close to accurate as possible.

Student participants answered survey questions directly on the survey questionnaire and returned that questionnaire to the teacher facilitator. Although each survey was labeled with a unique identification number to use for recording data, no survey number was tied to student names, school name, or other identifying information. To maintain anonymity of students answering the survey, student names were not collected at any point during the survey process. Additionally, no survey was linked to specific school locations; except in the few cases where students wrote a comment containing information about his or her particular school, no individual school identity was possible.

### **Data Organization**

The data was reported in spreadsheet format by random identification numbers provided by the Excel computer program and the survey records. The results were sorted into two categories of students – those students who were currently in school and completed the administered survey, and those students in the student information system who entered high school during the fall of 2006 with the potential to graduate in the fiscal school year 2010 with a regular diploma after being exposed to career technology education programs. All of the information gathered from the student record system is reported annually to the state of Georgia by electronic methods during the summer months; once the data is entered into the state database, it is very difficult – or nearly impossible – to manipulate or make changes without extensive documentation. Therefore, the data used in this study provided an extremely accurate picture of student

history and outcomes. The data concerning the two groups of students was further sorted by diploma type and level of involvement in the career technology programs while in high school. I examined the resulting evidence to determine if there was a link concerning participation in career technology education programs and high school completion.

For the two groups, each variable under consideration was listed for the participants. The dependent variable examined for the Student Information group was the status of high school completion – either graduating with a diploma or leaving school without graduating. The independent variable to be examined was the level of participation in CTAE groups or programs. The use of contingency and descriptive tables allowed me to conduct the statistical procedures more efficiently.

### **Analysis of Data**

To decide if there was a relationship between high school completion and participation in career technology programs, I used Pearson's Chi square test of independence and *t* test for independent samples. The Chi square test of independence is used "to determine whether or not the two variables in the design are independent of one another" (Ary, 2006, p. 208). By comparing the categorical values of graduates and dropouts with the independent groups of CTAE programs, the Chi square test of independence allowed me to determine if there was a level of difference in the two study groups and the level of involvement in the CTAE programs while in high school. Yates' correction for continuity was used to analyze hypotheses using "2-by-2- tables" and small expected frequencies (Argyrous, 2005, p. 328). The *t* test for independent samples was used to evaluate one null hypothesis. McMillan (2010) states the *t* test for independent

samples “is used to determine whether the mean value of a variable on one group of subjects is different from the mean value on the same variable on a different group of subjects” (p. 478). Significance was determined at the .05 level due to the size of the groups.

When using Chi square, tests of assumptions must be met. Argyrous (2005) lists those assumptions of Chi square as: (1) Any cell in the bivariate table has an expected frequency of less than one; and (2) The expected frequency of cases in 20% or greater of the cells is less than 5 (p. 328). If one of these assumptions has been violated, Chi square cannot be used. Other probability tests must be conducted to interpret the results for 2-by-2 tables; Yates’ Correction for Continuity and Fisher’s Exact Test are alternatives that may be used.

When the *t* test for independence is used, it is important to meet three statistical assumptions: “(1) that the frequency distributions of scores for both populations of each group are normal, (2) that the variances in each population are equal, and (3) that the observation of scores in one group is independent of the other group” (McMillan, 2010, p. 478). Timothy Urdan (2010) states, “If there are violations of the assumptions for the *t* test for independence, a nonparametric alternative to the *t* test – the Mann-Whitney U test – should be considered” (p. 96). When the sample is large, the assumption of normality can be disregarded because of the Central Limit Theorem because “when sampling from a large population of any distribution shape, the sample means have a normal distribution whenever the sample size is 30 or more” (Stephens, 2006, p. 158). The assumption of variances can be tested with Levene’s Test for Equality of Variances. Each hypothesis was tested for violations of assumptions; other tests were utilized as needed to determine

any significance that may exist between the relationships being studied. A closer examination of each analysis of the hypotheses is found in Chapter Four.

Information from the Excel spreadsheets was imported into Statistical Product and Service Solutions software (SPSS) to run statistical tests. In order to describe the relationship of the variables of graduation results and participation in career technology programs within the population, Pearson's Chi square test of independence was conducted for observed interaction. Inferential and descriptive statistics were used to evaluate the research hypotheses.

### **Research Questions**

Examining the comparisons between high school graduation success and participation in career technology programs, this research focused on the following questions to guide the study. Research questions one through five were answered using 2010 official records from the school system's student data base, Infinite Campus<sup>®</sup>. Data from the student questionnaire administered within one month prior to graduation was used to answer research question six.

Research Question 1: Does high school student participation in the Career Technology programs offered during high school have an impact on graduation from high school?

To answer this research question, four null hypotheses were evaluated:

Null Hypothesis (Ho1<sub>1</sub>) for research question 1: There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students identified "at risk" entering grade nine who participated

in a CTAE intervention program and students identified “at risk” entering grade nine who did not participate in a CTAE intervention program.

To analyze this hypothesis, students who were considered at risk at the time of entry into grade nine were included in the analysis. The at risk component was determined from the Level One score category on the Reading and/or Mathematics portion of the Georgia Criterion-Referenced Competency Test (CRCT) administered to the students during the spring of the eighth grade school year. From this selected at risk group, the participants in the CTAE intervention programs were compared with those students who did not participate in the CTAE intervention programs to test if there was a difference in the graduation rates. A two-way contingency table was used to organize the data for examination of students identified as at risk. The dependent variable was the graduation status and the independent variable was participation in the CTAE intervention program. Pearson’s Chi square test for independence was used to test the hypotheses for the two-way contingency table.

Null Hypothesis ( $H_0$ ) for research question 1: There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students who participated in the Early College or dual enrollment programs and students who did not participate in the Early College or dual enrollment programs.

To analyze this hypothesis, all students who completed grade 10 were included in the data comparisons. In order to participate in the Early College or dual enrollment programs students must be at least 16 years old or have completed a minimum of six high school credits. Limiting the drop-out group to only those who dropped out after the 10<sup>th</sup>

grade assured that drop-out students would have had an opportunity to participate in the early college or dual enrollment program. The dependent variable was the graduation status and the independent variable was the participation in the Early College or dual enrollment programs. A two-way contingency table was used to organize and compare the data dealing with graduation and participation in the early college or dual enrollment programs. Pearson's Chi square test for independence was used to test the difference between the percentages between the two categories of graduation and program participation.

Null Hypothesis (Ho<sub>13</sub>) for research question 1: There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students who participated in a Career Technology student organization and students who did not participate in a Career Technology student organization.

The students included in analyzing the data for this hypothesis were all students who entered grade nine in the fall of 2006. The dependent variable was the graduation status and the independent variable was participation in a Career Technology student organization. A two-way contingency table was used to organize the data for this portion of the study. Pearson's Chi square test of independence was used to test the difference between the graduation rate and the participation in a Career Technology student organization.

Null Hypothesis (Ho<sub>14</sub>) for research question 1: There is no statistically significant difference in the number of CTAE courses taken by the end of the 10<sup>th</sup> grade by students who graduated and the number of CTAE

courses taken by the end of 10<sup>th</sup> grade by those students who did not graduate.

All students who completed grade ten were included in the analysis. A *t* test for independent samples was used to test the difference between the mean number of CTAE courses taken by those students who dropped out of high school and the mean number of CTAE courses taken by those students who graduated from high school. Courses examined were those courses completed by the end of grade ten.

Research Question 2: Is there a statistically significant difference in the type of high school diploma received among the students who graduated from high school, based upon the type of career technology program the students participated in while attending high school?

To answer this research question, the following two null hypotheses were tested:

Null Hypothesis (Ho<sub>21</sub>) for research question 2: There is no statistically significant difference in the type of high school diploma (Career Technology Education, Dual Seal or College Preparatory Education) students received based on the students' participation in a Career Technology student organization or the lack of participation in a Career Technology student organization.

All students who graduated were included in this analysis. The dependent variable was the type of diploma and the independent variable was the participation in a Career Technology student organization. A two-by-three contingency table was used to organize the data and Pearson's Chi square test of independence was used to test the hypothesis.

Null Hypothesis ( $H_0$ ) for research question 2: There is no statistically significant difference in the type of high school diploma (Career Technology Education, Dual Seal, or College Preparatory) students received based on the students' participation in a Career Technology work-based learning program.

All students who graduated were included in this analysis. The dependent variable was the type of diploma and the independent variable was participation in the Career Technology work-based learning program. A two-by-three contingency table was used to organize the data and Pearson's Chi square test of independence was used to test the hypothesis.

Research Question 3: Among high school dropout students who initially pursued a Career Technology Education or Dual Seal diploma prior to dropping out, what percentage completed a CTAE concentration among those who: (1) dropped out after completing the tenth grade; (2) dropped out during or after completing the eleventh grade; and (3) those who dropped out during the twelfth grade?

To answer this research question, only dropouts who completed the tenth grade were included in the analysis. Descriptive statistics (frequency counts and percentages) were used to describe the following groups of students: (1) students who dropped out of high school at the end of grade 10; (2) students who dropped out of high school during or at the end of grade 11; and (3) students who dropped out of high school during grade 12.

Research Question 4: What percentage of students who graduated with a College Prep diploma participated in the Career Technology Program?

To answer this research question, graduates with a College Prep diploma were included in the analysis. Descriptive statistics (frequency counts and percentages) were used to describe: (1) whether or not students took an intervention course; (2) whether or not students took more than the one CTAE course required for graduation (Computer Applications); (3) whether or not students participated in a CTAE student organization; and (4) whether or not they participated in the early college or Dual Enrollment programs.

Research Question 5: Among students who graduated from high school after entering in the fall of 2006, what percentage: (1) completed a CTAE concentration; (2) completed two or more classes above a CTAE concentration?

To answer this research question, all graduates were included in the analysis. Descriptive statistics (frequency counts and percentages) were used to describe: (1) the number of graduates who completed a CTAE concentration (three courses in the same career area) and (2) the number of graduates who completed two or more classes above a CTAE concentration.

Research Question 6: Among students who indicated they were going to receive a Career Technology Education diploma or a Dual Seal diploma on the survey instrument, what were their current or future plans related to their education and occupational goals after high school and their perceptions of the preparation they received in Career Technology program?

To answer this research question, descriptive statistics were used for the following categories: (1) Would you be in school were it not for the Career Technology program classes?; (2) Relation of their current attendance or future plans to attend a college or

technical school related to their high school career courses; (3) Relation of their current employment or future plans to work in an area related to their career technology courses; and (4) Their perception of whether or not their career technology classes prepared them for their education or occupation after high school.

### **Summary**

Chapter Three explained the methods that were used in this quantitative study of the relationship of CTAE programs and high school graduation rates. The relationship between the programs of career technology and agriculture education and graduation success from high school will be determined utilizing inferential and descriptive statistical procedures. Chapter Four contains the results and analysis of these comparisons using tables and narrative text.

## **CHAPTER FOUR: RESULTS**

The purpose of this study was to examine the relationship between various programs in career technology and agriculture education and determine if the programs offered had an impact on student participation in high school, leading to students remaining in high school through graduation. Chapter Four includes the findings for the study as related to the six research questions that guided the study:

Research Question 1: Does high school student participation in the Career Technology programs offered during high school have an impact on graduation from high school?

Research Question 2: Is there a statistically significant difference in the type of high school diploma received among the students who graduated from high school, based upon the type of career technology program the students participated in while attending high school?

Research Question 3: Among high school dropout students who initially pursued a Career Technology Education or Dual Seal diploma prior to dropping out, what percentage completed a CTAE concentration among those who: (1) dropped out after completing the tenth grade; (2) dropped out during or after completing the eleventh grade; and (3) those who dropped out during the twelfth grade?

Research Question 4: What percentage of students who graduated with a College Prep Diploma participated in the Career Technology Program?

Research Question 5: Among students who graduated from high school after entering in the fall of 2006, what percentage: (1) completed a CTAE concentration; and (2) completed two or more classes above a CTAE concentration?

Research Question 6: Among students who indicated they were going to receive a Career Technology Education diploma or a Dual Seal diploma on the survey instrument, what were their current or future plans related to their education and occupational goals after high school and their perceptions of the preparation they received in Career Technology program?

### **Receipt of and Coding of Data**

Reports from the Infinite Campus<sup>®</sup> student database in the 2010 fiscal school year revealed that 861 students entered grade nine in the fall of 2006. These records provided information for all students who either transferred out to another educational facility or setting, dropped out of high school, or who eventually graduated in the spring of 2010. Of the 861 students, 131 were removed for transferring to another educational facility, leaving 730 active records for examination and coding. Two data sets were provided: (1) all courses taken by each student in the areas of career technology education, dual enrollment, Early College, work-based learning and intervention, and (2) student information concerning gender, date entered grade nine, withdrawal information, diploma type pursued/awarded, credits earned at the time of leaving school, and the scores on the 8<sup>th</sup> grade Criterion-Referenced Competency Test (CRCT) in both reading and mathematics.

The set describing courses taken was listed by state identified course numbers, title of the course, school year during which the course was taken and whether or not the

student received credit for the course. This database was submitted to me by the school system's Information Technology department and contained 6152 lines of data to sort and code; this data set was labeled "Course Data." The information containing school entry/leave data, diploma type, credits and CRCT scores contained 936 lines of data to compile and code; this data set was labeled "Student Information" for ease of reference.

The Course Data was examined for each individual student listed. Courses were sorted into various categories:

1. The year in which a CTAE concentration was completed was coded as follows:

"0" – indicated that a concentration was not completed

"1" – completed concentration during grade 9

"2" – completed concentration during grade 10

"3" – completed concentration during grade 11

"4" – completed concentration during grade 12

2. The number of courses a student received credit for by the end of grade 10 was coded by using the actual number of courses counted in fiscal years of 2006 and 2007.

3. Based upon course numbers listed for each student, participation in the following programs was coded as follows: "0" for no participation or "1" for participation:

- a. Dual Enrollment participation

- b. Work-based learning opportunities

- c. Intervention programs/courses

- d. Completing a CTAE concentration

e. Completing two or more courses above a CTAE concentration

4. Career Technology Student Organization (CTSO) participation was determined by gathering all official organization rosters filed with the state CTSO affiliate during the fiscal years of 2007, 2008, 2009, and 2010 and checking for name matches in the student course data file. The information was coded as follows: “0” if student was not a member at any time or “1” if student was ever listed as a member.

The Student Information was examined to determine the actual school year and semester a student left school either as a graduate, classified as a dropout, or transferred out of the school system. All students transferring out of the system to other educational institutions were removed from the data set. All students remaining in the data set were coded as follows to indicate the period of time in which the student left the school system:

“1” – Dropped out during Grade 9

“2” – Dropped out at the end of Grade 9

“3” – Dropped out during Grade 10

“4” – Dropped out at the end of Grade 10

“5” – Dropped out during Grade 11

“6” – Dropped out at the end of Grade 11

“7” – Dropped out during Grade 12

“8” – Dropped out at the end of Grade 12

“9” – Student graduated with a diploma

All other data codes provided from Infinite Campus<sup>®</sup> were used as listed in the data set and defined for import into SPSS. Those codes included the End Status

(graduate or dropout), Diploma Type (College Preparatory, Dual Seal, Career Technology Preparatory, Certificate of Attendance, or Special Education Certificate), and score values on the CRCT in reading and mathematics (scores less than 300 for math and less than 800 for reading were coded as at risk in the student information).

Once both data sets were coded, sorted, and examined for proper removal of all transfer students, I verified the data lists four times, matching line by line. The two files were then merged to one. Student names were removed for protection of student identity; the files were prepared for import into SPSS for evaluation of the data given. The resulting data contained 730 lines of individual student data.

## **Findings**

### **Research Question 1**

As mentioned in Chapter One, Research Question 1 was answered by investigating four null hypotheses. Each of these was evaluated as follows:

Hypothesis 1 ( $H_{01}$ ): There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students identified “at risk” entering grade nine who participated in a CTAE intervention program and students identified “at risk” entering grade nine who did not participate in a CTAE intervention program.

A two-way cross tabulated table and Pearson’s Chi square test of independence were used to assess whether or not there was a difference in graduation rates between students who participated in a CTAE intervention program and students who did not. The effect size was determined to be .143. More than 20% of the cells of the cross tabulated table had an expected frequency of less than five, a violation of an assumption

of Chi square. Because there was a violation of an assumption of Chi square, Pearson's Chi square test of independence was not used to test the null hypothesis. However, Yates' Continuity for Correction was used. The value for the Yates' corrected version of Pearson's Chi square test of independence was  $\chi^2_{\text{Yates}} = (1, N = 85) = .916, p = .339$ . The difference is not significant using the Yates' Correction for Continuity. The null hypothesis holds true; there was not a significant difference between the graduation rates of those who participated in intervention programs and the graduation rates of those students who did not participate in intervention programs. There were a total of 85 students who met the criteria for at risk. As shown in Table 1, among those who participated in the intervention program, 50% graduated from high school, while 70.7% of those who did not participate in an intervention program graduated from high school.

Table 1:  
Graduation Status of Intervention Students

	Participation in Intervention Program					
	No		Yes		Total	
Graduation Status:	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Dropped Out	22	29.3	5	50.0	27	31.8
Graduated	53	70.7	5	50.0	58	68.2
Total	75	100.0	10	100.0	85	100.0

Hypothesis 2 (Ho1<sub>2</sub>): There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students who participated in the Early College or dual enrollment programs and students who did not participate in the Early College or dual enrollment programs.

This analysis included all students who completed grade 10 to allow students to have both the minimum age and number of high school credits needed for Early College

or dual enrollment eligibility. In the same manner, limiting the dropout group to only those who dropped out after the 10<sup>th</sup> grade assured that dropout students would have had an opportunity to participate in the Early College or dual enrollment program. There were a total of 693 students who completed at least the 10<sup>th</sup> grade.

A two-way cross tabulated table and Pearson’s Chi square test of independence were used to evaluate whether or not there was a difference in graduation rates between students who participated in Early College or dual enrollment programs and students who did not participate. The effect size was determined to be .081. The assumptions of Chi square were met. No more than 20% of the cells had an expected count of less than five and the minimum count was at least one. Therefore, the Chi square can be interpreted. The Chi square test was significant, Pearson  $\chi^2 (1, N = 693) = 4.553, p = .033$ . Therefore, the null hypothesis was rejected. There was a statistically significant difference in the graduation rate (graduated or did not graduate) between students who participated in the Early College or dual enrollment programs and the students who did not participate in the Early College or dual enrollment programs. As shown in Table 2, 91.6% of those who did not participate in dual enrollment programs graduated, while 98.6% of those who did participate in dual enrollment graduated.

Table 2:  
Graduation Status of Dual Enrollment Participants

	Participation in Early College/Dual Enrollment			
	No		Yes	
Graduation Status:	<i>n</i>	%	<i>n</i>	%
Dropped out after 10 <sup>th</sup> grade	52	8.4	1	1.4
Graduated	568	91.6	72	98.6
Total	620	100.0	73	100.0

Hypothesis 3 (Ho1<sub>3</sub>): There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students who participated in a Career Technology student organization and students who did not participate in a Career Technology student organization.

A two-way cross tabulated table and Pearson’s Chi square test of independence were used to evaluate whether or not there was a difference in graduation rates between students who participated in a career technology student organization and those students who did not participate. All students who entered grade 9 in the fall of 2006 were included in the analysis. The effect size was determined to be .158. No violations of the assumptions of Chi square were noted. None of the table cells had an expected count of less than 5; the minimum expected count was 39.8 which is not a violation of Pearson’s Chi Square. The Chi square test was significant, Pearson  $\chi^2 (1, N = 730) = 18.200, p < .001$ . Therefore, the null hypothesis was rejected. Table 3 shows of the students who were members of a career technology student organization, 93.5% graduated from high school while only 83% of students who were not members of a career technology student organization graduated from high school.

Table 3:  
Graduation Status of CTSO Participants

	Participation in Career Technology Student Organization			
	No		Yes	
Graduation Status:	<i>n</i>	%	<i>n</i>	%
Dropped out	69	17	21	6.5
Graduated	338	83.0	302	93.5
Total	407	100.0	323	100.0

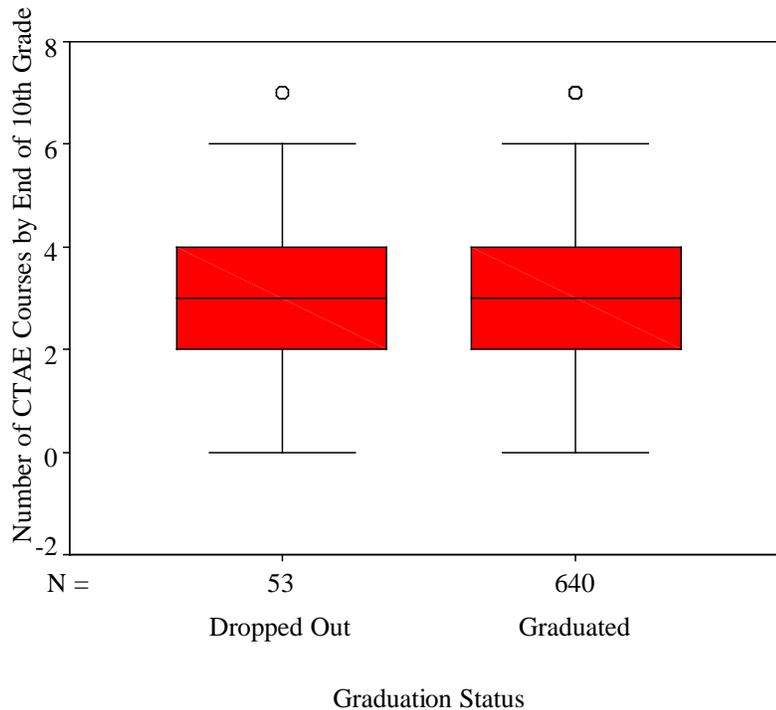
Hypothesis 4 (Ho1<sub>4</sub>): There is no statistically significant difference in the number of CTAE courses taken by the end of the 10<sup>th</sup> grade by students who graduated and the number of CTAE courses taken by the end of 10<sup>th</sup> grade by those students who did not graduate.

All students who completed grade ten were included in this analysis; the courses examined were those that were completed by the end of grade 10. A *t* test for independent samples was conducted to determine if there was a difference in the mean number of CTAE courses completed by the end of the tenth grade between students who dropped out of high school and those who graduated. To evaluate the *t* test assumption of normality, the one-sample Kolmogorov-Smirnov test was used to test the distribution of the number of CTAE courses against a normal distribution. The test was significant with Kolmogorov-Smirnov  $Z = 3.810$ ,  $p < .001$ . However, due to the large sample size ( $N = 693$ ), the Central Limit Theorem removed the constraint of the assumption of normality. A second assumption of the *t* test, equal variances, was tested by Levene's Test for Equality of Variances. Levene's test was not significant,  $F(1, 691) = .036$ ,  $p = .850$ . Therefore, the *t* test that assumed equal variances was used.

The *t* test was not significant,  $t(691) = -.316$ ,  $p = .752$ . Therefore, the null hypothesis was not rejected. The effect size, as measured by  $\eta^2$ , was quite small ( $< .001$ ). Less than one-tenth of a percent of the variance in the number of CTAE courses taken was shared with the grouping variable (dropped out versus graduated). The mean number of CTAE courses taken by the end of the tenth grade by students who eventually dropped out of high school ( $M = 3.04$ ,  $SD = 1.60$ ),  $n = 53$ , was only slightly lower than the mean number of CTAE courses taken by the end of graduates' tenth grade year ( $M = 3.11$ ,  $SD$

= 1.51),  $n = 640$ ; however, there was not a significant difference. Figure 1 shows the distribution of the number of CTAE courses taken by the end of the tenth grade by graduation status (dropped out versus graduated).

Figure 1:  
CTAE Course Distribution



Note: o = an observation between 1.5 times to 3.0 times the interquartile range

## Research Question 2

As mentioned in Chapter One, Research Question 2 was answered by investigating two hypotheses. Each of these was evaluated as follows:

Hypothesis 1 ( $H_{02_1}$ ): There is no statistically significant difference in the type of high school diploma (Career Technology Education, Dual Seal or College Preparatory Education) students received based on the students' participation in a Career Technology student organization or the lack of participation in a Career Technology student organization.

This analysis included all students who graduated with a Career Technology Education, Dual Seal or College Preparatory diploma; it excluded 18 students who “technically graduated” by earning a certificate for attendance or special education. Neither certificate is considered as one of the three major types of diplomas.

A 2-by-3 cross tabulated table and Pearson’s Chi square test of independence were used to analyze whether or not there was a difference in the type of diploma received by students based on the participation in a career technology student organization. The effect size was determined to be .158. The Chi square test was significant, Pearson  $\chi^2 (2, N = 622) = 15.523, p < .001$ , therefore, the null hypothesis was rejected. There were no violations of the assumptions of Chi Square. Correction for continuity was not needed due to the size of the contingency table. As shown in Table 4, among those students who participated in a career technology student organization, 58.7% received a Dual Seal diploma compared to 45.3% of those who did not participate in a career technology student organization received a Dual Seal diploma. In addition, while 13.3% of those who participated in a career technology student organization received a College Preparatory diploma, 24.3% of those who did not participate in a career technology student organization received a College Preparatory diploma.

Table 4:  
CTSO Participants and Diploma Type

	Student Participation in Career Technology Student Organization			
	No		Yes	
	<i>n</i>	%	<i>n</i>	%
Career Technology Diploma	100	30.4	82	28.0
Dual Seal Diploma	149	45.3	172	58.7
College Preparatory Diploma	80	24.3	39	13.3
Total	329	100.0	293	100.0

Hypothesis 2 (Ho<sub>2</sub>): There is no statistically significant difference in the type of high school diploma (Career Technology Education, Dual Seal, or College Preparatory) students received based on the students' participation in a career technology work-based learning program.

This analysis included all students who graduated with a Career Technology Education, Dual Seal or College Preparatory diploma; it excluded 18 students who technically graduated by earning a certificate for attendance or special education. Neither certificate is considered as one of the three major types of diplomas.

A 2-by-3 cross tabulated table and Pearson's Chi square test of independence were used to analyze whether or not there was a difference in the type of diploma received by students based on participation in a career technology work-based learning program. The effect size was determined to be .241. The Chi square test was significant, Pearson  $\chi^2 (2, N = 622) = 36.227, p < .001$ , therefore, the null hypothesis was rejected. There were no violations of the assumptions of Chi square. Correction for continuity was not needed due to the size of the contingency table. Table 5 shows that among those

students who participated in a career technology work-based learning program, 62.7% received a Dual Seal diploma compared to 44.7% of those who did not participate in a career technology work-based learning program received a Dual Seal diploma. In addition, while 6.8% of those who participated in a career technology work-based learning program received a College Preparatory diploma, 24.7% of those who did not participate in a career technology work-based learning program received a College Preparatory diploma.

Table 5:  
Work-Based Learning Program Comparison of Diploma Recipients

	Participation in Work-Based Learning Program			
	No		Yes	
	<i>n</i>	%	<i>n</i>	%
Career Technology Diploma	132	30.7	50	26.0
Dual Seal Diploma	192	44.7	129	67.2
College Preparatory Diploma	106	24.6	13	6.8
Total	430	100.0	192	100.0

### Research Question 3

Research Question 3 was answered by including only dropouts who completed the 10<sup>th</sup> grade in the analysis. Descriptive statistics (frequency counts and percentages) are used to describe the results. Only 20% of the 10<sup>th</sup> graders had completed a concentration in a career technology area prior to dropping out of school. Out of 53 dropouts included in the analysis, 29 left school without graduating during or at the end of the 11<sup>th</sup> grade. Of those 29, only 34.5% completed a CTAE concentration prior to dropping out of school. Of the 19 students who dropped out of school during grade 12,

only 36.8% completed a career education concentration before leaving school without a diploma. The results of this data are illustrated in Table 6.

Table 6:  
Percentage of Dropouts Completing CTAE Concentrations

Grade Dropped Out	Total Number of Dropouts	Total Completing CTAE Concentration	Percentage Completing CTAE Concentration
End of Grade 10	5	1	20.0%
During or End of Grade 11	29	10	34.5%
During Grade 12	19	7	36.8%

#### **Research Question 4**

Research Question 4 was answered by including all graduates with a College Preparatory diploma in the analysis. Descriptive statistics (frequency counts and percentages) are used to describe the results. Out of 730 total graduates, the 119 students who earned a College Prep diploma were included in the analysis. From this select group of students, only 2.5% participated in a career technology intervention program. Enrolling in and taking at least one course in career technology other than the computer applications required for graduation was reported at 82.4% of the college preparatory recipients. Only 32.8% of the college prep diploma students participated in a CTAE student organization. Of the College Prep diploma students, 92.4% did not participate in a dual enrollment program. Table 7 depicts the results of the data gathered:

Table 7:  
College Prep Participation in CTAE Programs

CTAE Program	Participation in CTAE Programs					
	No		Yes		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Intervention	116	97.5	3	2.5	119	100.0
CTAE course other than Computer Apps	21	17.6	98	82.4	119	100.0
CTAE Student Organizations	80	67.2	39	32.8	119	100.0
Dual Enrollment	110	92.4	9	7.6	119	100.0

### Research Question 5

Research Question 5 was answered by including all 640 graduates to examine the percentage of graduates who completed a CTAE concentration and those who completed two or more classes above a CTAE concentration. Descriptive statistics (frequency counts and percentages) are used to describe the results in the analysis. As shown in Table 8, of the 640 graduates, 520 (81.3%) completed a CTAE concentration.

Table 8:  
Completion of CTAE Concentrations

	Graduates	
	<i>n</i>	%
Did Not Complete CTAE Concentration	120	18.7
Completed CTAE Concentration	520	81.3
Total	640	100.0

Table 9 shows that 496 of the 640 graduates (77.5%) completed two or more CTAE classes above a career concentration.

Table 9:  
More Courses Than Concentration Required

	Graduates	
	<i>n</i>	%
No Additional Course Above a Concentration	144	22.5
Completed 2 or More Courses Above Concentration	496	77.5
Total	640	100.0

### Research Question 6

Research Question 6 utilized descriptive statistics to report results from questions on the student survey instrument: (1) Would you be in school were it not for the Career Technology program classes?; (2) Relation of their current attendance or future plans to attend a college or technical school related to their high school career courses; (3) Relation of their current employment or future plans to work in an area related to their career technology courses; and (4) Their perception of whether or not their career technology classes prepared them for their education or occupation after high school. The students included in this analysis were the 206 who answered that they were pursuing a Career Technology or Dual Seal diploma on the student survey.

When asked if they would be in school if not for the Career Technology classes, 27 students (13.1%) reported that they would not be in school if career classes were not part of their program of studies. Describing their future educational plans, 146 students (70.8%) reported they were already studying or planning to study the same career technical area they studied in high school at some type of postsecondary institution once they graduated as opposed to 60 (29.1%) stating that they had no plans to continue more study in their current high school career program. Describing their future employment

plans, 139 students (67.4%) stated that they already had or were interested in an occupation similar to a career technology area they were studying in high school. When asked if the study of career technology areas were preparing them for life after high school, only 47 students (22.8%) stated that such study had no influence on their plans in post-high school study or career. Table 10 summarized the data results from Research Question 6.

Table 10:  
Student Survey Selected Responses

	Graduates	
	<i>n</i>	%
<b>Would Be In School If Not For CTAE Classes:</b>		
Yes	179	86.9
No	27	13.1
Total	206	100.0
<b>Best Description of Educational Plans:</b>		
Already Attending College to Study CTAE Area	5	2.4
Planning to Attend College to Study CTAE Area	141	68.5
Plans Do Not Include More Study in CTAE Area	60	29.1
Total	206	100.0
<b>Best Description of Occupational Plans:</b>		
Currently Employed in CTAE Area	30	14.7
Planning on Employment Similar to CTAE Area	109	53.4
No Interest in Employment in CTAE Area	65	31.9
Total	204	100.0
<b>Preparation for Plans After High School:</b>		
CTAE Courses Prepared Student for Study After HS	108	54.8
CTAE Courses Prepared Student for Job After HS	42	21.3
CTAE Courses Have Not Influenced Plans for After HS	47	23.9
Total	197	100.0

Note: Where response totals do not equal the 206 total surveys collected, the survey question was not answered by the student.

## Summary

Student participation in Career Technology Student Organizations was determined to have a positive relationship on graduation from high school (93.5%) as well as a relationship on the type of diploma earned by students (58.7% earned a Dual Seal diploma). Student participation in work-based learning programs was also positively related to the type of diploma earned (67.2% earned a Dual Seal diploma). Another significant factor related to graduation was the completion of a CTAE concentration or pathway; an overwhelmingly high number of students dropping out of high school were shown as not completing a CTAE concentration – regardless of the grade level at the time of leaving high school.

The analysis results from the Early College and Dual Enrollment participation showed promising results for relationship to graduation success, as did the participation in the Career Technology Student Organizations. The participation in career technology programs such as student organizations and work-based learning programs aligned positively with graduation from high school and the awarding of a Dual Seal diploma.

The analysis of student participation in intervention programs did not show a significant difference or an impact on graduation status of students. Likewise, comparing the number of CTAE courses taken by the end of the tenth grade by those students who dropped out and those students who graduated was not a significant finding. The number of courses taken by the end of the 10<sup>th</sup> grade in career technology education areas prior to students dropping out was very closely comparable to the same number of courses a graduate would have taken at the same point prior to entering grade 11.

The completion of a career technology concentration is an important step in earning a high school diploma and laying a foundation for good skills in the work world. The analysis of the completion of a career technology concentration among students who dropped out after grade 10 showed a small percentage overall of students who dropped out actually completing the concentration of courses needed. Examination of the College Preparatory diploma students showed very little participation in CTAE programs other than taking more courses in career technology areas than was required for graduation. Among all graduates, regardless of diploma type, a large percentage of students not only completed a CTAE concentration, but also a large percentage of students completed two or more courses above what was needed for a concentration.

The results of the student survey data revealed that the majority of those students participating in the survey placed educational value on the career technology education gained in high school. Over 70% of the students indicated that they were taking courses that would have an impact on their plans for employment or postsecondary training. More than 67% specified that they already worked in a position or were planning to pursue an occupation that aligned with their career technology training area in high school. Overall, the results of the data analysis of the research questions indicate career technology programs have value and merit in a high school education. Chapter Five will provide more discussion, conclusions, and implications derived from the data analysis.

## **CHAPTER FIVE: DISCUSSION**

Chapter Five summarizes the study, presents an overview of the problem, and reviews the methodology. Conclusions and implications based on the findings of the study will also be presented. The chapter will conclude with limitations, delimitations, and recommendations for further study and research.

### **Summary of the Study**

This study examined the programs available in Career Technology and Agriculture Education (CTAE) and the relationship such programs had with student graduation from high school. Data included elements from 861 students who entered the 9<sup>th</sup> grade in the fall of 2006 in a northwest Georgia school district. Of the 861 students, 131 students transferred to another educational setting and were eliminated from the study. A total of 730 students remained eligible for the May, 2010 graduation; 640 of those students graduated while 90 students left school prior to graduation.

### **Overview of the Problem**

Over the past several decades, high schools in America have experienced a dropout rate range of approximately 25-30% (Colvin, 2003; Mathews, 2008). With the passing of the No Child Left Behind Act of 2001, the national focus has been on raising the graduation rate to 100% by the year 2014. School districts have sought ways to support and encourage students to stay in school. One avenue was to provide programs that support student engagement, encourage sense of belonging and involvement, and focus on high expectations (Benard, 1991; Miller, 2006; Klem & Connell, 2004; J. Finn, 1989).

The literature review revealed that support systems are needed in high schools to provide students with a purpose, relative meaning, applicability, and positive relationships to stay in school (Bottoms, 2008; Dan Hull, 2005; American Institutes for Research, 2007). Students who leave school before graduating identified several factors that led to their decision: falling behind in coursework credits or grades, lack of relationships in a large environment, coursework that was uninteresting, unchallenging, and irrelevant to his or her future (Kennelly & Monrad, 2007; Jofus, 2002). Career technology education is a program that could support these areas for student success and more (Achieve, Inc., 2004; Beltram, 2010). The very nature of “hands on” learning found in career technology labs help students apply normal classroom academics to real world situations and problem-solving. Producing graduates who are both college and career ready adds not only relevance to work completed in school, but also value to the workforce of tomorrow (American Diploma Project, 2010). Based on this background, data was collected and examined for any contributions provided toward graduation by career technology education programs in high school.

### **Purpose**

The purpose of this study was to examine the relationship between various career technology and agriculture education programs and graduation of students in high school and to provide schools in the selected northwest Georgia area and other school districts one possible solution for keeping students in high school through graduation. Areas examined for this study were participation in CTAE courses, intervention programs, Early College and dual enrollment initiatives, work-based learning opportunities, career technology-related student organizations and completion of a CTAE concentration or

pathway. Also examined for comparison were student dropouts and graduates within a four year period from entering high school in the fall of 2006. The effects of the CTAE programs and participation on graduation were analyzed using a causal comparative research design. The intent was to use the data gathered for support of specific program improvement in high schools that would help strengthen graduation rates overall.

### **Review of Methodology**

This study was a quantitative, causal comparative study using two-way contingency analysis, *t* test for independent samples, and descriptive statistics to describe the relationship between career technology education programs and the graduation of high school students. The study also included examining and reporting descriptive statistics based on the results of a volunteer student survey issued to 12<sup>th</sup> grade students from the school district during April and May, 2010.

The study included examining the student records of 861 students who entered the 9<sup>th</sup> grade in the fall of 2006; of these 861 individual records, 131 were eliminated from the study due to transfer to other educational districts or institutions. A final 730 student records were kept for analysis; of those 730, 640 students were graduates and 90 were high school dropouts. Student record data was gathered in two different files from the northwest Georgia school district in the fall of 2010 after verification of student information files with the state of Georgia was completed. One file contained CTAE course history and program participation data. The second file contained information concerning graduation coding, withdrawal and graduation dates, and type of diploma attempted and awarded. Arranged in spreadsheet format, the student record data was examined and coded, transfer students removed ( $n = 131$ ), then merged for overall

comparison. Error checking was completed against actual student transcripts and corrections were made to the final spreadsheet for import into SPSS.

### **Findings and Discussion**

The findings for the study were presented in Chapter Four; the conclusions and discussion of the results were based on the six research questions that guided the study.

#### **Research Question 1**

Does high school student participation in the Career Technology programs offered during high school have an impact on graduation from high school?

To answer Research Question 1, four null hypotheses were considered:

Hypothesis 1 ( $H_{01}$ ): There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students identified “at risk” entering grade nine who participated in a CTAE intervention program and students identified “at risk” entering grade nine who did not participate in a CTAE intervention program. Examination of this null hypothesis showed a violation of an assumption of Chi square; more than 20% of the cells of the cross tabulated table had an expected frequency of less than five. Therefore, the Chi square test was not used to test the null hypothesis. Due to the violation of the assumption of Chi square, Yates’ Continuity for Correction was used; the difference was not significant and the null hypothesis was not rejected. Results of the data gathered showed that among the students who participated in the intervention program provided by CTAE, 50% graduated from high school while 70.7% of those who did not participate in the intervention program graduated from high school.

Hypothesis 2 (Ho<sub>12</sub>): There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students who participated in the Early College or dual enrollment programs and students who did not participate in the Early College or dual enrollment programs. The Chi square test was used to analyze this null hypothesis and was shown to be significant ( $p = .033$ ); the null hypothesis was rejected. There was a significant difference in the graduation rates of students who participated in dual enrollment programs. Of those students who participated in dual enrollment programs, 98.6% graduated, while 91.6% of those who did not participate in dual enrollment programs graduated.

Hypothesis 3 (Ho<sub>13</sub>): There is no statistically significant difference in the graduation rate (graduated or did not graduate) between students who participated in a Career Technology student organization and students who did not participate in a Career Technology student organization. The Chi square test was used to analyze this null hypothesis and was shown to be significant ( $p < .001$ ); the null hypothesis was rejected. There was a significant difference in the graduation rate of students who participated in career technology student organizations. Of those students who were members of a career technology student organization, 93.5% graduated, while only 83% of those students who were not members of a career technology student organization graduated.

Hypothesis 4 (Ho<sub>14</sub>): There is no statistically significant difference in the number of CTAE courses taken by the end of the 10<sup>th</sup> grade by students who graduated and the number of CTAE courses taken by the end of 10<sup>th</sup> grade by those students who did not graduate. A  $t$  test for independent samples was conducted; Levene's Test for Equality of Variances was not significant ( $p = .850$ ). When using the  $t$  test that assumed equal

variances, the test was not significant ( $p = .752$ ). Therefore, this null hypothesis was not rejected. The mean number of CTAE courses taken by the end of the 10<sup>th</sup> grade by students who dropped out of high school was only slightly lower than the mean number of courses taken by the end of the graduates' 10<sup>th</sup> grade year.

Overall, the analysis of the data suggests that programs in career technology education can have a positive effect on graduation from high school. The findings of significance concerning dual enrollment programs as related to graduation align with those of M. Karp and Hughes (2008) as they discovered that dual enrollment produced better educational outcomes for students who participated. The rigor and relevance of a dual enrollment program adds meaning to the body of knowledge already developed in high school. As Kathleen Cushman (2006) found, students are not opposed to stretching their thinking and tackling more difficult work if the task and purpose is interesting and has meaning. Dual enrollment is one program that supports preparation for what a student plans to do after high school; as Dan Hull (2005) found, careers of the future will require high levels of useful academics and most careers will require education beyond high school (p. 14). With 98.6% of the dual enrollment students remaining in school through graduation, the dual enrollment program has a positive role in graduation and contributes to both relevant academic work and preparation for the world of work beyond academic study.

Likewise, the participation of students in career technology student organizations showed a significant influence on graduation rate. As stated above, of the participants in career technology student organizations, 93.5% graduated from high school. These results support the third tenet in protective factors of resiliency research – the opportunity

to participate and become active. Aligning with the findings of Susan Reese (2010), participation in career technology student organizations can make a real difference in a students' understanding of the relevance of subject matter. The positive findings of this data support previous findings published in "Dropout Prevention and Recovery" by the Association for Career and Technical Education; CTSO activities positively affect students' academic engagement, leading to better success overall in school (p. 5).

The evaluation of the null hypothesis concerning no significant difference in the graduation rate (graduated or did not graduate) between students identified as at risk entering grade nine who participated in a CTAE intervention program and students identified as at risk entering grade nine who did not participate in a CTAE intervention program was found not significant. The null hypothesis was not rejected. This result did not substantially support the notion of academic growth provided by intervention programs as found by Dykeman et al. (2003). However, the students included in this research question were only considered by means of scores on the state Criterion-Referenced Competency Test (CRCT) scores in Reading and Math since those pieces of data cannot be manipulated. Teacher recommendation and outlying factors such as socioeconomic and personal issues may also be included in the decision to have students participate. Since the intervention program is one of choice considering criteria is met, students do not have to participate in the intervention program. It is suggested the school system consider a better method of identifying students for the intervention program and tracking progress. This leads to recommendations for further research surrounding intervention program design and methodology.

Additionally, the failure to reject the null hypothesis concerning the number of CTAE courses taken by the end of the 10<sup>th</sup> grade by students who graduated as compared to the number of CTAE courses taken by the end of the 10<sup>th</sup> grade by students who did not graduate also leads to suggestions for further study and consideration for educational program design. These suggestions will be mentioned in a later section of this chapter.

### **Research Question 2**

Research Question 2: Is there a statistically significant difference in the type of high school diploma received among the students who graduated from high school, based upon the type of career technology program the students participated in while attending high school?

To answer Research Question 2, two null hypotheses were considered:

Hypothesis 1 (Ho<sub>2\_1</sub>): There is no statistically significant difference in the type of high school diploma (Career Technology Education, Dual Seal or College Preparatory Education) students received based on the students' participation in a Career Technology student organization or the lack of participation in a Career Technology student organization.

This analysis was completed using a cross tabulated table and the Chi square test to evaluate whether or not there was a difference in the type of diploma received by students based on the participation in a career technology student organization. The Chi square test was significant ( $p < .001$ ); therefore, this null hypothesis was rejected. The results showed that among those students who participated in a career technology student organization, 58.7% received a Dual Seal diploma compared to 45.3% of those who received a Dual Seal diploma but did not participate in a career technology student

organization. Additional examination showed that while 13.3% of those who participated in a career technology student organization received a College Preparatory diploma, 24.3% of those who did not participate in a career technology student organization received a College Preparatory diploma.

Hypothesis 2 ( $H_{02}$ ): There is no statistically significant difference in the type of high school diploma (Career Technology Education, Dual Seal, or College Preparatory) students received based on the students' participation in a career technology work-based learning program. This null hypothesis was evaluated by using a cross tabulated table and the Chi square test to analyze whether or not there was a difference in the type of diploma received by students based on participation in a career technology work-based learning program. The Chi square test was significant ( $p < .001$ ); therefore, the null hypothesis was rejected. Among those students who participated in a career technology work-based learning program, 62.7% received a Dual Seal diploma compared to 44.7% of those who did not participate in a career technology work-based learning program received a Dual Seal diploma. Additionally, while 6.8% of those who participated in a career technology work-based learning program received a College Preparatory diploma, 24.7% of those who did not participate in a career technology work-based learning program received a College Preparatory diploma.

In Georgia, a Dual Seal diploma is given to those students who pursued a course of study above the normal requirements; students must want to achieve a higher standard by "going the extra mile" to take additional classes than required by the traditional College Preparatory diploma. Additionally, the student must also concentrate his or her study in a particular career technology area; a total of four career technology courses

must be taken by the student, with three of the four concentrated in one particular career technology area. Adding these four career technology courses to a traditional college preparatory course of study, the student may earn the Dual Seal diploma. Rejecting both cases of the null hypotheses for this research question indicates a significant relationship with the type of diploma being pursued. The higher percentage of students achieving a Dual Seal diploma when participating in work-based learning programs and career technology student organizations supports prior research of academic success when high expectations and involvement in learning situations are provided for students (Beltram, 2010; Benard, 2004; Hood, 2006; Brown, 2002; Stone & Alfeld, 2004). The lower percentages of work-based learning student participation for those receiving College Preparatory diplomas are contributed more to the logistical requirements of the work-based learning program; in most instances, a clear career pathway study should be established in high school prior to acceptance into the work-based learning field. College Preparatory diploma students often will not have that clear pathway established due to other courses needed for the college prep track being pursued, and therefore are not often considered as candidates for work-based learning.

### **Research Question 3**

Research Question 3: Among high school dropout students who initially pursued a Career Technology Education or Dual Seal diploma prior to dropping out, what percentage completed a CTAE concentration among those who: (1) dropped out after completing the tenth grade; (2) dropped out during or after completing the eleventh grade; and (3) those who dropped out during the twelfth grade? Descriptive statistics were used to describe the results of this question. Only 20% of the 10<sup>th</sup> graders had

completed a concentration in a career technology area prior to dropping out of school. Out of 53 dropouts included in the analysis, 29 left school without graduating during or at the end of the 11<sup>th</sup> grade. Of those 29, only 34.5% completed a CTAE concentration prior to dropping out of school. Of the 19 students who dropped out of school during grade 12, only 36.8% completed a career concentration before leaving school without a diploma.

In each grade level of the dropouts included for this research question, the largest number of students who dropped out of high school did so without completing a career technology concentration throughout all their coursework while in school. Of those who dropped out of school at the end of 10<sup>th</sup> grade, 80% did not complete a career concentration. Over 65% of the students who left school during or at the end of 11<sup>th</sup> grade did not complete a career concentration, while 63.2% of those who dropped out during grade 12 did not have a completed career concentration. Although other factors may have contributed to the student leaving school before graduating, I question that if students had a concentrated course of study in an occupational field of interest, would they have had more motivation to stay in school?

The data collected in this analysis support prior research of the effect of career academies or pathways in high schools. Career academies and career pathways have been found to incorporate a focus in academic schoolwork and apply that work to an occupation or career field. (Stone & Alfeld, 2004; Castellano, Stringfield & Stone, (2003); Hood, 2006; Kennelly & Monrad, 2007). The completion of a career technology pathway or concentration as shown by this data collection supports the earlier findings of Castellano et al. (2003) concerning student engagement and overall improvement of

achievement. When students are engaged in their learning and activities at school, their level of dedication to work at school increases.

#### **Research Question 4**

Research Question 4: What percentage of students who graduated with a College Prep Diploma participated in the Career Technology Program? Descriptive statistics (frequency counts and percentages) were used to describe the findings. From the select group of students who earned a College Prep diploma (119), only 2.5% participated in a career technology intervention program. Enrolling in and taking at least one course in career technology other than the computer applications required for graduation was reported at 82.4% of the college preparatory recipients. Only 32.8% of the college prep diploma students participated in a CTAE student organization. Of the College Prep diploma students, 92.4% did not participate in a dual enrollment program.

The surprising finding for this research question was in the percentage of students who took more CTAE courses than the required computer applications course. Even though a College Preparatory diploma student may have a focus on specific study in academics to complete the requirements for graduation, there should still be room in the schedule to explore other areas such as physical education, fine arts, humanities, or career technology. The data here suggests that more students desire to explore areas related to a career that would support their study in college or choices for the world of work after high school, even if that exploration is just one or two classes from the career program areas at their school. This exploration has been supported by the work of the American Diploma Project (2010) to make certain that every graduate from high school has proper

preparation for whatever he or she decides to do after high school – being college and career ready.

### **Research Question 5**

Research Question 5: Among students who graduated from high school after entering in the fall of 2006, what percentage: (1) completed a CTAE concentration; (2) completed two or more classes above a CTAE concentration? Descriptive statistics were used to describe the results in the analysis. Of the 640 graduates, 81.3% (520) completed a CTAE concentration. From the group of 640 graduates, 77.5% (496) completed two or more CTAE classes above a career concentration.

The findings from this analysis were indicative of the seeming willingness of graduates to pursue study in areas that may support a career choice or college study after high school. As mentioned previously, a total of 81.3% of the graduates completed a CTAE concentration or pathway; however, 77.5% of the graduates committed their path of study to include two or more courses above the normal requirement of three courses for a concentration. This was a strong point of interest in support of the CTAE programs in high schools and follows prior findings of linking academics with meaning for success in high school (Dan Hull, 2005; Achieve, Inc., 2004; Beltram, 2010; Bottoms, 2008).

### **Research Question 6**

Research Question 6: Among students who indicated they were going to receive a Career Technology Education diploma or a Dual Seal diploma on the survey instrument, what were their current or future plans related to their education and occupational goals after high school and their perceptions of the preparation they received in Career Technology program? This research question was answered using descriptive statistics to

report findings from selected questions on the student survey instrument. The only students included in this analysis were the 206 who answered that they were pursuing a Career Technology or Dual Seal diploma on the student survey. Twenty-seven students (13.1%) reported that they would not be in school if career classes were not part of their program of studies. Describing their future educational plans, 146 students (70.8%) reported they were already studying or planning to study the same career technical area they studied in high school at some type of postsecondary institution. Describing their future employment plans, 109 students (52.9%) stated that they were interested in having a job similar to a career technology area they were studying in high school. When asked if the study of career technology areas were preparing them for life after high school, 150 students (76.1%) stated that such study had an influence on their plans for post-high school study or career.

The findings of this data indicate that these particular students may have connected their experience in CTAE study to future occupational and educational possibilities. This supports prior research of the importance of linking academic and career-related topics in school (Walker, 2008; Meeder & Stevens, 2005; Baxter & Young, 1982; Keffeler, 2008). This particular set of data findings demonstrate the large influence that career technology education programs can have in the area of preparing for future study and careers for students in high school.

### **Implications and Discussion**

The research findings suggest that the programs offered by career technology and agriculture education have an effect on students' graduation from high school. Since the No Child Left Behind (2001) legislation set the graduation goal of 100% by the year

2014 for school districts, schools are searching to find ways of ensuring a student's success in high school. The focus of this study was to examine the relationship between programs of career technology and agriculture education and student graduation from high school in an effort to support school districts trying to reach a goal of graduating 100% of their high school students. As recommended by the American Diploma Project (2010), the goal for the future of high schools in America is to prepare students to be both college and career ready. No longer is the high school focus one of just academic preparation. The focus has shifted to one of preparation for life's choices after high school. This study lends data to support schools in that quest. While the findings of this research study may not be generalized for all school districts and students, the results of the study suggest that there is a relationship between the programs offered by career technology education and student graduation from high school.

As supported by prior research (Benard, 2004; Stone & Alfeld, 2004; Association for Career and Technical Education, "Dropout Prevention and Recovery"; Reese, 2006; Beltram, 2010; Castellano, Stringfield & Stone, (2003); Schwallie-Giddis, Creamer, & Kobylarz, 2005; M. Karp & Hughes, 2008), participation in extra activities and content-related areas such as dual enrollment, student organizations, and work-based learning situations connect meaning to a students' education. Prior research also supports the finding from this research that completion of a career technology concentration or pathway lays a foundation for good skills in the work world (Bottoms, 2008; Dan Hull, 2005; Stone & Alfeld, 2004). Data results gathered from the student survey indicated that those students view the personal value of career technology education when thinking about decisions to be made after high school. The results of the data analysis of the

research questions indicate career technology education programs have a strong value within a high school education. Subsequently, it is hoped that school districts will consider the importance of CTAE programs in high school as demonstrated by these findings to not only support, but also to strengthen an emphasis on CTAE programs for students within their own district. I considered the following efforts as credible implementation:

1. Incorporate academic interventions throughout all areas of course study – academic areas as well as career technology areas in high school rather than intervening in isolation with struggling students.
2. Create focused career concentrations or pathways that support academic areas offered in the school district. Consistently incorporate integrated study and teacher planning within those areas.
3. Work with community leaders and business partners to establish stronger work-based learning and internship opportunities for more students throughout various stages in their high school career.
4. Identify at-risk students early on at each level of high school, prior to entering each grade level and schedule those select students purposefully in courses connecting them to areas of career interest.
5. Inform students early about the benefits of Early College and Dual Enrollment; strengthen the guidance component that provides continuous monitoring of students within such programs.
6. Recruit students to join career technology student organizations based upon career interests.

7. Create student organizations with a general career exploration for students that remain undecided about joining any particular affiliated group.
8. Regardless of post-secondary plans, maintain a local school district requirement for students to explore at least one of the various career technology courses or pathways throughout high school.
9. Work to strengthen parental knowledge of opportunities available to students in high school that support post-secondary decisions.
10. Implement a career-interest inventory to be administered to middle and high school students to provide early investigation of potential occupational interests.
11. Work with middle schools to inform students early of the benefits for staying in school, pursuing a career pathway, and preparing early for post-secondary decisions.
12. Consistently and continually remind students at all grade levels of the end goal: complete school with skills necessary to be college and/or career ready.

Implementation of the above mentioned considerations will support student preparation for his or her next course of action after high school. School systems that maintain and strengthen career technology education programs may possibly see an increase in not only the graduation rate, but also the overall academic achievement results of students. The support structures mentioned have the potential to build upon each other to continually influence students to stay in school and graduate.

### **Limitations to the Study**

Geographics and demographics are the main limitations of this study. The sample in this study was limited to one public school district in northwest Georgia. The

demographics of this school district with a largely Caucasian student body limit general comparisons to other, more racially diverse school districts. Additionally, the study only focused on the students who entered high school in this one northwest Georgia school district in the fall of 2006. No other groups of students were studied, so comparisons from year to year concerning student graduation data are not able to be made with the collected data. With the exception of the student survey instrument, the data studied and presented in the research was limited to the recorded student database factors.

The student group being studied was limited to not only those who entered high school in the fall of 2006, but also limited to those who either dropped out from the school district or those who graduated from that same district. All students who entered high school in the fall of 2006 and transferred to another school district to finish school and graduate were removed from the study. A total of 131 data sets were removed for transfer students, reducing the sample size of the study from 861 to 730. The data available for students who dropped out of school or who constantly transferred from school to school within the district had the potential for some duplication of course listings or incomplete data on diploma program pursued. The potential for human errors in data input may have had an altered effect on some of the findings in this study. However, this study relied on the consistency and reliability of the school district to keep accurate records and report those findings yearly to the Georgia Department of Education. Given the numerous opportunities of the district to correct errors potentially noted throughout each school year, the data presented in this study are the most accurate possible as derived from the school district.

Another limitation of the study concerns the students in the intervention group, or those students considered at risk. As stated earlier, students considered at risk in the study were only considered by means of scores on the state CRCT scores in Reading and Math since those pieces of data cannot be manipulated. Teacher recommendation and outlying factors such as socioeconomic and personal issues may also be included in the decision by the intervention teacher or the receiving school to invite students to participate. Since the intervention program is one of choice considering criteria is met, students are not required to participate in the intervention program. Not all students who need intervention assistance choose to be in the program. Additionally, parental consent is required for the intervention program; if that consent is not given, the student was not included in the data piece even if test scores showed that he or she should have been classified as at risk. There were a total of 85 students who met the criteria of at risk based upon test data. Only 10 of these students made a choice to participate in the program. The other students considered in the data piece were placed in the program based on outside factors. This leads to suggestions for further research surrounding intervention program design and methodology.

One further limitation to be considered in this study is that of researcher bias. My career work has consistently focused on high schools and more recently, career technology programs. Due to my current occupation, bias may be a consideration factor in interpretation of data findings. Taking this into consideration, I purposely chose to use data from student records after the record validation with the state had taken place. The student survey I created focused on career technology programs in schools; questionnaire bias could be a consideration. As presented in Chapter Three, I took great care to revise

the survey and executed several processes of validation before administering. Despite the care taken to overcome any researcher bias, this still has to be a consideration as a limitation to the study.

### **Recommendations for Further Research**

The nationwide concern of high school graduation and proper preparation of students for successful entry into college or a career has been alive since the early 1950s. This concern still remains. This study focused on one aspect of high school that may prove successful for keeping students in high school through graduation, but there are many areas that could be studied to discover other means of student success in graduation. I suggest the following recommended areas for further study:

1. Identification of at risk students in high school and support programs to ensure their success toward graduation. A study on the components of the program and the benefits over the four-year term of a student's time in high school could lend valuable information for strengthening intervention programs in high school.

2. The original intent of this study was to include three years of student graduation data. Due to the size of the record manipulation and the fact that the school system changed student information database systems, the study was limited to only one cohort of students for study. Increasing the database to multiple years of student graduation data could allow comparisons to be made from each graduating class.

3. A study that follows students exposed to career exploration courses in middle school through high school graduation could lend information to the value of middle school career technology courses.

4. A study that replicates this particular one in school districts with similar demographics could assist in proving accuracy and consistency of the study.

5. A study that replicates this particular study in school districts of different demographics could lend to the theory of thought that CTAE programs have value in any school district in relation to graduation and interest in high school completion.

### **Conclusion**

The purpose of this study was to examine the relationship between career technology education programs and high school graduation rates. The findings were consistent with prior research with the exception of the influence that intervention programs may have on successful graduation. This inconsistency may encourage school districts to develop better plans for the identification of students in need of intervention. Also, students and parents need to be made aware of support services available.

Significant findings were the graduation rates for students participating in student organizations and work-based experiences. Of the students participating in a student organization, 93.5% graduated; furthermore, those students were more likely to earn a Dual Seal diploma (58.7%) upon graduation. Students participating in work-based learning experiences and achieving a Dual Seal diploma (67.2%) were far greater than those earning only a Career Technology diploma (26.0%). Because a Dual Seal diploma requires students to meet both the College Preparatory and Career Technology diploma requirements, these students are committed to achieving the higher academic requirements. This supports and aligns with the prior research findings of increased student expectations and applying learning that has meaning (Cushman, 2006; Beltram, 2010; Stone & Alfeld, 2004). School personnel may be led to encourage membership in

student organizations and may even prompt the creation of other groups in which students may belong based upon these findings.

The findings of this study show that students took more career technology courses than required for their diploma type. To meet the requirements for a Career Technology or Dual Seal diploma, students were required to earn credit in four career technology courses. With over 77% of the graduates completing two or more courses in career technology education *above* required career concentration, the indication is that these courses must hold interest for students. These findings lead to a suggestion for school districts to provide a variety of career technology courses and pathways in which students experience learning in a setting that mirrors the real world of work.

Career technology education provides an essential part of a student's learning. The learning not only connects meaning to the academic focus normally experienced in high school, but allows exploration in occupational areas. These two factors add challenge and personal relevance to the entire learning experience; as Beltram (2010) stated, career technology courses give students the "ah-ha" moments that connect their learning to life. This education is one that leads to ultimate success not only in high school, but preparation for life in the real world.

## REFERENCES

- Achieve, Inc. (2004). *The expectations gap: A 50-state review of high school graduation requirements*. Retrieved from Achieve, Inc. website:  
<http://www.achieve.org/ExpectationsGap2004>
- Alexander, B. (2002). *The teacher trap and how I can break free*. Macon, GA: The Alexander Resource Group.
- Alfeld, C., Stone, J.R., Aragon, S.R., Hansen, D.M., Zirkle, C., Connors, J., . . . Woo, H. (2007, June). *Looking inside the black box: The value added by career and technical student organizations to students' high school experience*. St. Paul: National Research Center for Career and Technical Education, University of Minnesota.
- Alliance for Excellent Education. (2008, June). *The high cost of high school dropouts: What the nation pays for inadequate high schools* (Issue Brief). Washington, DC: [www.all4ed.org](http://www.all4ed.org)
- American Diploma Project. (2010). Retrieved from <http://www.achieve.org/ADPNetwork>
- American Institutes for Research. (2007, April). *Evaluation of the early college high school initiative: Select topics on implementation*. Washington, D.C.: Andrea Berger, Project Director.
- Argyrous, G. (2005). *Statistics for research*. Thousand Oaks, CA: SAGE Publications, Inc.
- Ary, D., Jacobs, L. C., Razavieh, A., & Sorensen, C. (2006). *Introduction to research in education* (7<sup>th</sup> ed.). Belmont, CA: Thompson Wadsworth.

- Association for Career and Technical Education. (n.d.). *Career and technical education's role in American competitiveness*. (Issue Brief). Alexandria, VA: Author.
- Association for Career and Technical Education. (n.d.). *Career and technical education's role in dropout prevention and recovery* (Issue Brief). Alexandria, VA: Author.
- Association for Career and Technical Education. (n.d.). *Career and technical education's role in workforce readiness credentials* (Issue Brief). Alexandria, VA: Author.
- Association for Career and Technical Education. (n.d.). *CTE's role in secondary-postsecondary transitions* (Issue Brief). Alexandria, VA: Author.
- Association for Career and Technical Education. (2010). *CTE information: What is career and technical education?* Retrieved from:  
[www.acteonline.org/cte\\_info.aspx](http://www.acteonline.org/cte_info.aspx)
- Backgrounder on the Morrill Act. (n.d.). In *Basic readings in U.S. democracy* (Part V). Retrieved from <http://usa.usembassy.de/etexts/democrac/demo.htm>
- Bagby, J. (2004). Persistence to graduation: A study of an alternative high school. *Dissertation Abstracts International*, 65(08), 2872. (UMI No. 3144399).
- Balfanz, R., Bridgeland, J. M., Moore, L. A., & Fox, J. H. (2010). *Building a graduation: Progress and challenge in ending the high school dropout epidemic*. Report by America's Promise Alliance, Civic Enterprises, and Everyone Graduates Center at Johns Hopkins University, Retrieved from <http://www.americaspromise.org/Our-Work/Grad-Nation/Building-a-Grad-Nation.aspx>
- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

- Bandura, A. (1994). Self-efficacy. In V.S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). New York: Academic Press.
- Barton, P. (2006). The dropout problem: Losing ground. *Educational Leadership*, 63(5), pp. 14-18.
- Baxter, M.B. & Young, J.L. (1982). Survey report: What do employers expect from high school graduates? *NASSP Bulletin* 66, pp. 93-98.  
doi:10.1177/019263658206645816
- Beltram, P. (2010, May). Total CTE program model makes CTE the answer. *Techniques* (85)5, pp. 10-11.
- Benard, B. (1991). *Fostering resiliency in kids: Protective factors in the family, school and community*. National Resilience Resource Center publication, Retrieved from ERIC database. (ED335781).
- Benard, B. (2004). *Resiliency: What we have learned*. San Francisco: WestEd.
- Benard, B. (2007). The foundations of the resiliency paradigm. In N. Henderson (Ed.), *Resiliency in action: Practical ideas for overcoming risks and building strengths in youth, families, and communities* (pp. 3-8). Ojai, CA: Resiliency in Action.
- Bottoms, G. (2008, November/December). A vision for high schools: Joining academic and technical studies to promote more powerful learning. *Techniques*, 83(8), 16-21.
- Boyer, A. & Hamil, B.W. (2008). Problems facing American education. *Focus on Colleges, Universities, and Schools* 2(1). Retrieved from <http://www.nationalforum.com/Electronic%20Journal%20Volumes/Boyer,%20Ashley%20Problems%20Facing%20American%20Education.pdf>

- Bridgeland, J.M., DiIulio, J.J., & Morison, K.B. (2006). *The silent epidemic: Perspectives of high school dropouts*. Retrieved from Civic Enterprises, LLC website: <http://www.civicerprises.net>
- Brown, B.L. (2002). *CTE student organizations* (Report No. 235). Columbus, OH: Adult Career and Vocational Education. (ERIC Document Identifier ED467238).
- Burris, C.C., & Welner, K.G. (2005). Closing the achievement gap by detracking. *Phi Delta Kappan*, (86)8. pp. 594-598.
- Carnevale, A. & Desrochers, D. (2002, April). *The missing middle: Aligning education and the knowledge economy*. (Paper prepared for the Office of Vocational and Adult Education, U.S. Department of Education, contract no. ED-99-CO-0160).
- Castellano, M., Stringfield, S., & Stone, J.R., III. (2003). Secondary career and technical education and comprehensive school reform: Implications for research and practice. *Review of Educational Research*, (73)2. pp. 231-272.
- Center for Education Reform. (1998). *Education manifesto: A nation still at risk*. Retrieved from <http://www.edreform.com/index.cfm?fuseAction=document&documentID=1548>
- Chaddock, G. R. (2006, June 21). U. S. high school dropout rate: high, but how high? *Christian Science Monitor*. Retrieved from <http://www.csmonitor.com/2006/0621/p03s02-ussc.html>
- Chambers, T.T.V., Huggins, K.S., & Scheurich, J.J. (2009). To track or not to track: Curricular differentiation and African American students at highview high school. *Journal of Cases in Educational Leadership*, (12)1, pp. 38-50. doi: 10.1177/1555458909334102

- Christle, C.A., Jolivette, K., & Nelson, C.M. (2007). School characteristics related to high school dropout rates. *Remedial and Special Education, 28*(6), pp. 325-339.  
doi:10.1177/07419325070280060201
- Clark, C. (n.d.). *Morrill Act of 1890*. Retrieved from  
<http://jschell.myweb.uga.edu/history/legis/morrill.htm>
- Codding, J.B., & Tucker, M.S. (2000, April). A new high school design focused on student performance: Part 1. *NASSP Bulletin 84*, pp.79-92.  
doi:10.1177/019263650008461510
- Colvin, R. L. (2003, September). What's wrong with our schools? Our education system is the best in the world...or not...depending on where you sit in the classroom. *State Legislatures (29)*8, 12-15.
- Cove, E., Eiseman, M., Popkin, S.J. (2005, December). *Resilient children: Literature review and evidence from the HOPE VI panel study*. (Research Report Grant No. 1020-1348, UI No. 07032-007-00). Retrieved from The Urban Institute website:  
[http://www.urban.org/uploadedpdf/411255\\_resilient\\_children.pdf](http://www.urban.org/uploadedpdf/411255_resilient_children.pdf)
- Croninger, R. G., & Lee, V. E. (2001). Social capital and dropping out of high school: Benefits to at-risk students of teachers' support and guidance. *Teachers College Record 103*(4), pp. 548-581.
- Cushman, K. (2006, February). Help us care enough to learn. *Educational Leadership (63)*5, pp. 34-37.
- Day, J. C., & Newburger, E. C. (2002, July). *The big payoff: Educational attainment and synthetic estimates of work-life earnings*. Retrieved from U.S. Census Bureau website: <http://www.census.gov/prod/2002pubs/p23-210.pdf>

- Downs, M. (2007, March 13). Majors aren't just for college. *Florida Today*. Retrieved from [www.floridatoday.com](http://www.floridatoday.com) (available in archives).
- Dual Enrollment*. (2010). R & D alert. (Volume 11, No. 1). San Francisco: WestEd.
- Dykeman, C., Wood, C., Ingram, M., Gitelman, A., Mandsager, N., Chen, M., & Herr, E.L. (2003). *Career development interventions and academic self-efficacy and motivation: A pilot study*. Research report conducted by the National Research Center for Career and Technical Education, University of Minnesota. Retrieved from [www.nccte.com](http://www.nccte.com)
- Finn, C.E. (2002, April). What ails U.S. high schools? How should they be reformed? Is there a federal role? (Paper prepared for the Office of Vocational and Adult Education, U.S. Department of Education, contract no. ED-99-CO-0160).
- Finn, J.D. (1989). Withdrawing from school. *Review of Educational Research*, 59(2), pp. 117-142. doi: 10.3102/00346543059002117
- Flattau, P.E., Bracken, J., Van Atta, R., Bandeh-Ahmadi, A., del la Cruz, R., Sullivan, K. (2006). *The national defense education act of 1958: Selected outcomes* (IDA Document D-3306). Retrieved from Institute for Defense Analyses, Science and Technology Policy Institute website: <https://www.ida.org/stpi/pages/D3306-FINAL.pdf>
- Florida Legislature Office of Program Policy Analysis & Government Accountability. (2011, January). *Several states offer high school diploma options to address students' needs and future goals*. (Report No. 11-05). Retrieved from <http://www.oppaga.state.fl.us/MonitorDocs/Reports/pdf/1105rpt.pdf>

- Foster, P.N., & Wright, M.D. (1996, Spring). Selected leaders' perceptions of approaches to technology education. *Journal of Technology Education*, 7(2), Retrieved from <http://scholar.lib.vt.edu/ejournals/JTE/v7n2/foster.jte-v7n2.html>
- Georgia Career Related Education Manual. (2007). Available from the Georgia Department of Education:  
[http://www.doe.k12.ga.us/ci\\_cta.aspx?PageReq=CICTACareerRelatedEd](http://www.doe.k12.ga.us/ci_cta.aspx?PageReq=CICTACareerRelatedEd)
- Georgia Department of Education. (2003). *Coordinated vocational academic education coordinators handbook*. Atlanta, GA.
- Georgia Department of Labor. (2010). *Georgia Area Labor Profile: Labor Force Activity 2010*. Retrieved from:  
<http://explorer.dol.state.ga.us/mis/Profiles/Counties/Catoosa.pdf>
- Goodlad, J. I. (2004). *A place called school (20<sup>th</sup> anniversary edition)*. New York: McGraw-Hill.
- Governor's Office of Student Achievement. (2005). *Report card, Indicators: Graduation Rate*. Retrieved from:  
<http://reportcard2006.gaosa.org/k12/Indicators.aspx?ID=623:ALL&TestKey=GradRate&TestType=indicators>
- Governor's Office of Student Achievement. (2007). *Report card, Indicators: Graduation Rate*. Retrieved from:  
<http://reportcard2007.gaosa.org/k12/demographics.aspx?ID=623:ALL&TestKey=EnR&TestType=demographics>
- Governor's Office of Student Achievement. (2008). *Report card, Indicators: Graduation Rate*. Retrieved from:

[http://reportcard2008.gaosa.org/\(S\(ozf0cduz5h5ocl553a3sye45\)\)/k12/Indicators.aspx?ID=623:ALL&TestKey=GradRate&TestType=indicators](http://reportcard2008.gaosa.org/(S(ozf0cduz5h5ocl553a3sye45))/k12/Indicators.aspx?ID=623:ALL&TestKey=GradRate&TestType=indicators)

Governor's Office of Student Achievement. (2010, June). *Georgia's Education Scoreboard*. Retrieved from <http://www.gaosa.org/score.aspx>

Grotberg, E.H. (1995). A guide to promoting resilience in children: Strengthening the human spirit. In Bernard Van Leer Foundation (Series Ed.), *Early Childhood Development: Practice and Reflection Series. The International Resilience Project*. Retrieved from <http://resilnet.uiuc.edu/library/grotb95b.html>

Grysho, K. (2008, February 6). Just why do students drop out? *AZCentral.com*. Retrieved from <http://www.azcentral.com/news/articles/0206ednbyrodel0206.html>

Halperin, S. (Ed.). (1998). *The forgotten half revisited*. Washington, DC: American Youth Policy Forum.

Harty, K. (2009, February 20). Students find career center options can be a good fit. *Cumberland Times-News*. Retrieved from [http://www.times-news.com/archivesearch/local\\_story\\_051224943.html](http://www.times-news.com/archivesearch/local_story_051224943.html)

Henderson, N. (2007). Hard-wired to bounce back. In N. Henderson (Ed.), *Resiliency in action: Practical ideas for overcoming risks and building strengths in youth, families, and communities* (pp. 9-14). Ojai, CA: Resiliency in Action.

Hood, L. (2006, May 1). Engineering a turnaround. *Teacher Magazine* (17)6, pp. 25-28.

Hull, D. [Dan]. (2005). *Career pathways: Education with a purpose*. Waco, TX: CORD Communications.

Hull, D. [Dana]. (2007, January 15). Vocational ed rebounding as an answer to dropout crisis. *San Jose Mercury News*. Retrieved from <http://www.mercurynews.com>

- Joftus, S. (2002, September). *Every child a graduate: A framework for an excellent education for all middle and high school students*. Washington, D.C.: The Alliance for Excellent Education.
- Karp, M.M., & Hughes, K.L. (2008, October). Study: Dual enrollment can benefit a broad range of students. *Techniques* (83)7, pp. 14-17.
- Karp, S. (2009, March 4). College versus career. *Extra: Two languages*, p. 8. Retrieved from [http://www.extranews.net/edicion\\_virtual/030509.pdf](http://www.extranews.net/edicion_virtual/030509.pdf)
- Keffeler, C. (2008, April). Lifelong learning through CTE. *Techniques* (83)4, p. 6.
- Kennelly, L., & Monrad, M. (2007). *Approaches to dropout prevention: Heeding early warning signs with appropriate interventions*. Retrieved from National High School Center website:  
[http://www.betterhighschools.com/docs/NHSC\\_ApproachesToDropoutPrevention.pdf](http://www.betterhighschools.com/docs/NHSC_ApproachesToDropoutPrevention.pdf)
- Klem, A.M., & Connell, J.P. (2004, September). Relationships matter: Linking teacher support to student engagement and achievement. *Journal of School Health* (74)1. pp. 262-273.
- Libbey, H.P. (2004, September). Measuring student relationships to school: Attachment, bonding, connectedness, and engagement. *Journal of School Health* (74)1. pp. 273-283.
- Lightcap, B. (2008). *The Morrill Act of 1862*. Retrieved from <http://www.ux1.eiu.edu/~cfrnb/morrill.html>

- Luttrell, W., & Parker, C. (2001). High school students' literacy practices and identities, and the figured world of school. *Journal of Research in Reading*, 24(3). 235-247.  
Retrieved from <http://www.reading.ccsu.edu>
- Lynch, R., & Hill, F. (2008, October). Dual enrollment in Georgia's high schools and technical colleges. *Techniques*, (83)7, pp. 28-31.
- Mack, A. (2008, February 23). Technical classes offer students a glimpse of their futures. *Star News*. Retrieved from  
<http://www.starnewsonline.com/article/20080223/NEWS/802230355/-1/xml>
- Masten, A.S. (1997). Resilience in children at-risk. *University of Minnesota Center for Applied Research and Educational Improvement (CAREI) Research/Practice Newsletter* 5(1). Retrieved from  
<http://www.cehd.umn.edu/carei/reports/rpractice/Spring97/resilience.html>
- Mathews, J. (2008, February 11). Online courses aim to prevent dropouts. *Washington Post*. Retrieved from <http://www.washingtonpost.com/wp-dyn/content/article/2008/02/10/AR2008021002068.html>
- McKinney, B., Steglich, D., & Stever-Zeitlin, J.A. (2002). Small schools, big lessons. *The McKinsey Quarterly*, 2, pp. 122-133.
- McMillan, J.H. (2010). *Research in education: Evidence-based inquiry*. Upper Saddle River, NJ: Pearson Education, Inc.
- Meeder, H. & Couch, J. (2005). Where are the good jobs? In D. Hull (Ed.), *Career pathways: Education with a purpose*. (pp. 25-51). Waco, TX: CORD Communications.

- Meeder, H., & Stevens, J.C. (2005). Aligning career pathways with federal and state policies and standards. In D. Hull (Ed.), *Career pathways: Education with a purpose*. (pp. 85-107). Waco, TX: CORD Communications.
- Miller, M. (February, 2006). Where they are: Working with marginalized students. *Educational Leadership*, 63, 5, pp. 50-54.
- Morrison, C. (2009, March 31). Early college enrollment on the rise in Catoosa county. *Chattanooga Times Free Press, North Georgia Edition*, p. B1.
- National Center for Education Statistics. (2009). Digest of education statistics: Unemployment rate of persons 16 years old and over; by age, sex, race/ethnicity, and educational attainment: 2006, 2007, and 2008 [Table 382]. Retrieved from [http://nces.ed.gov/programs/digest/d09/tables/ddt09\\_382.asp](http://nces.ed.gov/programs/digest/d09/tables/ddt09_382.asp)
- Noddings, N. (1996). Learning to care and be cared for. In A. M. Hoffman (Ed.), *Schools, Violence, and Society* (pp. 185-198). Westport, CT: Pager Publishers.
- Noddings, N. (2010). Moral education and caring. *Theory and Research in Education*, 8(2), 145-151. doi: 10.1177/1477878510368617
- Once a dropout, not always a dropout*. (2010). R & D alert. (Volume 11, No. 1). San Francisco: WestEd.
- Pajares, F. & Schunk, D.H. (2001). Self-beliefs and school success: Self-efficacy, self-concept, and school achievement. In R. Riding & S. Rayners (Eds.), *Perception* (pp. 239-266). London: Able Publishing. Retrieved from <http://www.des.emory.edu/mfp/PajaresSchunk2001.html>

- Plank, S.B. (2001). A question of balance: CTE, academic courses, high school persistence, and student achievement. *Journal of Vocational Education Research*, 26(3). 279-327.
- Plank, S., DeLuca, S., & Estacion, A. (2005). Dropping out of high school and the place of career and technical education: A survival analysis of surviving high school. Retrieved from National Research Center for Career and Technical Education website: <http://136.165.122.102/UserFiles/File/pubs/DroppingOut-Plank.pdf>
- Plank, S.B., DeLuca, S., & Estacion, A. (2008). High school dropout and the role of career and technical education: A survival analysis of surviving high school, *Sociology of Education*, 81, 345-370. doi:10.1177/003804070808100402
- Reese, S. (2006, April). A drive for fuel efficiency. *Techniques* (81)4, pp. 16-19.
- Reese, S. (2010, April). Learning and serving through cte. *Techniques* (85)4, pp. 16-20.
- Resiliency. (2003). R & D alert. (Available from WestEd at [www.wested.org](http://www.wested.org) or WestEd, 730 Harrison Street, San Francisco, CA 94107-1242).
- Rodriguez, L. F. (2008). "Teachers know you can do more": Understanding how school cultures of success affect urban high school students. *Educational Policy* (22)5. pp. 758-780. doi: 10.1177/0895904807307070
- Schwallie-Giddis, P., Creamer, E., & Kobylarz, L. (2005). Helping students make career choices. In D. Hull (Ed.), *Career pathways: Education with a purpose*. (pp. 193-225). Waco, TX: CORD Communications.
- Shi, M. (2006). Students explain the value of CTE. *Techniques*, 81(4), pp. 34-35.
- Skinner, R. R., & Apling, R. N. (2005). *The Carl D. Perkins vocational and technical education act of 1998: Background and implementation* (Congressional Research

- Service Report for Congress). Retrieved from  
[http://216.250.255.51/content/pdfs/Perkins\\_CSR\\_Report.pdf](http://216.250.255.51/content/pdfs/Perkins_CSR_Report.pdf)
- Smith-Hughes Act of 1917*. (1998). Prentice Hall Documents Library. Retrieved from  
<http://cwx.prenhall.com/bookbind/pubbooks/dye4/medialib/docs/smith917.htm>
- Spiegel, M.R. (2000). *Statistics*. New York, NY : McGraw-Hill.
- Stasz, C. & Bodilly, S. (2004, June). *Efforts to improve the quality of vocational education in secondary schools: Impact of federal and state policies*. Prepared for the National Assessment of Vocational Education, U.S. Department of Education (ED-00-C0-0002). Retrieved from  
<http://www2.ed.gov/rschstat/eval/sectech/nave/impact-2004.pdf>
- State of Georgia. (2009). *Consolidated state application accountability workbook*. Office of Elementary and Secondary Education, U.S. Department of Education, Washington, D.C. Retrieved from <http://www.gadoe.org/ayp2009.aspx>
- Steinberg, A., & Almeida, C. (2008, February). *Raising graduation rates in an era of high standards: Five commitments for state action*. Report prepared for Achieve, Inc., and Jobs for the Future, Retrieved from the Achieve website:  
<http://www.achieve.org/RaisingGraduationRates>
- Stephens, L.J. (2006). *Schaum's outline of theory and problems of beginning statistics*. New York, NY: McGraw-Hill.
- Stone, J.R.,III, & Alfeld, C. (2004, April). Keeping kids in school: The power of cite. *Techniques* (79)4, pp. 28-29.

- Stossel, J. (2006, January 13). How lack of choice cheats our kids out of a good education. *John Tassel's 'Stupid in America'*. Retrieved from <http://abcnews.go.com/print?id=1500338>
- Student Well-being*. (2003). R & D alert, 5. (Available from WestEd at [www.wested.org](http://www.wested.org) or WestEd, 730 Harrison Street, San Francisco, CA 94107-1242).
- The value of cte. (2008, March). *Techniques* (83)3, pp. 50-53.
- Urdan, T.C. (2010). *Statistics in plain English (3<sup>rd</sup> Edition)*. New York, NY: Routledge; Taylor & Francis Group.
- U.S. Census Bureau. (2006). *Metropolitan Areas and Component Counties*, Table C-2. Retrieved from: <http://www.census.gov/prod/2008pubs/07ccdb/appc.pdf>.
- U.S. Census Bureau. (2007). *Mean earnings by highest degree earned: 2007*. Table 227. Washington, DC: U.S. Government Printing Office. Retrieved from <http://www.census.gov/compendia/statab/2010/tables/10s0227.pdf>
- U.S. Census Bureau. (2009). *State and County Quick Facts*. Retrieved from: <http://quickfacts.census.gov/qfd/states/13/13047.html>
- U.S. Department of Education, National Center for Education Statistics. (2000). *Vocational education in the United States: Toward the year 2000*. (NCES Publication 2000-029). Retrieved from <http://nces.ed.gov/pubs2000/2000029.pdf>
- Walker, S. (2008, January). *Top ten issues to watch in 2008*. Atlanta, GA: Georgia Partnership for Excellence in Education ([www.gpee.org](http://www.gpee.org)).
- Wolfe, M. L. (1978). The vocational education act of 1963, as amended: A background paper. Retrieved from ERIC database. (ED159450)

Yazzie-Mintz, E. (2006). *Voices of students on engagement: A report on the 2006 high school survey of student engagement*. Retrieved from Center for Evaluation and Education Policy website: <http://ceep.indiana.edu/hssse>

## APPENDIX A

This survey is designed to gather data on the types of activities in which you are involved during high school. No identifying information on individual students will be needed or used in this survey. Results from the survey will be summarized in a study comparing the relationship between involvement in career technology programs and graduation from high school. Based on your responses, important decisions may be formed concerning career technology education in our school systems.

Please answer the following questions to the best of your ability:

1. Indicate your gender:
  - a. Male
  - b. Female
  
2. Will you be able to graduate from high school in 4 years after starting high school?
  - a. Yes
  - b. No
  
3. Indicate the type of diploma you are pursuing:
  - a. Career Technology Education
  - b. Dual Seal – both College Preparatory and Career Technology Education
  - c. College Preparatory Education
  
4. In preparing for any part of the Georgia High School Graduation Test or a retest session of the Georgia High School Graduation Test, did you receive tutoring help from any of the following?
  - a. An academic subject teacher
  - b. Career technology teacher
  - c. Both of the above
  - d. None of the above
  
5. While in school, you may have been involved in one or more programs from the Career Technology area. Please indicate which programs you experienced:
  - a. CCAE or CVAE (Coordinated Career and Academic Education or Coordinated Vocational and Academic Education)
  - b. Career Technology Student Organization (Student clubs related to a “vocational” class you took)
  - c. Work Study Program (DCT, CBE, or Youth Apprenticeship Program)
  - d. Early College
  - e. More than one of the above
  - f. None of the above

6. Of the following you may have experienced while in high school, which was the activity that interested you the most?
  - a. An academic class
  - b. A career technology class
  - c. Belonging to a club related to a career technology area
  - d. Competing in local, region or state events or conferences for career technology clubs
  - e. Taking a college course (academic or career technical) while still in high school
  - f. Being able to participate in the Work-Based Learning program (DCT, CBE, or YAP)
  
7. Are you currently attending - or planning to attend - a college or technical school to study an area related to any career technology classes you chose while in high school?
  - a. Yes
  - b. No
  
8. Do you currently have - or plan to seek - a job in an area related to any of the career technology classes you chose while in high school?
  - a. Yes
  - b. No
  
9. In your career technology classes, were academic topics such as English, math, or science evident within the career focus lessons?
  - a. Yes
  - b. No
  
10. Are your career technology classes preparing you for your desired occupation or education after high school?
  - a. Yes
  - b. No
  
11. When I needed help to prepare for Georgia's testing requirements for graduation, I turned to:
  - a. A teacher in the career technology department
  - b. A teacher in the academic department
  - c. A career technology teacher and a teacher of academics
  - d. None of the above

12. The following statement describes me the best at this time:
- I am *already attending* a college or technical college to study an area related to my high school career technology classes.
  - I am *planning to attend* a college or technical college to study an area related to my high school career technology classes.
  - My plans for life after high school do *not* include more study in an area related to career technology classes I took.
13. Choose the statement that best fits you:
- I am currently employed in a job that is closely related to what I have studied in a career area at my high school.
  - After high school, I would like to find a job that is similar to what I studied in career area courses.
  - Having a job similar to the career areas I studied in high school does *not* interest me.
14. The following statement relates to you the best:
- The career courses I have been involved in during high school have prepared me for *college or technical school study* after high school.
  - The career courses I have been involved in during high school have prepared me for *my occupation* after high school.
  - The career courses I have been involved in during high school have *not* had an influence in what I plan to do after high school
15. It is obvious when my career technology teacher uses English, math or science in the class lessons.
- Yes
  - No
16. My extra-curricular time in high school included:
- Membership in a student club related to a career area such as business, construction, health occupations, etc.
  - Taking classes on a college campus such as Dalton State College or Northwestern Technical College
  - Being able to have a job during school hours and receive school credit for it
  - Participation in a Coordinated Career and Academic Education class (CCAEE)
  - More than one of the above
  - None of the above

17. Pick the statement that fits you the best:
- a. While in high school, I enjoyed being able to participate in either DCT, CBE, Youth Apprenticeship or another work-study type program.
  - b. While in high school, I enjoyed being a student at a 2- or 4-year college or technical college.
  - c. While in high school, I enjoyed participating in competitions and conferences. (local, region, state or national) for my career technology student club.
  - d. While in high school, I enjoyed an academic class the most.
  - e. While in high school, I enjoyed a career technology class the most.

## APPENDIX B

### Survey for Career Technology Students: Developed January, 2009

This survey is designed to gather data on the types of activities in which you are involved during high school. No identifying information on individual students will be needed or used in this survey. Results from the survey will be summarized in a study comparing the relationship between involvement in career technology programs and graduation from high school. Based on your responses, important decisions may be formed concerning career technology education in our school systems.

Please answer the following questions to the best of your ability. Choose only one answer per question and answer all questions asked:

1. Indicate your gender:
  - a. Male
  - b. Female
  
2. Will you be able to graduate from high school in 4 years after starting high school?
  - a. Yes
  - b. No
  
3. Indicate the type of diploma you are pursuing:
  - a. Career Technology Education
  - b. Dual Seal – both College Preparatory and Career Technology Education
  - c. College Preparatory Education
  
4. In preparing for any part of the Georgia High School Graduation Test or a retest session of the Georgia High School Graduation Test, your tutoring help was provided by:
  - a. An academic subject teacher
  - b. Career technology teacher
  - c. At different times, each of the above
  - d. None of the above

5. While in school, you may have been involved in one or more programs from the Career Technology area. Please indicate which programs you experienced:
  - a. CCAE or CVAE (Coordinated Career and Academic Education or Coordinated Vocational and Academic Education)
  - b. Career Technology Student Organization (Student clubs related to a “vocational” class you took)
  - c. Work Study Program (DCT, CBE, or Youth Apprenticeship Program)
  - d. Early College, to prepare for a career
  - e. More than one of the above
  - f. None of the above
  
6. Of the following you may have experienced while in high school, which was the activity that interested you the most?
  - a. An academic class
  - b. A career technology class
  - c. Belonging to a club related to a career technology area
  - d. Competing in local, region or state events or conferences for career technology clubs
  - e. Taking a college course (academic or career technical) while still in high school
  - f. Being able to participate in the Work-Based Learning program (DCT, CBE, or YAP)
  
7. Are you planning to attend or currently attending a college or technical school to study an area related to any career technology classes you chose while in high school?
  - a. Yes
  - b. No
  
8. Do you plan to seek or currently have a job in an area related to any of the career technology classes you chose while in high school?
  - a. Yes
  - b. No
  
9. In your career technology classes, were academic topics such as English, math, or science evident within the career focus lessons?
  - a. Yes
  - b. No
  
10. Are your career technology classes helping prepare you for your desired occupation or education after high school?
  - a. Yes
  - b. No

11. When you needed help to prepare for Georgia's testing requirements for graduation, you turned to:
- A teacher in the career technology department
  - A teacher in the academic department
  - A career technology teacher and a teacher of academics
  - None of the above
12. The following statement describes you the best at this time:
- I am *already attending* a college or technical college to study an area related to my high school career technology classes.
  - I am *planning to attend* a college or technical college to study an area related to my high school career technology classes.
  - My plans for life after high school do *not* include more study in an area related to career technology classes I took.
13. Choose the statement that best fits you:
- I am currently employed in a job that is closely related to what I have studied in a career area at my high school.
  - After high school, I would like to find a job that is similar to what I studied in career area courses.
  - Having a job similar to the career areas I studied in high school does *not* interest me.
14. The following statement relates to you the best:
- The career courses I have been involved in during high school have prepared me for *college or technical school study* after high school.
  - The career courses I have been involved in during high school have prepared me for *my occupation* after high school.
  - The career courses I have been involved in during high school have *not* had an influence in what I plan to do after high school
15. It is obvious when your career technology teacher uses English, math or science as part of the career lessons.
- Yes
  - No

16. Your extra-curricular time in high school included:
- a. Membership in a student club related to a career area such as business, construction, health occupations, etc.
  - b. Taking classes on a college campus such as Dalton State College or Northwestern Technical College
  - c. Being able to have a job during school hours and receive school credit for it
  - d. Participation in a Coordinated Career and Academic Education class (CCAEC) – formerly called CVAE
  - e. More than one of the above
  - f. None of the above
17. Pick the statement that fits you the best:
- a. While in high school, I enjoyed being able to participate in DCT, CBE, Youth Apprenticeship or another work-study or internship program.
  - b. While in high school, I enjoyed being a student at a 2- or 4-year college or technical college.
  - c. While in high school, I enjoyed participating in competitions and conferences (local, region, state or national) for my career technology student club.
  - d. While in high school, I enjoyed an academic class the most.
  - e. While in high school, I enjoyed a career technology class the most.

This is the end of the survey. Please review the survey to be sure you responded to all questions asked and that you only used one answer per question.

## APPENDIX C

### Survey for Career Technology Students: Developed March, 2009

This survey is designed to gather data on the types of activities in which you are involved during high school. No identifying information on individual students will be needed or used in this survey. Results from the survey will be summarized in a study comparing the relationship between involvement in career technology programs and graduation from high school. Based on your responses, important decisions may be formed concerning career technology education in our school systems.

Please answer the following questions to the best of your ability. Unless the question asks differently, choose only one answer per question and answer all questions. Circle the answer to each question directly on this survey.

1. Indicate your gender:
  - a. Male
  - b. Female
  
2. Will you be able to graduate from high school in 4 years after starting high school?
  - a. Yes
  - b. No
  - c. Uncertain
  
3. Indicate the type of diploma you are pursuing:
  - a. Career Technology Education
  - b. Dual Seal – both College Preparatory and Career Technology Education
  - c. College Preparatory Education
  
4. In preparing for any part of the Georgia High School Graduation Test or a retest session of the Georgia High School Graduation Test, your tutoring help was provided by:
  - a. An academic subject teacher
  - b. Career technology teacher
  - c. At different times, each of the above
  - d. None of the above

5. While in school, you may have been involved in one or more programs from the Career Technology area. Please indicate which programs you experienced – you may have more than one answer to this question.
  - a. CCAE or CVAE (Coordinated Career and Academic Education or Coordinated Vocational and Academic Education)
  - b. Career Technology Student Organization (Student clubs related to a “vocational” class you took)
  - c. Work Study Program (DCT, CBE, or Youth Apprenticeship Program)
  - d. Early College, to prepare for a career
  
6. Of the following you may have experienced while in high school, which was the activity that interested you the most?
  - a. An academic class
  - b. A career technology class
  - c. Belonging to a club related to a career technology area
  - d. Competing in local, region or state events or conferences for career technology clubs
  - e. Taking a college course (academic or career technical) while still in high school
  - f. Being able to participate in the Work-Based Learning program (DCT, CBE, or YAP)
  
7. Are you planning to attend or currently attending a college or technical school to study an area related to any career technology classes you chose while in high school?
  - a. Yes
  - b. No
  
8. Do you plan to seek or currently have a job in an area related to any of the career technology classes you chose while in high school?
  - a. Yes
  - b. No
  
9. Please indicate the number of courses you took in career technology areas while in high school:
  - a. One – the Computer Applications course required for graduation
  - b. Two – one additional class other than Computer Applications
  - c. Three or more career technology courses
  
10. Are your career technology classes helping prepare you for your desired occupation or education after high school?
  - a. Yes
  - b. No

11. When you needed help to prepare for Georgia's testing requirements for graduation, you turned to:
- A teacher in the career technology department
  - A teacher in the academic department
  - A career technology teacher and a teacher of academics
  - None of the above
12. The following statement describes you the best at this time:
- I am *already attending* a college or technical college to study an area related to my high school career technology classes.
  - I am *planning to attend* a college or technical college to study an area related to my high school career technology classes.
  - My plans for life after high school do *not* include more study in an area related to career technology classes I took.
13. Choose the statement that best fits you:
- I am currently employed in a job that is closely related to what I have studied in a career area at my high school.
  - After high school, I would like to find a job that is similar to what I studied in career area courses.
  - Having a job similar to the career areas I studied in high school does *not* interest me.
14. The following statement relates to you the best:
- The career courses I have been involved in during high school have prepared me for *college or technical school study* after high school.
  - The career courses I have been involved in during high school have prepared me for *my occupation* after high school.
  - The career courses I have been involved in during high school have *not* had an influence in what I plan to do after high school
15. How many career technology courses have you taken while in high school?
- One
  - Two
  - Three or more
16. Your extra-curricular time in high school included (you may choose more than one answer to this question):
- Membership in a student club related to a career area such as business, construction, health occupations, etc.
  - Taking classes on a college campus such as Dalton State College or Northwestern Technical College
  - Being able to have a job during school hours and receive school credit for it
  - Participation in a Coordinated Career and Academic Education class (CCAEE) – formerly called CVAE

17. Pick the statement that fits you the best:
- a. While in high school, I enjoyed being able to participate in DCT, CBE, Youth Apprenticeship or another work-study or internship program.
  - b. While in high school, I enjoyed being a student at a 2- or 4-year college or technical college.
  - c. While in high school, I enjoyed participating in competitions and conferences (local, region, state or national) for my career technology student club.
  - d. While in high school, I enjoyed an academic class the most.
  - e. While in high school, I enjoyed a career technology class the most.

In the space below, please share any comments about your experience in career technology education while in high school:

This is the end of the survey. Please review the survey to be sure you responded to all questions asked. Be certain that you used one answer for each question, except for those questions allowing more than one answer.

## APPENDIX D

### Survey for Career Technology Students: Developed July, 2009

This survey is designed to gather data on the types of activities in which you are involved during high school. No identifying information on individual students will be needed or used in this survey. Results from the survey will be summarized in a study comparing the relationship between involvement in career technology programs and graduation from high school. Based on your responses, important decisions may be formed concerning career technology education in our school systems.

Please answer the following questions to the best of your ability. Unless the question asks differently, choose only one answer per question and answer all questions. Circle the answer to each question directly on this survey.

1. Indicate your gender:
  - a. Male
  - b. Female
  
2. Will you be able to graduate from high school in 4 years after starting high school?
  - a. Yes
  - b. No
  - c. Uncertain
  
3. Indicate the type of diploma you are pursuing:
  - a. Career Technology Education
  - b. Dual Seal – both College Preparatory and Career Technology Education
  - c. College Preparatory Education
  
4. What is your best estimate of your overall grade point average right now?
  - a. A – an overall average of 90
  - b. B – an overall average of 80 – 89
  - c. C – an overall average of 75 – 79
  - d. D – an overall average of 70 – 74
  - e. F - an overall average of 69 or below

5. While in high school, you may have been involved in one or more programs from the Career Technology area. Please indicate which programs you experienced – you may have more than one answer to this question.
  - a. CCAE (Coordinated Career and Academic Education) or CVAE (Coordinated Vocational and Academic Education)
  - b. Career Technology Student Organization (Student clubs related to a “vocational” class you took)
  - c. Work Study Program (DCT, CBE, Internship or Youth Apprenticeship Program)
  - d. Early College or Dual Enrollment
  - e. None of the above
  
6. Would you be in school if it were not for the Career Technology program classes?
  - a. Yes
  - b. No
  
7. Are you planning to attend or currently attending a college or technical school to study an area related to any career technology classes you chose while in high school?
  - a. Yes
  - b. No
  
8. Do you plan to pursue or do you currently have a job in an area related to any of the career technology classes you chose while in high school?
  - a. Yes
  - b. No
  
9. Indicate the number of career technology area courses you took in while in high school:
  - a. One – the Computer Applications course required for graduation
  - b. Two – one additional class other than Computer Applications
  - c. Three or more career technology courses
  
10. In your opinion, are your career technology classes helping you prepare you for your desired occupation or education after high school?
  - a. Yes
  - b. No
  
11. The following statement describes you the best at this time:
  - a. I am *already attending* a college or technical college to study an area related to my high school career technology classes.
  - b. I am *planning to attend* a college or technical college to study an area related to my high school career technology classes.
  - c. My plans for life after high school do *not* include more study in an area related to career technology classes I took while in high school.

12. Choose the statement that best fits you:
- I am currently employed in a job that is closely related to what I have studied in a career area at my high school.
  - After high school, I would like to find a job that is similar to what I studied in career area courses.
  - Having a job similar to the career areas I studied in high school does *not* interest me.
13. The following letter grade is an accurate prediction of my overall GPA (grade point average) right now:
- A
  - B
  - C
  - D
  - F
14. You may have more than one answer to the following question:  
Your extra-curricular time in high school included:
- Membership in a student club related to a career area such as business, construction, health occupations, etc.
  - Taking classes on a college campus such as Dalton State College or Georgia Northwestern Technical College.
  - Being able to have a job during school hours and receive school credit for it
  - Participation in a Coordinated Career and Academic Education class (CCAEC) – formerly called CVAE
  - None of these
15. The following statement relates to you the best:
- The career courses I have been involved in during high school have prepared me for *college or technical school study* after high school.
  - The career courses I have been involved in during high school have prepared me for *my occupation* after high school.
  - The career courses I have been involved in during high school have *not* had an influence in what I plan to do after high school.
16. How many career technology courses have you taken while in high school?
- One
  - Two
  - Three or more
17. If it were not for the career technology programs offered at my school, I would not enjoy being in high school.
- True
  - False

In the space below, please share any comments about your experience in career technology education while in high school (you may use the back if needed):

This is the end of the survey. Please review the survey to be sure you responded to all questions asked. Be certain that you used one answer for each question, except for those questions allowing more than one answer.

## APPENDIX E

### Pilot Survey Results

Pilot Student Number	Survey Question Pair Numbers 4 and 13	Survey Question Pair Numbers 5 and 14	Survey Question Pair Numbers 6 and 17	Survey Question Pair Numbers 9 and 16
1	Y	Y	Y	Y
2	Y	Y	Y	Y
3	Y	Y	Y	Y
4	Y	Y	N	N
5	Y	Y	Y	N
6	N	Y	Y	Y
7	N	N	Y	N
8	N	Y	N	Y
9	Y	Y	N	N
10	N	N	Y	Y
11	Y	Y	Y	Y
12	Y	Y	Y	N
13	Y	Y	Y	N
14	Y	N	Y	Y
15	Y	Y	Y	Y
16	Y	N	N	N
17	Y	N	N	Y
18	Y	Y	Y	N
19	Y	Y	Y	Y
20	Y	Y	Y	Y
<b>Total Matched Responses out of Total Possible</b>	<b>16 out of 20</b>	<b>15 out of 20</b>	<b>15 out of 20</b>	<b>12 out of 20</b>
<b>Percentage of</b>	<b>80%</b>	<b>75%</b>	<b>75%</b>	<b>60%</b>

**Table Key:**

Y – The student responses to the paired questions that contained repeated or rephrased content matched.

N – The student responses to the paired questions that contained repeated or rephrased content did not match. This includes those pairs of questions where one or both questions may not have been answered. Additionally, if a question contained more than one answer response where only one response was needed, the question could not be interpreted as matching the rephrased partner question.

## APPENDIX F

April 16, 2010

Dear Parent,

As a graduate student in the School of Education at Liberty University, Lynchburg, Virginia, I am working under the direction of Dr. Jill A. Jones on research about career education programs in high school and student graduation. The purpose of the research is to determine any effects on completing high school because a student took career technology courses or was involved in career organizations during high school.

Your senior student is invited to participate in this research study during the first three (3) weeks of May, 2010 by completing a short survey at his/her school. The surveys will be given outside of class instruction during the school day, and will take approximately 10-15 minutes to complete. This survey has been approved by the Institutional Review Board of Liberty University and has the approval by [REDACTED] Schools to be administered.

Your student will not be identified in any way on the survey or in the research results. There is little to no risk on a student's well-being from this particular survey or research. There will not be financial cost to your student to participate in the study; also, your student will not be compensated for his or her time. Taking the survey is voluntary; students may decide not to participate at any time during the survey period without penalty, even if the parent allows participation.

The possible benefits of this study may result in improvement of the methods for scheduling high school classes and increasing the number of courses students may choose from during high school.

Due to the age and maturity level of the students asked to participate, parental consent for this survey is asked for *by exception*. If you approve of your student participating in this study, you do not have to respond. However, if you do NOT wish for your student to participate in the survey at his/her school, please complete the enclosed form and return it to the main office at your child's school on or before April 30, 2010. Students with forms returned will be noted only by the school administration; those students will not be included in the groups asked to complete the survey at that high school.

If you have questions concerning this research study or your child's participation, please feel free to call me at [REDACTED] or email me at [REDACTED]. A

copy of the survey is available for you to view in the main office of your child's high school. If you would like a copy of the research results, you may also let me know by contacting me at any time.

Sincerely,  
Trish Schimpf  
High School Improvement Specialist  
[REDACTED] Schools

**APPENDIX G**

**Parental Denial of Consent**

The Relationship Between Career Technology Education Programs  
and High School Graduation

A Research Study Conducted by  
Trish Schimpf  
Liberty University  
School of Education

I have read the information provided by mail concerning the research study listed above.

I do NOT wish for my student to participate in the above study. By returning this form to the main office of my student's high school, my student will NOT be included in the survey group for this research study. I understand that no penalty will be given to my student for not participating.

My student does NOT have my permission to participate in the research study concerning career technology education programs and high school graduation success.

Student Name (please print): \_\_\_\_\_

Parent/Guardian Signature: \_\_\_\_\_

**Please return this form to the main office of the student's high school  
on or before the following date:**

**April 30, 2010**

## IRB APPROVAL

**LIBERTY**  
UNIVERSITY.

The Graduate School at Liberty University

IRB Approval 817.021710: Patricia Schimpf

The relationship between career technology education and high school graduation

April 6, 2010

Dear Patricia,

We are pleased to inform you that your above study has been approved by the Liberty IRB. This approval is extended to you for one year. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must resubmit the study to the IRB. See the IRB website for appropriate forms in these cases.

Thank you for your cooperation with the IRB and we wish you well with your research project.

Sincerely,



Fernando Garzon, Psy.D.  
IRB Chair, Liberty University  
Center for Counseling and Family Studies  
Liberty University  
1971 University Boulevard  
Lynchburg, VA 24502-2269  
(434) 592-4054  
Fax: (434) 522-0477

address 1971 University Boulevard  
Lynchburg, VA 24502

phone 434-592-4044  
fax 434-522-0506

web [www.liberty.edu/academics/graduate](http://www.liberty.edu/academics/graduate)